



4-24-2020

## Winthrop University Undergraduate Scholarship & Creative Activity 2020

Undergraduate Research Office  
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WINTHROP UNIVERSITY  
UNDERGRADUATE  
SCHOLARSHIP &  
CREATIVE ACTIVITY  
2020



University College and Winthrop University proudly present Undergraduate Scholarship and Creative Activity 2020. This ninth annual University-wide compilation of undergraduate work chronicles the accomplishments of students and faculty mentors from at least 35 academic departments and programs, spanning all five colleges of the university: College of Arts and Sciences (CAS), College of Business Administration (CBA), College of Education (COE), College of Visual and Performing Arts (CVPA) and University College (UC).

We think you will be impressed by the depth and diversity of scholarly and creative research highlighted within these pages. As you will see, these student projects grew from a variety of origins, including curricular requirements and extra-curricular programs, and were supported by a range of intra- and extramural funding sources. Students were also slated to share their projects in a remarkable array of venues (before the COVID-19 pandemic curtailed many such plans): presenting and performing scholarship at regional, national, and international conferences; and showing work in juried exhibitions. We congratulate all our student scholars on their creation of new knowledge and new forms of creative expression, as well as their development of professional skills and attributes that have prepared them to pursue nationally competitive awards, graduate and professional degrees, and employment in their chosen fields. In particular, we acknowledge undergraduate Erin Jones, a visual communication design major who completed the entire design and layout of this book.

We also recognize the faculty members who served as mentors, coordinators, thesis readers, and reference writers, whose commitment and dedication enabled students' accomplishments. We thank them for helping to sustain a vibrant learning environment on campus and for contributing to the development of the next generation of curious, engaged professionals. Lastly, we thank Samantha Kroft, program assistant in the Undergraduate Research Office, for invaluable editorial help.

We hope you enjoy our compilation! Please note that much of the work described here will be represented in our Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), which will have a virtual home at [https://digitalcommons.winthrop.edu/source/SOURCE\\_2020/](https://digitalcommons.winthrop.edu/source/SOURCE_2020/) by April 24, 2020.

**Robin K. Lammi, Ph.D.**

Director of Undergraduate Research

**Gloria G. Jones, Ph.D.**

Dean of University College

***“Human curiosity, the urge to know, is a powerful force, and is perhaps the best secret weapon of all in the struggle to unravel the workings of the natural world.”***

– Aaron Klug, British biochemist (1926 – 2018)

***“No matter what people tell you, words and ideas can change the world.”***

– Robin Williams, American actor and comedian (1951 – 2014)

Undergraduate Scholarship and Creative Activity 2020 shows that everyone at the university is doing individual tasks in order to collectively come together and "grow" our knowledge. I have it depicted here as a garden. However, everyone contributes differently by specializing in our individual majors.

**-Erin Jones**

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# WINTHROP UNIVERSITY UNDERGRADUATE RESEARCH INITIATIVE

*The Winthrop University Undergraduate Research Initiative supports a student-centered learning environment that fosters student research, scholarship, and creative activities. The Initiative encourages students and faculty mentors to collaborate in the design and implementation of projects and the dissemination of results.*

## University-Wide Undergraduate Research Advisory Committee:

**Robin K. Lammi, Ph.D.**

Director of Undergraduate Research

**Tomoko Deguchi, Ph.D.**

College of Visual and Performing Arts

**Marguerite Doman, Ph.D.**

College of Business Administration

**Shawna Helf, Ph.D.**

College of Education

**Gloria Jones, Ph.D.**

Dean, University College

**David Schary, Ph.D.**

College of Education

**Meg Schriffen, M.F.A.**

College of Visual and Performing Arts

**William Schulte, Ph.D.**

College of Arts and Sciences

**Merry Sleight, Ph.D.**

College of Arts and Sciences

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**Mattin Avalon**, Undergraduate

**Gregory Bell, Ph.D.**, History

**Siobhan Brownson, Ph.D.**, English

**Monique Constance-Huggins, Ph.D.**, Social Work

**Matthew Fike, Ph.D.**, English

**Nicholas Grosseohme, Ph.D.**, Chemistry, Physics, and Geology

**Kunsiri Grubbs, Ph.D.**, Biology

**James M. Hanna Jr., Ph.D.**, Chemistry, Physics, and Geology

**Anna Igou, Ph.D.**, World Languages and Cultures

**Peter Judge, Ph.D.**, Philosophy and Religious Studies

**Hye-Sung Kim, Ph.D.**, Political Science

**Hope Lima, Ph.D.**, Human Nutrition

**Robert Prickett, Ph.D.**, Associate Dean, College of Arts and Sciences

**Michael Sickels, Ph.D.**, Sociology, Criminology, and Anthropology

**Merry Sleight, Ph.D.**, Psychology

**Ephraim Sommers, Ph.D.**, English

**Bradley Tripp, Ph.D.**, Sociology, Criminology, and Anthropology

**Scott Werts, Ph.D.**, Chemistry, Physics, and Geology

**Ginger Williams, Ph.D.**, Interdisciplinary Studies

**Jessica Yang, Ph.D.**, Social Work



HONORS THESES





The Honors Program at Winthrop University is designed to enrich the college experience for highly talented and motivated students. Through interactions with outstanding faculty and peers, the Honors Program creates a vital community of scholars that embraces the pursuit of knowledge for the enhancement of intellectual and personal growth. Founded in 1960, Winthrop's Honors Program is one of the oldest in the nation. Then President Charles S. Davis, realizing the importance of an enriched education for high-achieving students, appointed faculty member John S. Eells as the founding director of our Honors Program. Eells became a member of a national organization that was formed as a clearinghouse for information on honors activities, the Inter-University Committee on the Superior Student (ICSS). The ICSS received funding from the Carnegie Foundation, the National Science Foundation, and the U.S. Office of Education to help establish honors programs at colleges and universities across the U.S.

When the ICSS disbanded in 1965, several members of that group formed the National Collegiate Honors Council (NCHC), which was committed to maintaining a professional association of honors educators. Eells was elected the fourth President of NCHC in 1970. Over the years, the Winthrop University Honors Program has continued to flourish, and in the early 1980s, the program was divided into a program for entering freshmen and a program for upperclassmen. At that time, there was a national trend toward creating "learning communities," and the Winthrop honors administration created the Clustered Learning Units for Educational Success (C.L.U.E.S.) program, in which new honors freshmen enrolled in a cluster of three honors classes together. This program later became the Freshman Honors Program. Seeing the need for a more cohesive honors experience, Anthony J. DiGiorgio led a 1997 initiative that combined the freshmen program with upper-class offerings.

Today, the Honors Program at Winthrop University enrolls approximately 350 students from each of the degree-granting colleges of the university. To graduate with an Honors Program Degree, a student must complete 23 hours of honors courses, which includes an honors thesis, while maintaining at least a 3.30 grade point average. The honors thesis is the culminating experience for Honors Program students, in which they work collaboratively with a faculty director and two faculty readers to produce a project that evaluates knowledge, concepts, and methodology; examines major issues; integrates complex information; and develops and appropriately defends an argument. The Honors Program students and I would like to thank the faculty members who have worked as honors thesis directors and readers throughout this process. Their expertise, guidance, and commitment is crucial to the continuing success of the Winthrop Honors Program.

**Michael E. Lipscomb, Ph.D.**  
*Director of the Honors Program*

## 2019 – 2020 Honors Advisory Committee

**Michael Lipscomb, Ph.D.**  
*Chair, Honors Program Director*

**Andrew Besmer, Ph.D.**  
*College of Business Administration*

**Diana Boyer, Ph.D.**  
*College of Arts and Sciences*

**Shaun Cassidy, M.V.A.**  
*College of Visual and Performing Arts*

**Janet Wojcik, Ph.D.**  
*College of Education*

**Marvin McAllister, Ph.D.**  
*College of Visual and Performing Arts*

**Hope Johnson, M.S.**  
*Dacus Library*

**Matthew Stern, Ph.D.**  
*College of Arts and Sciences*

**Leslie Bickford, Ph.D.**  
*Director of the Office of Nationally Competitive Awards, ex officio*

**Gloria Jones, Ph.D.**  
*Dean of University College, ex officio*

**Takita Sumter, Ph.D.**  
*Dean of the College of Arts and Sciences, ex officio*

## Implementation of a Data-Driven Solution for Student Loans: Utilizing Data Mining Algorithms Approach

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Honors Thesis Committee: Yuanshan Cheng, Ph.D.; Phillip Gibson, Ph.D.; and Shirley Shen, Ph.D.*

*CBA - Department of Accounting, Finance, and Economics*

*(FINC 498 - Cheng)*

### **Student: James Kachamila**

As of 2020, student loans debt hit \$1.6 trillion, with private loan debt volume reaching over \$125 billion. Student loans have grown to become the second largest category of household debt in the U.S. It has also become the largest financial burden in terms of debt for graduates, with nearly 44 million individuals holding outstanding student loans. The private loan industry accounts for about 8% of the market. The private sector, even with a stronger underwriting process, still has a relatively high default rate with about 1 in 10 individuals defaulting on their loans. Credit-risk assessments conducted by these private lending institutions are heavily reliant on variables such as debt-to-income ratio, credit history, FICO scores and co-signer availability. This paper explores a data mining algorithmic approach with the utilization of “untraditional” variables to determine an individual’s credit risk in regard to student loans. Using a neural network model with data from the U.S Department of Education, the aim is to extrapolate a reliable predictive model affecting student loan repayment. The goal is also to understand the business viability and business integration value of an automated credit-risk assessment tool that in theory should reduce default risk and increase efficiency by eliminating one of lending institutions’ major areas of overhead: underwriting costs.

## Consumer Perceptions of How Different Cosmetics are Manufactured

*Honors Thesis Committee: Stephanie Lawson, Ph.D.; Jane Thomas, Ph.D.; and Hemant Patwardhan, Ph.D.*

*CBA - Department of Management and Marketing*

### **Student: Ashlee McCall**

Previous research on organic cosmetic usage suggests that a consumer’s environmental consciousness influences the importance placed on certain cosmetic attributes, such as whether a product is organic or cruelty-free. In theory, if consumers view themselves as green consumers, they will be more likely to buy organic products than those who do not. However, there has not been in-depth research on how consumers comparatively perceive traditional, commercially made cosmetics versus organic, commercially made cosmetics or organic, artisan made cosmetics. This thesis identifies different factors that impact a consumer’s purchase intentions when buying cosmetic products; a wide array of perceptions may impact what consumers purchase. Understanding such perceptions is vital, and will allow marketers to construct beneficial marketing messages when advertising their unique products. In order to examine these perceptions, an online survey was distributed to Winthrop University students and faculty. Respondents were asked about the price, availability (convenience), quality, and brand loyalty to organic products in general. Questions were then asked about their usage of three different types of commonly used cosmetics: soap, toothpaste, and makeup. Finally, respondents were asked their skin types and other demographic questions. The results revealed three major conclusions. First, affordability is the number one deterrent for why consumers do not purchase organic products. Second, respondents have tried organic and artisan made versions of soap far more than they have toothpaste or makeup. Finally, consumers tend to try organic versions of cosmetics far more than artisan made versions.

## Determining Pronunciation of /p/ and /r/ in Spanish 101 Students Using Spanish Tongue Twisters (Trabalenguas)

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Honors Thesis Committee: Valerie Jepson, Ph.D.; Zachary Abernathy, Ph.D.; and Adam Glover, Ph.D.*

*CAS - Department of World Languages and Cultures*

### **Student: Olivia Greathouse**

Previous research shows that tongue-twisters can improve pronunciation in second-language learners. This experiment explores the pronunciation of /r/ and /p/ from participants in two Spanish 101 classes at a small, public, four-year university. One class participated in weekly tongue-twister practice sessions for eight weeks, where the professor read a tongue twister, the participants repeated the tongue-twister, and then practiced on their own or with a partner. The second class was used as a control group and no pronunciation practice was provided. Sound analyses were conducted post-experiment to determine if pronunciation improved when using tongue-twisters in the classroom. Additionally, a pre-experiment survey provided information on participants’ motivations in improving Spanish pronunciation, which allowed for correlations to inform researchers on the non-linguistic factors that may have aided in pronunciation improvement.

## Self and Social Acceptance: How Popular Media Affects the LGBTQ+ Population

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Honors Thesis Committee: Tara Collins, Ph.D.; Adam Glover, Ph.D.; and Merry Sleigh, Ph.D.*

*CAS - Department of Psychology*

**Student: Erin Streetman**

The LGBTQ+ community is vulnerable to many kinds of discrimination. From bullying during youth to discrimination in everyday adult life, LGBTQ+ individuals are frequently faced with hostile environments. This discrimination can have widespread negative physical and mental effects, so it is important to find ways to combat discriminatory practices and prejudices against minority groups such as the LGBTQ+ community. In recent years, media and social media have become major parts of everyday life and have become a safe space for oppressed individuals to band together, mature in their identities, and explore their senses of self. The promotion of positive representations of LGBTQ+ individuals on various media platforms could promote more positive online and offline interactions between those within the LGBTQ+ community and those outside of it. The present study analyzes how positive and negative media and social media representations of the LGBTQ+ community may affect attitudes towards the community from both those within the community and those outside of it. By measuring sexual orientation, media usage, and awareness of and prescription to prejudices and stereotypes, it was possible to study the effects of positive and negative media on attitudes toward the LGBTQ+ community.

## Pieced Together

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Honors Thesis Committee: Seth Rouser, M.F.A.; M. Gregory Oakes, Ph.D.; and Alice Burmeister, Ph.D.*

*CVPA - Department of Fine Arts*

**Student: Katherine N. Karban**

*Pieced Together* is a body of artwork that focuses on pattern, quilting, and the meaning items can have to an individual. Historically, visual patterns have been important to family histories as people relate imagery with family meanings. Patterns and symbols can convey feelings, represent ideals, or represent memories. Groups of people quilt together to re-contextualize symbols of importance, visually describing physical paths, showing life-changing moments, or creating new visual stories. A piece of fabric holds significance in the lives of many: a piece of clothing gifted, a family heirloom, or the most comfortable hand-me-down outfit. This project shows particular interest in the stories that reveal the importance of an item and how people relate their own self-images to visual patterns in both the quilted patterns and the patterns of the fabrics used. This could be a realistic flower motif, for example, because a subject is attracted to nature's comfort and sees herself as a practical person seeking factual answers. This project also uses the act of quilting as a means of building a community and as the driving concept for this body of work. Discussions with individuals result in a selection of one pattern per person. These patterns are used both in a painting of a person and in a section of a quilt, roughened through printing methods as if worn through use. The resulting quilt also represents a community of individuals. It is believed that art can have the same sense of quick and meaningful interaction as a conversation or built relationship.

## Yoga Practitioners' Chosen Facility Based on Their Motives for Practice and its Implications in Marketing Strategies

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Honors Thesis Committee: Stephanie Lawson, Ph.D.; Cara Peters, Ph.D.; and Gary Stone, Ph.D.*

*CBA - Department of Management and Marketing*

**Student: Cherilyn Heintz**

Yoga in a modern and Americanized sense has skewed from its original intent. There has been a shift from a spiritually sacred practice to a trendy commercialized exercise. The purpose of this study is to determine whether there is a significant difference in motivation for yoga practitioners who practice at a yoga studio versus those who practice at a recreation center. It is hypothesized that those who practice at a recreation center will have different motivations for practice than those who attend a yoga studio. The key motivations that will be considered are: physical fitness, spirituality, relaxation, community, and price sensitivity. This outcome will be determined by an online survey distributed to those of both populations and analyzed for significant differences. The results of this study help to understand customers' motivations and contribute to marketing strategy for both yoga studios and recreation centers.

## Story of Conversion: Why People Choose to Change Religions

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Honors Thesis Committee: Peter Judge, Ph.D.; Kristin Kiblinger, Ph.D.; and Merry Sleigh, Ph.D.*

*CAS - Department of Philosophy and Religious Studies*

**Student: Kathryn Priddy**

It is not uncommon for individuals to have and maintain their childhood religions throughout their lives. For many individuals, it is unfathomable to even consider leaving. However, this sentiment is not universal, as there are some people who choose to leave their childhood religion for another. The idea that someone can change from their childhood religion to another can be distressing for those who stay within their childhood religion and brings up the question as to why anyone would ever consider it. Recent scholarship suggests that there are different factors that can contribute to or dissuade conversion among people of various religious groups. In particular, four types of stress involving community, intellect, emotions, and spirituality seem to be of great importance and can be vital factors when one chooses to switch religions.

## Do Nonhuman Animals Have the Capacity for Ethics and Morals?

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: William Rogers, Ph.D.; Jennifer Schafer, Ph.D.; and Janice Chism, Ph.D.

CAS - Department of Biology

**Student: Breanna Walden**

Ethics and morals are subjective concepts and are based on the values that individuals hold within society. Ethics is the entirety of one's sense of self and place within the society based on the values and rules of conduct by which one lives. Morals are the universal and inviolable rules in any society. These terms are often used synonymously; however, they are not the same, and the distinction is important. Ethics and morals are able to change depending on the context in which they are being used, such as different cultures, countries, or groups. Some ethologists believe there is no biological basis for morals and ethics, and this led to the idea that nonhuman animals do not have ethics or morals. In this paper, it is argued that nonhuman animals do demonstrate morals and ethics. Key moral and ethical concepts found in most human cultures, such as altruism, community concern, conflict resolution, consolation, empathy, reciprocity, and sympathy have also been shown within nonhuman animals, and this argues for the presence of moral and ethical systems in those species, as well.

## Viral and Gameplay Marketing Case Studies Regarding Immersion through the Video Games *Bioshock 2* and *Wolfenstein: The New Order*

Honors Thesis Committee: Nathaniel Frederick II, Ph.D.; Casey Cothran, Ph.D.; and Bonnye Stuart, M.A.

CAS - Department of Mass Communication

**Student: Joseph Calamia**

The thesis examines the elements of gameplay and viral marketing through two case studies of marketing campaigns for the video games *Bioshock 2* and *Wolfenstein: The New Order*. By examining these two games, the research will discuss elements each case uses to include interactivity with their respective audiences and what motives they chose for the basis of their campaigns. The case studies will examine types of viral marketing and its origins through its beginning online and some modern-day examples. This paper seeks to challenge the relationship between creativity and audience participation with the lens of marketing and communication. The results of the two cases will not only show what type of marketing was used but evaluate the success of the campaign by looking at sales and how they affect modern-day entertainment. By showing creativity and audience participation in marketing, movies and games can help immerse their audiences in their products and generate excitement through coverage.

## I Met God and She's Black: A Perspective in Womanist Theology

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: Peter Judge, Ph.D.; O. Jennifer Dixon-McKnight, Ph.D.; and Kristin Kiblinger, Ph.D.

CAS - Department of Philosophy and Religious Studies

**Student: Kenashia Thompson**

Womanism, an emergent voice for African American women, is defined as a social theory based on the history and everyday experiences of black women. The term, first coined by Alice Walker, later led Katie Canon to found a new paradigm of thought for black women's religious experiences known as Womanist Theology. In this paper, the goal is to define Womanist Theology as a religious conceptual framework that considers, yet revises, traditional practices and interpretations of the Bible to empower and liberate African American women. It will argue, by viewing historically black denominations, that Womanist Theology can be visualized as a colloquy that allows for black women to embrace a religion, a Jesus, a God, and a lifestyle that is free from oppression and suppression of white supremacy and patriarchy. Due to the problems of racism, classism, patriarchy, and sexism, this research will also argue that the Womanist biblical approach provides an adequate solution to the problems of being black, female and Christian in America.

## The Correlation between Film Score and the Film's Success

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: Ronald Parks, Ph.D.; L. H. Dickert, Ph.D.; and Joseph Miller, M.M.

CVPA - Department of Music

**Student: Courtney A. R. Singleton**

This research analyzes the correlation between film scores and films' success. Without the film scores, films that viewers know and love would not be as successful as they are. This can be supported by analyzing how film scores have impacted the films that they accompany. Even during the silent film era, music has nearly always played a role in film. While the visuals of a film impact the viewer at a conscious level, the music impacts the viewer in subconscious ways that heighten the viewing experience. Examples of how pertinent film scoring is to the film can be seen through John Williams' work for *Star Wars* and *E.T., The Extra Terrestrial*. In both works, the respective directors have claimed that the film was greatly enhanced by Williams' scores. *American Beauty*, scored by Thomas Newman, is another example. These examples suggest that music is a consistent part of film, and furthermore, an important part of the artistic success of most films.

## The Potential Impact of Background Music on Creative Thinking in the General Elementary Classroom

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Honors Thesis Committee: Sarah Marie Catalana, Ph.D.; David Vawter, Ph.D.; and Bettie Parsons Barger, Ph.D.*

*COE – Department of Curriculum and Pedagogy*

### **Student: AnnaMarie Wilde**

Music has been known to enhance cognitive abilities in the classroom and this study is investigating to see whether there is a similar connection between music and creative thinking in the classroom. Creative thinking is like creativity, which is defined as the ability to produce something that is both useful and novel. Creativity is not just about the arts; it is also a large part of critical thinking and problem solving. This study looks at two elementary school classrooms where approximately 45 students complete a creative thinking activity, based on portions of the Torrance Test for Creative Thinking (TTCT). The students will spend ten minutes drawing one picture which will be directly followed by ten additional minutes spent drawing ten different pictures. One classroom will be playing calm, non-lyrical background music, while the other classroom will be playing no music. After the test is over, the students will be given a short survey to see how they feel about music playing or no music playing and whether it impacted their ability to creatively think on the activity. The activity will be scored based on the originality and elaboration of the drawings, two key components to creativity. The hope for this study is to highlight whether background music is helpful while producing creative thinking in the everyday activities in the general elementary school classroom.

## Active Shooter Protocols: Effects on University Faculty and Staff

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Honors Thesis Committee: Melissa Reeves, Ph.D.; Amanda Nickerson, Ph.D.; and Shane Jimerson, Ph.D.*

*CAS – Department of Psychology*

### **Student: Veronica Worthington**

Schools are becoming increasingly concerned with the threat of active shooters, pushing many to conduct drills and trainings without considering any possible lingering effects. Studies have found that training has the potential to increase preparedness; however, some studies have found that training increases anxiety. While these findings apply to short-term effects, there is a lack of empirical research on long-term effects of active shooter drills. This study was conducted in two phases. In the first phase conducted over the summer, long-term positive effects on preparedness and anxiety were found in undergraduate students. The present study moves into phase two and investigates whether similar effects are found within university faculty and staff, by exploring whether active shooter training completed at a previous employer impacts current levels of anxiety and preparedness. Participants completed an online survey and answered questions about perceived knowledge of protocols, protocol actions, and training methods from their previous employers followed by the same set of questions, this time referring to their current employers. It was anticipated that active shooter protocols that were completed at a previous employer would impact current levels of anxiety and preparedness in university faculty and staff. The present study hypothesized the following: a) those who received more training than just printed materials from a previous employer will feel more currently prepared, b) those who received training that involved a simulation of a real-life active shooter event will have greater impact on levels of reported anxiety. Results and implications will be discussed.

## Knowledge of and Attitudes toward Autism Spectrum Disorder

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Honors Thesis Committee: Merry Sleigh, Ph.D.; Tara J. Collins, Ph.D.; and Cheryl Fortner-Wood, Ph.D.*

*CAS – Department of Psychology*

### **Student: Ryan Zavitkovsky**

Attitudes toward developmental disorders such as Autism Spectrum Disorder have been shifting in recent years with the normalization of mental illness and its presence in popular media. The purpose of this study is to examine differentiations in attitudes toward individuals with Autism Spectrum Disorder, looking into three variables: gender, knowledge, and high versus low functioning. It is hypothesized that the low functioning condition will yield more positive attitudes, that female pronouns used in either condition will produce more negative attitudes, and that participants with more knowledge about the disorder as opposed to less will exhibit more positive attitudes across all conditions. This study will be accomplished through an online survey utilizing four randomly assigned vignettes, the Multidimensional Attitudes Scale toward Persons With Disabilities, and the Knowledge of Autism Scale.

## Optimization of Smooth Muscle Cell Culture for Blood Vessel Tissue Engineering

SAEOPP McNair/SSS  
Scholars Research  
Conference, Atlanta,  
Georgia, June 2019

Annual Biomedical  
Research Conference  
for Minority Students  
(ABRCMS), Anaheim,  
California, November  
2019; South Carolina  
INBRE Science Sym-  
posium, Columbia, South  
Carolina, January 2020

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Third Place, Life Sciences,  
SAEOPP McNair/SSS  
Scholars Research  
Conference, Atlanta,  
Georgia, June 2019

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Medical Sciences  
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Post-Baccalaureate  
Achievement Program  
grant from the U.S.  
Department of Education

Honors Thesis Committee:  
Matthew Stern, Ph.D.;  
Laura Glasscock, Ph.D.,  
and Courtney  
Guenther, Ph.D.

CAS - Department of  
Biology

**Student: Nicholle E. Lewis**

Over 1.5 million heart attacks occur annually in the United States. Vascular bypass surgery is a viable treatment option; however, grafts used in small-diameter bypass surgeries suffer from limitations. To combat those limitations, additional optimization is needed. Potential solutions include the use of tissue engineered conduits constructed using patient-specific smooth muscle cells (SMCs) and endothelial cells (ECs). This project tested the effects of 1) uncoated versus collagen-coated culture dishes, 2) different SMC media formulations, and 3) different mixtures of both SMC and EC media to identify optimal culture conditions for human aortic smooth muscle cells prior to and during recellularization of vascular scaffolds. The present study hypothesized that 1) collagen would enhance growth based on its abundance in the ECM, 2) both SMC media formulations tested would increase SMC growth, and 3) mixtures of SMC and EC media with more SMC media would enhance SMC proliferation. A parallel project was conducted using ECs cultured in mixtures of SMC and EC media to determine optimal conditions for simultaneous seeding. Results show that 1) collagen was not a significant enhancer of growth, 2) both types of SMC media promoted SMC growth, and 3) mixtures varied in their effect on SMC proliferation, but a 50:50 mixture showed no negative effect on SMC proliferation after 72 hours. These results indicate that SMCs grow successfully in several conditions, thus providing more leeway for simultaneous seeding of SMCs and ECs. Understanding factors needed to culture SMCs in combination with ECs provides valuable information for vascular tissue engineering.

## The Representation of Female African American College Students on Television: A Content Analysis of *A Different World* and *Grownish*

SAEOPP McNair/SSS  
Scholars Research  
Conference, Atlanta,  
Georgia, June 2019

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Third Place, Social  
Sciences, SAEOPP  
McNair/SSS Scholars  
Research Conference,  
Atlanta, Georgia, June  
2019

Honors Thesis Committee:  
Nathaniel Frederick  
II, Ph.D.; Emmanuel  
Nwachukwu, Ph.D.; and  
Guy Reel, Ph.D.

CAS - Department of  
Mass Communication

**Student: Monejah Black**

This research examines the portrayal and representation of the African American female college experience on television sitcoms. A content analysis was conducted on two situational comedy television shows, *A Different World* and *Grownish*, coding the comparative aspects of each show to include: the depiction of the female lead, the predominant theme of each episode, resolution of conflict, perceived realism, and overall tone. The study suggests that though *Grownish* addresses diverse issues faced by millennial students, the portrayal of these issues dilutes the overall message, while *A Different World* succinctly illustrates the problems students face. Results and implications will be discussed.

## Songs for the People: Music's Recreation of the Black Identity in the Works of Ralph Ellison and James Baldwin

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Honors Thesis Committee:  
Kelly Richardson,  
Ph.D.; Adolphus Belk  
Jr., Ph.D.; and Leslie  
Bickford, Ph.D.

CAS - Department of  
English

**Student: Faith Rush**

While many critics acknowledge the important role of music in Ralph Ellison's and James Baldwin's works, they do not fully consider the importance music plays in developing the protagonists' black identities. Music has embedded itself into African American culture since enslavement. While the sound of black music has changed over the centuries, music still poses a transformative power within the community, allowing their voices to take up space in a world that seeks to suppress them. This paper argues that music, specifically in Ralph Ellison's novel *Invisible Man* and James Baldwin's short story "Sonny's Blues," highlights the importance of music to the development of the black identity. While the invisible man in Ellison's novel only recognizes music's importance in his reflection of recent events, Sonny fully places his identity in his music which is misunderstood by the narrator. The genres of jazz and blues, old folktales, and spirituals allow the protagonists in each text to define themselves in a society where assimilation is preferred. In looking at the history and development of blues and jazz within American and more specifically the black community, it will be argued that both texts merge music with psychological conflict to allow the protagonists to reveal that their transcendence of oppression begins when they recognize who they truly are.

## The Effects of Protein Timing on Performance Measures in Athletes

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Honors Thesis Committee: Joni Boyd, Ph.D.; Ashley Licata, Ph.D.; and Jennifer Bossi, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

### Student: Heath Byrd

Protein is an essential macronutrient in the diet and is important for successful athletic performance. Current research headlines the importance of overall protein intake and its relation to physical performance measures. However, the purpose of this study was to provide a connection between athletes' performance and protein timing, specifically examining the number of protein servings throughout the day. This was studied at a university in the Southeastern United States and included 13 NCAA Division I baseball players, all of whom consented to participate. Data collection consisted of a 24-hour dietary and physical activity recall that was completed by each player one day prior to testing. On the day of testing, the athletes' BIA measurements were recorded, and then each athlete participated in three trials of a vertical jump test and one trial of a 30-yard sprint test. The analysis represented a trend that a higher number of protein servings resulted in increased vertical jump and decreased sprint times. However, this was not statistically significant, perhaps due to the study's limited sample size. The application of this study examines protein timing in relation to athletic performance, but also posits that a distribution of protein throughout the day is beneficial for athletes.

## The Effects of ADHD Medication in Comparison to the Effectiveness of Various Other Approaches

*Honors Thesis Committee: Jennifer Bossi, Ph.D.; Daniel Drane, Ph.D.; and Adam Keath Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

### Student: Kaitlyn Blankenship

Attention-Deficit/Hyperactivity Disorder (ADHD) and Attention-Deficit Disorder (ADD) are being diagnosed and medicated more frequently in today's youths. The problem lies in the fact that, most often, the treatment for the disorder involves medicating the people who are diagnosed. With other diseases/disorders such as depression, diabetes, and hypertension, to name a few, this is not as much of an issue because the individuals are older and there are not as many other ways to effectively treat them. However, with ADHD/ADD diagnoses, many are very young children and adolescents who should not be started at such an early age on a lifetime medication. This paper aims to discuss whether these disorders can be helped with better parental discipline techniques, different behavioral therapy methods, various occupational therapy modes, or physical activity/exercise as opposed to lifetime medication, or whether medication is necessary to control them. Merely prescribing medicine to aid in this disorder may cause more harm than good, which anyone would want to avoid in a young child. A variety of sources from numerous perspectives will be used in this discussion, along with problems in misdiagnosing and medicating and different parenting styles/interactions that may help more than medication.

## United States Assimilation

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Honors Thesis Committee: Ginger Williams, Ph.D.; Margaret Gillikin, Ph.D.; and Bryan McFadden, M.S.*

*CAS - Department of Interdisciplinary Studies*

*(IDVS 490H - Williams)*

### Student: Victoria Everest

Almost all citizens of the United States, at one point in their ancestry, were immigrants. Immigrants looking to become citizens of the United States strive to become a part of America's society. This process is called assimilation. The process of assimilation has looked different for different groups of immigrants throughout American history. The difference between the Irish and Mexican assimilation experiences is interesting and complex. You must consider many factors in order to answer the question: What are the most important factors that determine how fast an immigrant group assimilates into American culture? One discipline is not enough to fully understand the processes. Historians will look at the historical context of each group's immigration story. Geographers look at when certain people moved and where they moved. They also look at when individuals move out of ethnic neighborhoods and into more white areas in the United States. Sociologists look at the relationships formed, both with individuals from the same group and with individuals from different groups. A combination of the three disciplines uncovers five main issues. These issues are the location of immigrants over time, relationships between immigrants and Americans, the changing immigration laws and policies, the question of race, and how their culture intertwined in the culture of the United States. The most important factors that determine how fast an immigrant population assimilates into American culture are race, United States laws and policies, and relationships formed in the United States.

## Character Strengths across Cultures: Examining Virtue Differences in Kenyan and American Samples

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Honors Thesis Committee: Hye-Sung Kim, Ph.D.; Jeffrey Sinn, Ph.D.; Kathleen West, Ph.D.; and Darren Ritzer, Ph.D.*

*CAS - Departments of Political Science and Psychology*

### Student: Emma C. Harris

Understanding the development and progression of human character strengths has a direct association with human flourishing and happiness on an individualistic scale. Research suggests that sociocultural factors are more influential to the measure of strength characteristics than biological factors. This research strives to understand any similarities or modifications made to character strengths across cultures by examining an American sample (Winthrop University) and a Kenyan sample (Strathmore University). It is hypothesized that the strength virtues of wisdom, humanity, and justice will be more prevalent in Americans, whereas strength virtues of courage, transcendence, and temperance will be more prevalent in Kenyans. This research further hypothesizes that Americans will feel more overall life satisfaction. A major implication for this research is that existing international and cross-cultural studies do not explore VIA-IS character strengths. A deeper understanding of strength behaviors will inform social efforts directed towards the optimization of characteristics with the biggest positive social influence.

## Adipose Derived Stem Cell Morphology and Gene Expression in Two-Dimensional versus Three-Dimensional Environments

South Carolina INBRE Science Symposium, Columbia South Carolina, January 2020

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by a grant from the South Carolina EPSCoR/IDeA Developmental Research Program, an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS), and a Ronald E. McNair Post-Baccalaureate Achievement Program grant from the U.S. Department of Education

Honors Thesis Committee: Matthew Stern, Ph.D.; Eric Birgbauer, Ph.D.; and LaShardai Brown, Ph.D.

CAS - Department of Biology

**Student: Caroline G. Hammond**

Adipose-derived stem cells (ADSCs) are a population of mesenchymal stem cells with multipotent differentiation ability. Three-dimensional cell culture environments are particularly valuable for observing stem cell behavior as they represent a more accurate model of *in vivo* conditions than simple two-dimensional culture. The purpose of this research was to explore the potential to use several different three-dimensional culture systems to better understand how ADSCs cultured in three-dimensions behave relative to ADSCs cultured using traditional two-dimensional cell culture. The present study hypothesized that both ADSCs both on top of and inside of collagen hydrogels and as spheroids could be cultured to better understand how the cells behave in those environments. It was also hypothesized that cell sorting could be used to obtain a rare subpopulation of ADSCs known as Muse cells. Muse cells have greater developmental potency and the ability to differentiate at a faster rate than non-Muse mesenchymal stem cells. After both two-dimensional and three-dimensional cell culture, real-time RT-PCR was used to analyze gene expression of the housekeeping gene *Mrp19* and genes of interest *Cxcl12* and *Cxcr4*. It was observed that ADSCs are amenable to spheroid culture and self-organize into toroids when cultured on top of collagen hydrogels. Several differences were also observed in *Cxcl12* and *Cxcr4* gene expression between two-dimensional and three-dimensional cultures and between different three-dimensional culture platforms. In addition, the present study was able to identify Muse cells within the ADSC population, which will allow comparison between the behavior of Muse and non-Muse ADSCs in three-dimensional culture in future experiments.

## Women's Labor Force Participation and Occupational Prestige in the United States: 1968 – 2018

**Student: Katelyn Watford**

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: Maria Aysa-Lastra, Ph.D.; Katie Knop, Ph.D.; and Ty Miller, Ph.D.

CAS - Department of Sociology, Criminology, and Anthropology

(SOCL 516H - Aysa-Lastra)

This research centers on the evolution of U.S. women's labor force participation and the prestige of their occupations from 1968 to 2018. Occupational prestige qualifies the social standing of each occupation in the labor force. Previous literature recognizes that women's labor force participation has significantly increased since the late 1960s due to cultural and historical changes, such as the Civil Rights Movement and the prevalence of war in the United States. However, few sources in the literature focus on the prestige of the occupations that women held, which raises the question of how the occupational prestige of women's employment has changed since 1968. Based on the literature, it is expected to find that white women are more likely than non-white women to increase their participation in higher prestige occupations, that married women are more likely to participate than single women, and that the presence of children under the age of six hinders the participation of women in higher prestige occupations. This paper uses Annual Social and Economic Supplement data and prestige scales to analyze changes in the relative importance of occupations that women have held over time. Results indicate that, during the period covered in this analysis, women's participation in the labor force and their position in the occupational structure have improved substantially, and that these trends are partially explained by their investment in education. However, the rearing of children and household maintenance activities still slow the development of their potential.

## Climate Change-Induced Relocation of Coastal Alaskan Communities

**Student: Sara Rose Mulligan**

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: Marsha Bollinger, Ph.D.; Scott Werts, Ph.D.; and Bryan McFadden, M.S.

CAS - Department of Interdisciplinary Studies

(ENVS 490H - Bollinger)

Although the existence, or intensity, of future climate change is heavily debated, coastal Alaskan communities are already impacted by rising sea levels and reductions in the amount of sea ice. These communities are vulnerable to severe and increasing coastal erosion, causing them to consider relocating. However, leaving a place where they have deep cultural roots and traditions on how to live off of the land that are passed from generation to generation causes significant challenges in deciding to abandon their home land. The politics, economics, and cultural aspects of climate change-induced displacement will be discussed by following the journeys of current Alaskan communities, such as Shishmaref and Newtok. In relation to these communities, possible pathways towards a sustainable future will also be proposed, with attention to each interdisciplinary perspective.



## The Politics of Climate Change: Could Coastal Areas Alleviate Polarization?

Honors Thesis Committee:  
Hye-Sung Kim, Ph.D.;  
Michael Lipscomb,  
Ph.D.; and Christopher  
Van Aller, Ph.D.

CAS – Department of  
Political Science

(PLSC 490H – Kim,  
Lipscomb)

### Student: Hannah Hundley

This essay examines how the effects of climate change are impacting public opinion in the United States, which is then changing political attitudes and voting patterns. Historically, political partisanship has heavily influenced how individuals believe climate change needs to be addressed. In recent years, polarization of the political parties has created a divide in environmental policy. Research suggests that coastal cities will be key in the evolution of making environmental policy bi-partisan again. Candidates must adapt to the opinions of constituents, and coastal residents are experiencing and will continue to experience the effects of climate change that will shift perceptions regarding whether or not environmental regulations are “worth the cost.” The methodology of this study involved qualitative examination using case study states – namely, South Carolina, Louisiana, and Florida as test cases – that detail the political tendencies and the effects of climate change in these areas. In all three states, climate change is highly influenced by water, hurricanes, and hot temperatures. Data have been collected from newspaper articles, Congressional legislation, Gallup Research, and Pew Research. The findings suggest that, in these specific coastal case studies, there is a shift of coastal Republicans toward more progressive climate change policies. However, to generalize these findings to the entirety of the United States would require public opinion polling and/or evidence of shifts in Republican policy positions by elected officials across the country.

## Well One Time At Camp...: A Visual Exploration into Storytelling at Summer Camp

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Honors Thesis Committee:  
Claudia O’Steen,  
M.F.A.; Darren Ritzer,  
Ph.D.; and Evelynne  
Weeks, M.A.

CVPA – Department of  
Fine Arts

### Student: Margaret L. Claytor

*Well One Time At Camp...* is a body of mixed media paintings exploring the history of storytelling and memory through the scope of summer camp. Subjects from Camp Seneca Lake, ranging from the ages of 8 to 58, were interviewed to recall their most memorable moments while at camp. The stories were recorded and used as narrative inspiration for the body of work. The larger mixed media paintings incorporate found objects to examine the effects left by the memory and were inspired by Robert Rauschenberg’s combine-paintings. The smaller works are inspired by plaques that line the walls of the dining hall at Camp Seneca Lake. The process of creation played with the specificity and generality of storytelling. Depending on the point of view, details and moments from the narrative can be altered or forgotten. This essay focused on the perspective and timeline of each narrative to determine how specific or general the representation of the setting could be. The abstraction, color, and materiality of each piece reflected the descriptors and word choice used in each interview. An 8-year-old’s story including distinct childlike word choice led to a more youthful and simple color palette. Lengthier memories that were told with more maturity required thoughtful consideration to details and abstracted laying of moments. The abstraction of the narratives and lack of text hinders how easily the audience can understand the narrative, but allows the audience the opportunity to add their own interpretations to continue the evolution of the story.

## Voter Participation in the United States through the Lens of Race and Ethnicity

Honors Thesis Committee:  
Hye-Sung Kim, Ph.D.;  
Michael Lipscomb,  
Ph.D.; and Christopher  
Van Aller, Ph.D.

CAS – Department of  
Political Science

(PLSC 490H – Kim,  
Lipscomb)

### Student: Rebecca Watjen

This thesis examines voter participation in the United States through the lens of race and ethnicity, focusing on African Americans, Latinx Americans, and white Americans, in order to discover what factors impact voter participation and therefore offer suggestions about how best to improve voter participation, both by race and generally. As U.S. presidential elections have the most voter participation, focus will be placed on these elections. Both quantitative and qualitative research methods will be used in this research. Qualitatively, collection and analysis of sources and studies will be done in order to coalesce the existing research and discover new insights. Quantitatively, the use of statistical modeling methods will be done in order to discover significant factors that impact voter participation. Data have been collected from peer-reviewed journal articles, books, and polls. This thesis examines the low rates of voter participation in the United States through the lens of race and ethnicity in order to analyze the current situation and offer suggestions on how best to improve the situation in the future.



## Applying Gauthier's Social Contract Theory to Libertarianism

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: Adolphus Belk, Ph.D.; Christopher Van Aller, Ph.D.; David Meeler, Ph.D.; and Michael Lipscomb, Ph.D.

CAS - Department of Political Science

(PLSC 490 - Van Aller, Belk)

**Student: David Truesdale**

While Libertarianism is often portrayed in modern American politics as a form of radical conservatism that minimizes the influence of government as radically as possible - as seen through the Tea Party - this research will contend that it need not necessarily fall under the umbrella of conservatism. The question at hand is something along the lines of the following: what is the theory of Libertarianism? To address this question, the research aims to present a brief history of Libertarianism in American politics, specifically discuss the Libertarian theories proposed by Robert Nozick and Jan Narveson, and present the new idea for how Libertarian theory ought to be specifically understood through the lens of David Gauthier's *Morals by Agreement* - a contractarian philosophy that replaces Hobbes's *Leviathan* and Locke's *God* as enforcers of the social contract with individual reason, arguing that one chooses to engage in the social contract because it is individually beneficial. Specifically, the goal is to discuss how Gauthier's view of the social contract may allow for a broader discussion on what Libertarianism is. Furthermore, the hope is to apply these understandings of Libertarianism to a specific issue and ask where they are in these conversations - are they not involved, not loud enough, or simply ignored?

## Analyzing the Regulations and Statistics for Opportunity Zones

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: Jayne Maas, Ph.D., and Don Pesta, CPA

CBA - Department of Accounting, Finance, and Economics

**Student: Justin Grigg**

The Tax Cuts and Jobs Act of 2017 (TCJA) was the most significant tax reform since the Tax Reform Act of 1986. TCJA ushered in tax law changes including reforms to stimulate the economy. One such TCJA reform was the enactment of tax incentives called opportunity zones. Opportunity zones were designed to encourage economic development and job creation in "distressed communities," which are defined by the Internal Revenue Service. There are different views on the effectiveness of the opportunity zones legislation. Some believe the tax incentives are too generous, while others believe the regulations are too lax. Analyzing the success of opportunity zones is very difficult, since qualified opportunity zones, which encompass distressed communities, were not announced until April of 2018. This paper seeks to analyze existing opportunity zone regulations and statistics to explore ways for improving the regulatory guidance. More focused regulatory guidance may allow distressed communities to realize the benefits of economic development and job creation as intended, rather than just tax benefits to investors. Opportunity zones are a brilliant idea, but there needs to be more regulatory guidance to instill greater benefits for distressed communities.

## Mapping Brain-Wide Inputs to Two Distinct Thalamic Nuclei

34th Annual Massachusetts Institute of Technology Summer Research Programs Poster Session and Luncheon, August 2019

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by the Massachusetts Institute of Technology Summer Program in Biology and Neuroscience (MSRP-Bio)

Honors Thesis Committee: Jason Hurlbert, Ph.D.; Christian Grattan, Ph.D.; Matthew Stern, Ph.D.

Faculty Mentors: Ying Zhang, Ph.D.; Dheeraj Roy, Ph.D.; and Guoping Feng, Ph.D., Massachusetts Institute of Technology

CAS - Department of Chemistry, Physics, and Geology

**Student: Juliana Quay**

The thalamus contains many nuclei, among which the anterior thalamic nuclei (ATN) and parafascicular thalamus (PF) have been found to be the most unique based on their single cell RNA-sequencing transcriptomic signature. Functionally, ATN has been implicated in learning, memory, and spatial navigation, whereas PF is thought to contribute to both fine and coarse motor actions. The outputs of these two structures have been fairly well characterized; however, much less is known about brain regions that send inputs to these nuclei. In order to identify the regions that serve as inputs to ATN versus PF in a brain-wide manner, we used the monosynaptic rabies virus tracing approach. We imaged representative coronal mouse brain sections and aligned each section to the standard mouse brain atlas, before quantifying the number of retrogradely labeled rabies virus-positive neurons in each brain region upstream of ATN and PF. These data allowed us to create a rank-ordered list of brain regions that serve as inputs to ATN and PF, which has not been reported in the literature. We found that the retrosplenial granular cortex (RSG) and cingulate cortex (Cg1) were the regions sending greatest input to ATN, while a sub-division of the superior colliculus (InG), the anterior pretectal nucleus (APTD), and a sub-division of the motor cortex (M2) sent the greatest input to PF. This work not only sets the stage for future input-specific circuit manipulations during mouse behavioral tasks, but it will also serve as a resource for the entire thalamic neuroscience field.

## Treating and Preventing Childhood-Onset Mental Health Disorders

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: Ginger Williams, Ph.D.; Merry Sleight, Ph.D.; and Courtney Guenther, Ph.D.

CAS - Department of Interdisciplinary Studies

(IDVS 490H - Williams)

**Student: Katya Engalichev**

As the prevalence of mental health disorders in children rises, the need for integrated support systems and evidence-based practice increases, as well. Psychologists and psychiatrists recognize that childhood is the smartest and most effective time for intervention. Preventing severe and long-lasting mental health symptoms from developing also helps prevent crime, loss of productivity, substance abuse, family instability, and dependence on social services. One in five children in schools has a diagnosable mental health disorder, but about 70 percent of those children don't ever receive the services they need. So how can parents, educators, and healthcare providers work together to both treat and prevent childhood-onset mental health disorders? The present research combines theories, practices, and other research from the fields of education and psychology to address childhood-onset mental health disorders. Psychology, as a discipline, views early diagnosis and immediate treatment of psychological symptoms as essential to recovery and positive health outcomes, but children often experience limited access to mental health services. Educators tend to focus more on the policy side of this issue, advocating for certified health education programs in every school, nationwide mental health awareness initiatives, and expanded school-based mental health services. This issue can be solved through interdisciplinary collaboration between the fields of education and psychology, both of which provide valuable perspectives. Such a collaboration should focus on implementing school-based mental health resources in both primary and secondary schools, expanding the psychiatric workforce, promoting health educator certification, and advocating for public funding.

## Two Drug Epidemics in a Racist World: Comparing the Crack Crisis with the Opioid Epidemic

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: William Schulte, Ph.D.; Nathaniel Frederick II, Ph.D.; and Aimee Meader, Ph.D.

CAS - Department of Mass Communication

(MCOM 441 - Schulte)

**Student: Téa Franco**

America has faced two nationwide drug addictions: the crack crisis and the opioid epidemic. Despite several similarities in the spread of the addictions, the two garnered vastly different reactions from the media, society, and the government. It has become apparent that the reason for these different reactions is the race of those typically afflicted by each addiction. The crack crisis predominantly affected impoverished communities of color, whereas the opioid epidemic has affected more white Americans. Through journalistic methods including FOIA requests, government documents, interviews, and the gathering of primary and secondary sources, I have examined the way that race plays into how America responds to drug addictions. This project includes multimedia components as well, creating a comprehensive, multimedia, data-driven news package.

## Color, Class, and Beauty: The Effect of 19<sup>th</sup>-Century Cuban Female Representations on the 20<sup>th</sup>-Century Cuban Sex-Tourism Industry

Honors Thesis Committee: Adam Glover, Ph.D.; Jeannie Haubert, Ph.D.; and Michael Lipscomb, Ph.D.

CAS - Department of World Languages and Cultures

**Student: Keia Griffin**

This thesis investigates the representations of women in 19<sup>th</sup>-century Cuba based upon known works of literature, art, and advertisements. These representations are based upon color, social class, and beauty aesthetics. They are then used to make correlations between the social and beauty-based hierarchies in 19<sup>th</sup>-century Cuba and the 20<sup>th</sup>-century sex-tourism industry. This thesis will draw upon the connections of race and sex related occupations to assert that the hierarchical representations found directly influence the augmentation of the sex-tourism industry during the 20th century. The major research strategy includes literary research in sociological databases and the use of contemporary articles to retrospectively uncover the formation of a deep-rooted history of social bias in respect to phenotypes. With this information gathered, there are three main representations of the Cuban woman that are thematically centralized in popular works. The main representations found within the research are the *blanca*, woman of European descent; the *negra*, woman of African descent; and the *mulata*, woman of mixed descent. These women all occupy different statuses on the social scale, and this in turn affects the occupations they hold as time progresses to the 20<sup>th</sup>-century sex-tourism industry.

## The Impact of Mainstream Media on Public Opinion and Policy Decisions: Coverage of the Israeli—Palestinian Conflict

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: Christopher Van Aller, Ph.D.; Adolphus Belk, Ph.D.; and Jennifer Disney, Ph.D.

CAS - Department of Political Science

(PLSC 490H - Van Aller, Belk)

**Student: Aisha Muhammad**

The focus of this research will be on media influence, specifically regarding coverage of events surrounding the Israeli—Palestinian conflict. This thesis examines the influences of mainstream media regarding this issue in the United States, and briefly compares it to mainstream media influence in the United Kingdom. It explores the impact that the frequency of the coverage has on viewers, the general public, and, eventually, policy decisions. This thesis also scrutinizes and measures the kind of language and words used by popular television news channels concerning the conflict. Misinformation, misrepresentation, and sensationalism are common factors of mainstream media. This thesis analyzes how and why news channels cover stories differently and the impact or lack of impact it has on viewers. The Israeli—Palestinian conflict has been a popular issue in the news since the mid-1900s, but this thesis focuses on more recent coverage over the last 15 years of the conflict. This thesis will then study how the rate and type of coverage have impacted public opinion and support or opposition to government decisions regarding Israel and Palestine.

## A Comparative Analysis of Public Transportation in the United States and Europe

Honors Thesis Committee:  
Hye-Sung Kim, Ph.D.;  
Michael Lipscomb,  
Ph.D.; and Christopher  
Van Aller, Ph.D.

CAS – Department of  
Political Science

(PLSC 490H – Kim,  
Lipscomb)

### Student: Thelonious Kahler

This paper takes a comparative approach at examining the environmental sustainability of public transportation systems in American and European cities. Specifically, the alternatives to CO<sub>2</sub>-producing automobiles are considered, which include metros, buses, and trams. By analyzing these systems, research can conclude how transportation systems can be environmentally friendly, and which model— the American or European – is more effective at curbing carbon emissions. This essay will explore how historical factors have contributed to an auto-centric society and explain why cars that depend on fossil fuels contribute to global warming. It will then consider how public transportation is an alternative to these vehicles and explain how the U.S. and Europe employ different approaches to the issue of auto dependency. In addition to incorporating government reports on the transportation industry, the referral to various indexes which quantify how sustainable urban areas (or transit systems) are, will be made. It can be concluded that European cities approach urban sustainability more effectively, by developing efficient and attractive public transit systems, especially compared to American cities – which are more reliant on carbon-producing cars. European cities enact more environmentally progressive legislation, while American policy stagnates because of ineffective city planning (suburban sprawl) and a societal dependency on driving personal vehicles.

## A Mathematical Framework of Turbulence in Adaptive Optics

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Honors Thesis Committee:  
Zachary Abernathy,  
Ph.D.; Adam Glover,  
Ph.D.; and Fatima Amir,  
Ph.D.

CAS – Department of  
Mathematics

### Student: Hannah Elser

Adaptive optics (AO) is a technology that detects incoming waves that have been disturbed by turbulence and uses mal-formable mirrors to correct for distortion. When waves of light exit the vacuum of space and encounter Earth's atmosphere, those waves also encounter turbulence, a chaotic fluid motion of air. This turbulent air causes distortion in the light waves. By using a wave sensor to detect incoming waves and a control computer to calculate correction, this can deform the mirror of the telescope to compensate for the distortion and reduce interference, allowing for a clearer image. Here, the present study will decipher and explore the mathematical models critical to AO systems.

## Investigation and Optimization of the Synthesis of the Sphingosine Kinase 1 Inhibitor

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Honors Thesis Committee:  
Christian Grattan,  
Ph.D.; Aaron Hartel,  
Ph.D.; and Maria  
Gelabert, Ph.D.

CAS – Department of  
Chemistry, Physics, and  
Geology

### Student: Tiffany Dwyer

Phospholipids such as sphingolipids are main components of the lipid bilayer of the cell membrane. Sphingolipids are bioactive signaling molecules that play roles in cell division, proliferation, and death. Sphingosine kinase-1 (SK1) is an enzyme that regulates levels of sphingolipid metabolites, such as ceramide, sphingosine, and sphingosine-1-phosphate (S1P). In the sphingolipid metabolic pathway, ceramide is metabolized to sphingosine, which is phosphorylated to become S1P through the catalysis of SK1. Ceramide induces cell-cycle arrest and apoptosis, whereas S1P induces cell survival, proliferation, and migration. Malignant, cancerous cells have an overexpression of SK1, which causes over-production of S1P and leads to cancer cell proliferation, increased motility, and metastasis. The balance of ceramide, sphingosine, and S1P can therefore determine the fate of cancer cells. Due to its contribution to cancer progression, SK1 can be targeted in cancer therapy within the sphingolipid metabolic pathway. Inhibition of SK1 would deter cancer proliferation and result in apoptosis of cancer cells, which is the focus of any cancer therapy. A successful *in vitro* inhibitor, sphingosine kinase inhibitor-1 (SKI-1), was located, but is not an effective *in vivo* inhibitor due to its hydrophobicity and resulting low bioavailability. Derivatives of this inhibitor have been synthesized and analyzed to ultimately increase hydrophilicity and bioavailability of the parent inhibitor; these derivatives should exhibit the same *in vitro* effectiveness, as well as increased bioavailability, resulting in a more effective inhibitor *in vivo* as a possible treatment option in this pathway. The synthetic process used to synthesize derivatives of SKI-1 is being optimized. Previously, the Claisen condensation reaction of the synthetic scheme was optimized by using a microwave reactor. The overall synthesis is currently being further optimized to perform a one-pot synthesis of each derivative using the microwave reactor, and to maximize the yield and purity of the final product.

## The Differences in Student Engagement in Preschoolers/Kindergarteners with Attention and Impulse Control Problems

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: Cheryl Fortner-Wood, Ph.D.; Sarah Reiland, Ph.D.; and Erin Hamel, Ph.D.

CAS - Department of Psychology

**Student: Brianna McGee**

This thesis examines the differences in student engagement in preschool and kindergarten children with attention and impulse control problems. Specifically, this study examines not only general differences, but also differences of engagement throughout a typical school day, in order to explore whether there are specific types of activity (for example, academic centers versus large group instruction) in which these children exhibit differences in engagement. Areas of interest regarding classroom engagement are as follows: peer interactions, student-teacher relationships, and task engagement. This study examined these variances using three different methods: parent reports, teacher reports, and observation. Parent reports and teacher reports were comprised of rating scales pulled from the 2003 MacArthur Behavioral Questionnaire. The observational measure was an adaptation of the *Individualized Classroom Assessment Scoring System (inClass)*. This study also briefly examines differences in parent and teacher reports of children's behavior and engagement. Participants for this study were from an accredited early childhood laboratory school hosted by a southeastern university. Children were placed into groups by ratings performed by the classroom teacher. This scale was a subscale of the MacArthur Behavioral Questionnaire. Children with high ratings of attention and impulse control problems were placed in one group, while children with lower scores on this scale were placed in another. Six children (three from each analysis group) were randomly selected to participate.

## Perceptions of Femininity and Body Image in French Culture

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: Anna Igou, Ph.D.; Scott Shinabargar Ph.D.; and Donald Friedman Ph.D.

CAS - Department of World Languages and Cultures

**Student: Sarah Golzari**

For decades, French fashion and beauty have been idealized by women around the world- particularly Americans- as an emblem of femininity. Countless magazine articles and books attempt to provide detailed instructions on how to achieve that seemingly effortless, feminine French look. But how much effort goes into achieving such a look? And what happens when French women don't adhere to these strict yet unspoken cultural standards of beauty? Reconciling the gap between feminism and femininity, particularly in a culture riddled with stereotypes dictating how women should look and behave, is a daunting task. This research discusses cultural differences in the definition and expression of beauty in French and American culture. It explores influential factors in the development of culturally constructed female body image ideals, as well as differences in individuals' perceptions of body image with regard to fashion, the media, and socially perpetuated body standards in French culture.

## On Prime Labelings of Berge Hypergraphs of Nonprime Graphs

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: Arran Hamm, Ph.D.

CAS - Department of Mathematics

**Student: Chris Chamberlin**

Graph labeling problems, such as the Four Color Conjecture, date back to the beginning of Graph Theory itself. Roughly forty years ago, the notion of a prime labeling of a graph was introduced: a graph on  $n$  vertices has a *prime labeling* if its vertices can be labeled by the numbers  $1, 2, \dots, n$ , so that each edge spans a coprime pair (i.e. the labels on an edge have greatest common divisor one). A *hypergraph* consists of "edges" on a vertex set where the edges may contain any number of vertices. Since greatest common divisor can be generalized to more than two numbers, it is natural to consider prime labeling hypergraphs. As an entry point to this problem, we focus on a subclass of hypergraphs referred to as *Berge hypergraphs*. Given a graph  $G$ , the hypergraph is Berge- $G$  if there is a matching between edges of  $G$  and edges of the hypergraph in which, in this matching, each edge is within the corresponding edge of the hypergraph. The paper gives a condition based on how "close"  $G$  is to being prime, which implies that any hypergraph which is Berge- $G$  is prime, and finds that a handful of  $G$  for which any hypergraph which is Berge- $G$  is prime.

## Examining the Evolution of Interaction between Researchers and Indigenous Populations: An Investigation of Archaeologists and the Maya

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: Brent Woodfill Ph.D.; Richard Chacon Ph.D.; and Adam Glover Ph.D.

CAS - Department of Sociology, Criminology, and Anthropology

**Student: Kaitlyn Clingenpeel**

Interactions with Indigenous populations around the world have been, and continue to be, riddled with the remnants of colonialist and imperialist ideals. This can be especially true when considering archaeologists and the modern ancestors of the groups of people they study. There has more recently been a push for more ethical fieldwork methodologies, though they are still not the common practice for archaeological fieldwork. By using more collaborative research methodologies, it is possible to push for change and create a more mutually beneficial research environment. Through the examination of the evolution of interactions with the Maya population living in Guatemala and an investigation into more collaborative methods of archaeological research, this study will determine how to construct a more ethical fieldwork environment for all parties involved. This will provide insight into the next steps that should be taken and possible methods of implementation to remove the stigmas surrounding research and fieldwork for Indigenous communities.

## Establishing an Optimal Withdrawal Rate and Portfolio Allocation for FIRE Investors

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Honors Thesis Committee: Yuanshan Cheng, Ph.D.; Phillip Gibson, Ph.D.; and P.N. Saksena, Ph.D.*

*CBA - Department of Accounting, Finance, and Economics*

### **Student: Helena Morrow**

There is a relatively new movement among young investors called Financial Independence Retire Early (FIRE). A significant portion of FIRE investors are in their mid- to upper thirties. While this movement of being financially independent and retiring early has become more popular, little research has been done on the sustainability of their financial assets over the course of their lives. One of the first studies to look at an optimal portfolio withdrawal rate, was done by Bengen (1994). Bengen looked at individuals who retired around age 65, and determined that if these individuals withdrew four percent of their portfolios, adjusted for inflation and appropriate asset allocation, their portfolios would last throughout retirement. More recently, a study by Finke, Pfau and Blanchett (2013) shows that the historical four-percent withdrawal rate is not optimal for today's low interest rate environment. They determined that a more ideal rate would be closer to three percent. While both studies provided guidance on how much money someone should spend each year in retirement, they only looked at individuals who retired after age 65. So, what is a sustainable withdrawal rate for those who attain financial independence and retire at an early age? Furthermore, individuals who retire before age 65 do not have access to Medicare, which means they will have higher healthcare costs from health insurance premiums. The purpose of this study is to determine an appropriate withdrawal rate and portfolio allocation for individuals who retire in their late 30s or early 40s.

## Ambivalent Ageism, Familiarity, and Empathy as Predictors of Charitable Donation Decisions

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Honors Thesis Committee: Donna Nelson, Ph.D.; Merry Sleight, Ph.D.; and Darren Ritzer, Ph.D.*

*CAS - Department of Psychology*

### **Student: Madison DeMott**

Recently, researchers have identified two distinct forms of ageism: benevolent ageism, in which older people are patronized or pitied, and hostile ageism, in which older people are devalued. Raymer *et al.* (2017) found that young adults also can also be targets of negative, age-related attitudes; however, this topic is relatively unexplored. Thus, this study examined how young adults' ageist attitudes related to charitable decisions for young and senior adult recipients. It was hypothesized that hostile ageism would decrease donations to senior adults (SA), while benevolent ageism would increase donations to SA and predicted the same pattern regarding youth-ageism donations for young adults (YA). Participants were given the task of dividing money between SA and YA donation recipients; they also completed scales to assess benevolent and hostile ageism. To assess youth-ageism, the ageism scale was modified to refer to common stereotypes about YA. Average donation amounts revealed a bias towards YA. Ageist reasoning for donation choices predicted higher donation amounts for a YA recipient and less for a SA recipient. Hostile ageism predicted all other forms of ageism. Familiarity with SA in the form of volunteer work and having African American ethnicity predicted higher benevolent ageism. In conclusion, young adults favored their age group when making donation decisions. The relationship between empathy and Ambivalent Ageism is discussed. These findings provide new insight into youth-ageism.

## Stress of Preservice Teachers

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Honors Thesis Committee: Sarah Marie Catalana, Ph.D.; Dave Vawter, Ph.D.; Nancy Coleman, Ph.D.*

*COE - Department of Education Core*

### **Student: Marissa Atkins**

Stress is something familiar to most, if not all, individuals on some level. Stress may be more common for some than others depending on how they handle being under pressure and in their day to day lives. Some professions are proven to cause people within those professions more stress. Helping professions, professions such as nurses and teachers, are one of these professions that are known to cause higher stress levels. One not so researched area when it comes to stress is how stress impacts pre-service teachers, education majors that are working to become teachers. This paper will cover what kind of stress is most common for pre-service teachers and how that stress may impact their wellbeing. The sample for this study will consist mainly of preservice teachers within one university.

## Subverting the Patriarchy: Artistic Manipulations of the Female Trope in Weimar Germany

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: Karen Stock, Ph.D.; Michael Lipscomb, Ph.D.; and Jennifer Disney, Ph.D.

CVPA - Department of Fine Arts

### Student: Martha Whiteman

Gendered social anxieties prevailed during the Weimar Republic as women gained the right to vote. With the rapid departure of men from Germany at the onset of World War I, women were thrust into the public sphere to fulfill necessary labor roles. This cross-over from the domestic to the public sphere incited anxiety in the male population, who felt a loss of control and dominance in an otherwise patriarchal society. In reaction to this fear, men began to both physically and societally exert their dominance over women through the science-based process of classification. By breaking the collective idea of women down into categories, men created a distinction between their idea of a woman and all those who deviated from it. The avant-garde male artists were especially influential in German society, as they visually depicted the gendered changes around them. By depicting women as subjects of these classifications, they effectively reinforced these classifications and created concrete tropes. The four main tropes that this research will address are the *Neue Frau*, the *Garçonne*, the *Prostituierte*, and the *Mutter*. In looking closely at these classifications, this research intends to reveal the flawed misconceptions of female autonomy and sexuality by visually comparing male and female artistic renderings of women in the Weimar Republic. Through more intimate and sympathetic renderings of female subjects, women artists utilized stereotypical female classifications as a way to subvert the male-created trope, painting a more complex and authentic picture of female sexuality and autonomy in the Weimar Republic.

## Implications of the Gut-Brain-Microbiome Axis and Stress Response for Maladaptive Eating Behavior: A Literature Review

South Carolina Academy of Nutrition and Dietetics (SCAND) Annual Meeting, Columbia, South Carolina, April 2020

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: Hope Lima, Ph.D.; Karin Evans, M.A.; and Courtney Guenther, Ph.D.

CAS - Department of Human Nutrition

### Student: Emily Garrett

Several areas of research are revealing that the gut microbiome, or the bacteria colonized in human intestines, can have a significant impact on specific disease states, including maladaptive eating behaviors and eating disorders. Specifically, the gut microbiome can influence signaling pathways that affect brain regions related to emotion and behavior regulation. This connection between the gut and brain suggests that there may be mechanisms by which the gut influences behavior. If these mechanisms can be understood, interventions can be developed to improve gut health, as well as emotion and behavior regulation. This paper reviews the current literature pertaining to the gut microbiome, the gut-brain axis, and behavior regulation interventions, specifically in populations with eating disorders. Findings suggest that eating behavior is strongly influenced by the hypothalamic-pituitary-adrenal (HPA) axis, which produces the stress hormone cortisol. Cortisol can be influenced by alterations in gut hormones caused by a dysregulated gut microbiome. If the gut microbiome is dysregulated, HPA axis activation will be dysregulated, and the body will respond to physical and psychological stressors with abnormal amounts of cortisol, which in turn influences hunger and satiety hormone levels and alters subsequent eating behavior. Studies indicate that when the stress response is attenuated by mindfulness practices, behavior regulation improves, suggesting implications for food intake and eating behavior. This paper also explores gaps in the available data related to stress response and eating behavior, future research directions, and ways to further implement some existing mindfulness-based interventions in the field of nutrition.

## Energy Conserving Behaviors among Winthrop University Students

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Honors Thesis Committee: Christopher Johnson, B.F.A., M.Arch.; Marsha Bollinger, Ph.D.; Jeffrey Sinn, Ph.D.; and Stacey Washington, B.S.

CAS - Department of Interdisciplinary Studies

### Student: Joshua Ateca

This thesis seeks to answer the question, "Why do students at Winthrop University vary in their energy conservation behaviors?" The paper sets out by establishing the importance of energy conservation, followed by an introduction to consumer behaviors that conserve energy. It then attempts to explain why people conserve and makes the claim that people conserve energy at varying degrees. Finally, the thesis takes a closer look at the behaviors of Winthrop students, as revealed by original research, and compares their behavior to that of college students in general, as described by current literature. The core objective of the thesis is to draw conclusions about the conservation behaviors of Winthrop students, and to make recommendations for improving educational content and strategies that foster increased student engagement in energy conservation.



# PUBLIC PRESENTATIONS AND PERFORMANCES



## Food Security and Social Conflict: A Comparative Analysis of Four Latin American Countries

*Southern Sociological Society (SSS) Annual Meeting, Jacksonville, Florida, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Maria Aysa-Lastra, Ph.D.*

*CAS - Department of Sociology, Criminology, and Anthropology*

*(SOCL 471 - Aysa-Lastra)*

### Student: Reagan Cady

Colombia implemented for several years a “food security policy.” However, the effects of the armed conflict on the food security status of the population has not been evaluated. There are lasting implications of armed conflict that impact the ability for a country to be food secure, whether it is the ability to be politically stable or have access to basic drinking water. This paper seeks to explain three main objectives. First, it compares the food security status of the populations in Colombia, Chile, Ecuador and Peru. The former three countries suffered from periods of armed conflict or political and economic instability, while Chile serves as the benchmark for food security status in the region. Second, it explores the relation between conflict and food security status in these countries between 2000 to 2016. Third, it evaluates the magnitude of the negative impact of measures of armed conflict on measures of food security status. Using data from the World Bank Health, Homicide, Poverty, and Urban Development indicators; the Internal Displacement Monitoring Centre; and the Food and Agricultural Organization, this paper will cross-examine variables relating to food security and armed conflict. Preliminary estimations indicate that while numbers of battle-related deaths and numbers of intentional homicides are not strongly associated with measures of food security, indexes measuring political instability are strongly associated with food security status.

## Seen, yet Unknown: The Growth of a Boy in *The Sky is Gray*

*South Atlantic Modern Language Association (SAMLA) Annual Conference, Atlanta, Georgia, November 2019*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Leslie Bickford, Ph.D.*

*CAS - Department of English*

*(ENGL 312 - Bickford)*

### Student: Anslie Vickery

In *The Sky is Gray*, Ernest Gaines chooses to narrate from the perspective of eight-year-old James, who has little understanding of either the world he lives in or the challenges he faces because of his race. Since he is unable to profoundly grasp what he sees and hears, he often shares his love for his mother and his dreams of nice things to give to her instead of offering opinions on his experiences. Through his eyes, ears, and thoughts, we watch James learn more about his mother’s seemingly strange, prideful actions, and we observe as he develops into a young man willing to take action for her sake. To reduce his story to merely a cautionary tale of the effects of segregation would be to ignore the intricacies of his relationships with his mother, her pride, and his surrounding world, and it would further weaken the impact of James’ growth into manhood through his sensory experiences. This paper will approach the purpose of Gaines’ narrative style by focusing on James’ senses and the way he interprets what he sees, hears, and remembers. This paper also intends to draw connections between what he sees and hears his mother doing in the beginning of the story and the actions he takes to care for her in the end in an attempt to show how James has, through his sensory experiences, grown into the man his mother wants him to be.

## Fans’ Emotional Reactions during a Live Sporting Event: Examination of Twitter during National Football League (NFL) Game

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Jinwook (Jason) Chung, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(SPMA 390 - Chung)*

### Student: Caroline Rowell

This research focused on understanding and analyzing sports fans’ emotional reactions during a live sporting event through Twitter. Technology and usage of social media arouse in the sports world. One major social media platform that stood out was Twitter and how researchers are transforming Twitter into more ways to interact with fans and gain access to live game stats. Data were collected by gathering tweets generated during the Carolina Panthers–Tennessee Titans football game that was played on November 3, 2019. The game started at 1 p.m., and 100 tweets were collected for each hour during a 3-hour window. A majority of the tweets came from the Carolina Panthers’ official Twitter pages, highlight tweets from ESPN, and Game Center Twitter pages. Tweets were compiled from major plays that occurred throughout the game, such as touchdowns, sacks, field goals, and poor play-calling. Collected tweets were categorized into 4 different emotions (e.g., happiness, sadness, enjoyment, frustration). These tweets were analyzed to examine fans’ positive or negative emotional status during the sporting event. Furthermore, the analysis provided better understanding of what plays cause fans to react more and what main emotions drive them to tweet throughout the live sporting event.

## A Genealogy of the Criminalization of Poverty In America

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentors: Hye-sung Kim, Ph.D., and Michael Lipscomb, Ph.D.*

*CAS - Department of Political Science*

*(PLSC 490 - Kim, Lipscomb)*

### Student: Richard Lyda

This research aims to address the evolution of power structures as they relate to opinions and policies surrounding poverty in the United States. The analysis focuses on welfare policy, privatization of penal systems, and so-called quality of life offenses. The time frame of this analysis begins in the seventeenth century; however, the focus is primarily later nineteenth century forward. Arguably, in order to understand contemporary issues surrounding poverty policy and the treatment of the indigent, one must first understand the economic, political, and social conditions from which those policies have developed. Examining welfare policy over time illuminates ideologies that shaped the conceptualization of poverty, as well as how through surveillance the welfare system became intertwined with the legal system. In understanding the privatization of penal systems, it becomes clear that criminalization of the poor relieves burdens on the State while allowing for the creation of a pernicious profit system for wealthy individuals. Quality of life violations transform the racist roots of private penal systems into modern day classist systems of oppression that benefit the wealthy at the expense of the poor. This genealogical approach elucidates the persistence of class- and race-based systems of oppression and how they continue to profit private industries through disproportionate application of legal penalties against the indigent.

## Religion, Mindfulness, and Resilience as Strategies to Cope With Anxiety

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Merry Sleigh, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 302 - Sleigh)*

**Students: Kristen Watson, Hailey Upton, and Sara Warner**

This study examined mindfulness, resilience, and anxiety in adults adhering to either traditional or progressive, more flexible, faith beliefs. Participants ( $n = 98$ ) were college students (64% Caucasian; 85% women) with a mean age of 21.78 ( $SD = 5.44$ ). Twenty-nine percent had previously received a diagnosis of anxiety. Participants responded to the following scales: Generalized Anxiety Disorder, Warwick-Edinburgh Mental Well-being, Mindfulness Attention Awareness, Spiritual Experience Index, and Brief Resilience. Additionally, participants were asked about their level of agreement with religious tenants in order to categorize participants as having traditional, progressive, or non-differentiated religious beliefs. It was found that mindfulness and resilience emerged as better predictors of anxiety level than did religion. Contradicting the hypothesis, higher mindfulness did not predict lower anxiety; instead, lower anxiety related to lower mindfulness and higher resilience. Perhaps a mindful, or intentional, focus on daily experiences increased anxiety in anxious people, and the current sample of college students reported high levels of anxiety. Traditionally religious college students reported using religion to cope with stress; however, they were no more or less anxious than other students. This study also found that adults who agreed with liberal theology looked more like non-religious than conservatively religious adults in terms of religion's impact on their lives. These findings emphasize the fact that adults who consider themselves to be religious are not a homogeneous group and that the trait of resilience might be a more consistent buffer against anxiety than is mindfulness or religion.

## Factors that Predict Knowledge and Perceptions of Police Use of Force

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Merry Sleigh, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 302 - Sleigh)*

**Students: Alexis McInnis and Alexandra Smith**

This study examined whether use of force perceptions depend on the gender(s) of the police officer and citizen involved in the situation. Participants were 100 adults with a mean age of 19.51 ( $SD = 1.71$ ). The majority were Caucasian (63%) and women (65%). Participants were randomly assigned to one of four scenarios. In all scenarios, a police officer interacted with a citizen during a routine traffic stop, ultimately ending with the police officer deploying a taser. The gender of the police and citizen were modified across the four versions to be male/male, male/female, female/male, and female/female. Participants responded to items to assess their perceptions of the presented situation, knowledge of use of force, perceptions of police, and aggression levels. Results revealed that young adults had negative perceptions toward the police officer and use of force in our scenarios. Participants were most understanding of a female officer using a taser to subdue a male citizen and viewed the remaining three gender combinations similarly. Perhaps this finding reflects participants' assumptions about the size and strength of the female officer and male citizen. Having positive past interactions with police was linked to more positive attitudes towards police officers; however, these positive past interactions did not predict more positive attitudes toward the use of force in the scenarios. Aggressive individuals were not more supportive of use of force and felt more negatively toward police officers, perhaps reflecting their overall hostility toward others or because their aggression had caused previous problems with authority figures.

## Examination of Sports Fans' Perception of African American Athletes Portrayed in the Media

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Jinwook (Jason) Chung, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(SPMA 390 - Chung)*

**Student: Alexis Garrick**

This paper explores a possible negative perception of African American athletes through their chosen actions and/or reactions to events in which they are involved due to their specified sport. Outside of the athletes' actions, there are other proven factors such as: salary differences, under-representation, lack of media coverage, racism, sexism, societal expectations, fewer opportunities beyond sport, and lack of support. These factors associate the perception of the female and male African American athletes together and individually. To test the hypothesis, a repeated measure ANOVA was used to distinguish characteristics of both sets of athletes that could correlate and work individually as well. Within the provided surveys of both athletes, Antonio Brown and Serena Williams, were the same in tested variables, with differences including their sport, league/association, and themselves as athletes. However, according to the findings there was no significant difference identified between pre- and post-survey results.

## Partner Characteristics, Confidence, and Knowledge Predict Sexual Consent Attitudes

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Merry Sleight, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 302 - Sleight)*

**Students: Andrea D. Ward, Erin Creed, and Nadirah Madyun**

This study examined college students' perceptions of consent in sexual situations comprised of different partner-pairings; we included non-heterosexual couples, as research on sexual consent within these groups is very limited. Participants were 95 young adults (62% women; 50% Caucasian) with a mean age of 19.36 ( $SD = 1.41$ ). Participants provided their perceptions of one of four randomly assigned scenarios; the scenarios described sexual encounters between a heterosexual couple, a gay couple, a lesbian couple, or an age-diverse heterosexual couple. In all scenarios, sexual consent was ambiguous and not clearly offered. Participants also responded to scales to measure sexual consent attitudes and sexual risk-taking. Mixed results were found for the hypotheses. Age did not influence college students' perceptions of sexual consent; instead, students found the lack of consent less troublesome for a gay couple than for lesbian or heterosexual couples. This perception may reflect an (incorrect) assumption that consent is more important for a woman to give than for a man. Interestingly, the results did not find gender differences in overall perceptions of consent. Individuals who were African American, confident, or knowledgeable about sexual consent felt the most in control of their own sexual consent. However, knowledge of sexual consent was also linked to sexual risk-taking. Perhaps risky sexual choices create situations where sexual consent is necessary. Social media use, a common behavior among college students, predicted increased sexual-risk taking. This information, particularly regarding non-heterosexual couples, contributes to the growing body of research focused on understanding sexual consent on college campuses.

## Should College Athletes be Paid? Examining the Perception of Sports Fans

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Jinwook (Jason) Chung, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(SPMA 390 - Chung)*

**Student: Thomas Glenn**

Recently, there has been a worldwide conversation focused on the question of whether college athletes should be paid. Everyone has their different perspectives—including professional athletes, former college athlete superstars, the media, and others—and it is interesting to see various reasons behind why people are for or against this issue. One of the biggest points of discussion is the California bill and whether it should be passed or defeated. A New York state senator proposed a bill that would give college athletes the ability to sell the rights to their own names and likenesses. Therefore, the purpose of this research is to examine and conduct group comparison on the issue of whether college athletes should be paid. Participants were categorized into fans versus non-fans, and college athletes versus non-athletes. A survey was utilized to collect data from these participants. 71.13% of respondents believe that college athletes should be paid, while 28.87% believe that they should not be paid.

## The Effect of College Setting on Perceptions of Cisgender-Transgender Interactions

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Merry Sleight, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 302 - Sleight)*

**Students: Victoria Sulak, Haley Kane, and Ashley Underwood**

This study assessed students' perceptions of a social interaction with a transgender individual in different college settings. Participants were 101 college students with a mean age of 19.6 ( $SD = 1.82$ ). The majority were cisgender women (87%), Caucasian (55%), and heterosexual (78%). Participants were randomly assigned to one of three experimental conditions. All conditions described a social interaction on a college campus where a transgender male student was mis-identified as a woman, and a similar situation where a transgender female student was mis-identified as a man; the conditions varied in where the interaction took place: a restroom, residence hall, or classroom. Participants provided their perceptions of the situation and responded to scales to assess transphobia, self-esteem, open-mindedness, and need to belong. Results revealed that students reported low levels of transphobia. However, violating the hypothesis, they tended to be more sympathetic to a bystander who unintentionally mis-gendered an individual than they were to the transgender individuals; this was especially true for those with more transphobic attitudes. Students also felt the mistaken speaker would feel the most unsafe in the restroom compared to other settings, suggesting that location was a factor in perceptions. Personality characteristics were more predictive than race. Higher transphobia predicted lower open-mindedness, but also higher self-esteem and no need to belong. Perhaps students with lower self-esteem were more cautious in presenting negative opinions, or perhaps those higher in self-esteem had a greater misunderstanding of the challenges faced by other students. These findings provide new insight into the experience of transgender individuals.

## The Impact of Pay Gaps in Sport: Beyond Gender

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Jinwook (Jason) Chung, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(SPMA 390 - Chung)*

**Student: Carleigh Greene**

The purpose of this research was to examine why there is a significantly large pay gap between LPGA and PGA players. Different individual motivational factors were analyzed as a way to uncover the true issue that exists regarding the two Tours. This study did not focus primarily on gender. The research focuses on factors including marketing, motivational factors for spectators, popularity of players, sponsorships, etc. A survey was distributed to the general population containing sixty questions. There were 137 participants who completed the survey and the results showed a lack of LPGA fans. The interest in men's golf and the PGA was higher across the board. The discussion of this research centers on the potential explanation as to why the pay gap is exponentially larger between the LPGA and the PGA and to provide suggestions for future research.

## Young Adults' Perceptions of Non-Gender Conformity Across Occupations

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Merry Sleight, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 302 - Sleight)*

### **Students: Orion Hanna and Emily K. Hayes**

The study examined young adults' perceptions of a man, varying his appearance and labeling him with different occupations. Participants were 116 adults with a mean age of 19.90 ( $SD = 5.20$ ). The majority were women (76%), Caucasian (53%), and heterosexual (71%). Participants were randomly assigned to one of four conditions: a picture of a man labeled as either a doctor or barista and the same man wearing make-up labeled as a doctor or barista. Participants rated how accurately a list of masculine and feminine traits matched the picture, and responded to scales to assess their need to belong, self-esteem, and attitudes toward transgender individuals. Need to belong, self-esteem, race, and gender did not predict perceptions of the pictures. Conformity and occupation did not interact. The stated occupation was minimally influential in driving perceptions; the doctor was viewed as having more feminine behavior, which might reflect the fact that doctors help people, which is considered stereotypically feminine. The appearance of gender non-conformity drove perceptions more than did the race, gender, self-esteem, and social needs of the viewer. The non-gender conforming individual was seen as having masculine and feminine behaviors, which matched his appearance. Adults also viewed the gender-discordant individual as more capable at his job, regardless of his occupation. Adults may have seen the flexibility in appearance as a sign that he would be a flexible colleague, or perhaps our participants, who were generally positive toward transgender individuals, were showing support for a person they believed to be transgender.

## Concussions and Injuries in Football

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Jinwook (Jason) Chung, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(SPMA 390 - Chung)*

### **Student: Malik Harper**

NFL players were diagnosed with more concussions in 2017 than in any season since the NFL started sharing data in 2012. There were over 281 concussions during the pre-season and regular season. The injuries in the NFL have become so brutal that players are retiring early. Former All-Pro quarterback Andrew Luck was one example of a player to retire because of brutal injuries that result in the National Football League. On May 2, 2012, former NFL linebacker Junior Seau was found dead at the age of forty-three with a self-inflicted gunshot wound to the chest. His death was classified as suicide. Many believe his suicide was related to multiple concussions and brain trauma. Therefore, the purpose of the research is to examine the impact that brutal injuries have on parents' perspective and NFL revenue. Are young football players doomed because football is so brutal? Is this impacting whether parents allow their kids to play football or even watch football? How will this affect long-term NFL revenue if young kids aren't allowed to participate in and watch football?

## Influence of Social Media Exposure, Knowledge and Officer Location on Police Perceptions

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Merry Sleight, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 471, 472 - Sleight)*

### **Student: Victoria Newman**

The study investigated exposure to police-related content on social media and adults' perceptions of police use of force. Location of the police activity was also manipulated to gauge its effect on perceptions. Participants were 119 adults with a mean age of 24.36 ( $SD = 10.13$ ). The majority were Caucasian (64%) and women (80%). Participants were assigned to one of three experimental conditions via an online platform. In all conditions, participants read about police-citizen interactions that varied in the use of force and level of suspect resistance. The conditions differed in where the interactions were said to have taken place: familiar small town, familiar large city, or unfamiliar small town. Participants provided their opinions about the scenarios, and responded to a knowledge quiz about policing, the Perceptions of Police Scale, and questions about their exposure to social media as a news outlet. Results revealed no support for the hypothesis that geographic location would influence perceptions of police-citizen interactions, suggesting that perceptions of police officers maintain across situations and reveal global consistency. Instead, race and social media exposure were more predictive of police perceptions. Matching the hypothesis, reliance on social media related to more negative attitudes toward police officers. Perhaps social media exposure helps create the negative attitudes, or conversely, those with negative attitudes look to social media for confirmation of their opinions. Compared to Caucasians, and reflecting current societal tensions, African American adults reported more negative police perceptions and more exposure to negative postings about police on social media.

## Media Influence on Viewers' Perceptions of Athletes

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Jinwook (Jason) Chung, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(SPMA 390 - Chung)*

### **Student: Austin Whiteside**

This study pertains to how viewers of media content perceive an athlete emotionally, as well as in terms of attitude. The study was conducted through distributing a survey via smartphone and through posting a survey link on social media accounts. The survey included two clips of Ezekiel Elliott, running back of the Dallas Cowboys (on-field and off-field). Participants rated their emotions and attitudes toward Elliott after viewing each clip. Results showed that there was no significant finding for emotion toward an athlete after viewing a short clip. There was a significant finding for attitude toward an athlete after viewing a short clip. Participants had more positive impressions of Elliott after viewing the first clip compared to the second clip. This allows those researching sport to take into account that viewers of media content have to see more content of an athlete to properly evaluate how they feel about an athlete emotionally. However, viewers may develop a particular impression (referring to attitude) of an athlete based upon the content they have seen.

## Young Adults' Argumentativeness and Responsiveness to Social Media Posts Varying in Emotional Tone

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Merry Sleigh, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 471 - Sleigh)*

### **Student: Derek Velez**

The present study examined young adults' willingness to respond to social media posts varying in emotional content, hypothesizing that adults would be more willing to respond to posts with an emotional, versus a neutral, tone. It was also hypothesized that argumentativeness would predict greater responsiveness to social media posts. Participants were 144 adults with a mean age of 21.75 ( $SD = 5.52$ ). The majority were women (84%) and Caucasians (62%). Participants were randomly assigned to one of three experimental conditions via an online platform. Each condition had social media posts with a specific emotional tone: neutral, negative, or positive. Participants rated their reactions and willingness to respond. Participants also completed scales to assess their argumentativeness and social media activity. Contradicting the hypothesis, young adults were more reluctant to respond to the provided posts that had an emotional tone, even though the negative posts elicited the strongest emotional reactions. Despite saying they were hesitant to respond to the emotional posts in our study, participants indicated that they typically respond to happy and sentimental postings on their own social media sites; this contradiction might reflect inaccurate self-perceptions or the possibility that anonymity elicits different responses than does being identifiable. In partial support of the prediction, argumentative people seemed to seek opportunities to argue by responding to angry posts. Lastly, in comparison to African American adults, Caucasian adults reported being more concerned with being perceived badly on social media and more irritated when others were not similarly cautious.

## Young Adults' Perceptions of a Mid- and Post-Transition Transgender Woman

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Merry Sleigh, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 302 - Sleigh)*

### **Students: Ashley Underwood, Marcus Julien Foster, and Emma Kitchens**

This study investigated whether transgender alignment processes impact perceptions of the transgender individual. It is hypothesized that a transgender individual would be perceived more positively after transitioning to the new identity than in the midst of transitioning. Participants were 83 adults with a mean age of 20.90 ( $SD = 2.56$ ). There was a diverse sample; however, the majority were cisgender women (58%), Caucasians (49%), and heterosexuals (66%). Participants were randomly assigned to one of three conditions: 1) a picture of a mid-transition transgender woman labeled as a "transgender woman"; 2) a picture of the same woman post-transition labeled as a "transgender woman"; 3) the same picture of the post-transition woman labeled as a "woman." Participants provided their opinions regarding the woman and then responded to scales to assess their attitudes toward transgender individuals, self-esteem, and political views. Young adults reported more interest about the mid-transition transgender woman, but also perceived her as less attractive and felt uncomfortable evaluating her. Interestingly, even seeing the mid-transition picture elicited more negative attitudes toward transgender individuals than viewing the post-transition woman. In other words, adults were more positive when the pictures more closely matched a single gender identity. Personal experience with transgender individuals related to more positive attitudes. Democrats, who tend to be supportive of LGBTQ+ rights, were more supportive of transgender individuals than Republicans. Women and those with lower self-esteem also reported more positive attitudes toward transgender individuals, possibly because these two groups have empathy toward those who are marginalized at times by society.

## Factors that Influence Young People's Spiritual Beliefs during the Transition to Adulthood

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Merry Sleight, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 472 - Sleight)*

### Student: Adalaina Musheff

This study examined whether young adults perceived their faith to have changed since high school and what factors influenced the transition. Participants ( $n = 102$ ) were adults (74% White and 81% women) with a mean age of 22.67 ( $SD = 6.99$ ). Participants responded to an online survey to assess faith practices and Christianity beliefs. Questions were created to assess past and current ethical behaviors, motivation for church attendance, and social aspects of spiritual beliefs. It was anticipated that high school experiences would predict religious beliefs in young adults. This idea received some support. Adults who held conservative religious beliefs in their family of origin tended to maintain the beliefs, but not necessarily the religious behaviors. In fact, spiritual beliefs influenced later beliefs more than did early religious behavior or activities. Most of our participants indicated that their parents were the most influential people in determining their faith; however, those with conservative ideology were also more likely to agree that they relied on a spiritual mentor in high school who was not a parent. If adults perceived their parents as hypocritical, they felt it damaged their relationships with God. If adults perceived the church as hypocritical, they directly blamed God. In other words, adults equated the church with God but saw their parents as more of spiritual guides. These findings suggest that spirituality, which impacts young adults' health and achievement, begins during the high school years, but also evolves, with progressive faith beliefs being more malleable than conservative faith beliefs.



## College Students' Perceptions of Athlete versus Non-Athlete Privilege

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Merry Sleight, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 302 - Sleight)*

### Students: Megan Loveland, Karina Grant, and Vijay Mishra

This study examines the construct of "athlete privilege," modeled after constructs such as "white privilege." Participants were 146 college students (60% Caucasian; 82% women), with a mean age of 20.62 ( $SD = 1.31$ ). Division 1 athletes comprised approximately one third of the sample. Participants were randomly assigned to read a paragraph that described either "athlete privilege" (e.g., favored status, funding, excused absences) or "non-athlete privilege" (e.g., more free time, less pressure, less stress). Participants then responded to items to assess their attitudes about athletes and non-athletes, as well as scales to measure entitlement, envy, pride, and life satisfaction. Results mostly supported our predictions. College students did not agree equally with our two paragraphs about privilege. Instead, students agreed more that athlete privilege exists than non-athlete privilege. Participants were then asked to imagine themselves in the other group, athletes and non-athletes felt they would have privileges that they did not currently enjoy if they switched places. Athletes thought life would be easier, while non-athletes thought their social prestige would be higher; these perceptions may reflect stereotypes or perhaps some truth. College students who were more envious, more entitled, less proud, or less satisfied were more upset about athlete privileges. Although both groups saw benefits of being in the other group, each group also admitted that they experience privilege. The privileges of athletes, however, seemed to be either more salient or desirable for college students.

## Examining the Motivations of Traditional Fantasy Sport

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Jinwook (Jason) Chung, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(SPMA 390 - Chung)*

### Student: Tiffany Stegall

Traditional fantasy sports have generated continuous interest in sports. However, with the growing fascination and studies regarding daily fantasy sports, the current motives for playing traditional fantasy sports have become less clear. A survey was conducted to see which motives contribute the most and the least, and to examine the effects on attendance and viewership. The survey also examined demographics and fandom level. The results showed that entertainment and surveillance are the two biggest motivational factors to playing traditional fantasy sports, while money (gambling) is the smallest contributor. Results also showed that playing does not increase attendance but does create a spike in viewership. Age doesn't greatly affect motives and most traditional fantasy sport players are avid sport fans.

## The Real and Perceived Effects of Social Media Usage on Relationship Outcomes

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Tara J. Collins, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 302 - Collins)*

**Students: Stephanie Carr, Kayla Pelle, Tiana Whitney, and Destiny Black**

Social media platforms are one of the most common ways that humans interact in societies all over the world. The primary purpose of the current study was to examine the influence of social media on the outcomes of relationship satisfaction. We hypothesized that both real and hypothetical social media usage would associate with decreased romantic relationship satisfaction. This study consisted of 138 participants that were a convenience sample of Winthrop University students. Those participants aided in measuring perceptions of social media through completing social media usage scenarios and previously created questionnaires. The scenarios described the average day of a Winthrop University college student, including varying amounts of social media usage. Additionally, the research utilized previously created measures that asked participants about personal social media usage incorporated into their everyday lives. The participants went through the questionnaire online, developed for this research, by answering questions examining the actual and hypothetical impact of social media on romantic relationship satisfaction. From these results we can conclude that although people perceive that social media usage will have a significant negative effect on romantic relationships, it does not appear to significantly predict actual romantic relationship outcomes. Further, the data are very beneficial to the concept of how social media usage can influence romantic relationship satisfaction outcomes. That is due to specific predictors yielding significant findings. However, future research is needed to examine whether social media usage truly predicts romantic relationship satisfaction.

## Within and Without

*Student Choreography Showcase, Winthrop University, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Kelly Ozust, M.F.A.*

*CVPA - Department of Theatre and Dance*

*(DANT 301 - Ozust)*

**Student: Kyla Smith**

In my piece, I explore the idea of a codependent relationship through movement. The relationship is neither romantic nor does it express human emotion; it simply portrays two beings who cannot function without one another. This idea is shown through the use of space; what happens when the dancers are close together? What happens when they are far apart? Movement motifs and gestures are also used to express the chaos present when they are without each other.

## Relationships Between Sleep Disturbance, Energy Levels, Low-Energy Coping Mechanisms, and GPA

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Tara J. Collins, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 302 - Collins)*

**Students: Eva Hermanova and Kanesha M. Rhodes**

College students are said to be the most sleep-deprived group of individuals; therefore, it is crucial to understand how sleep deprivation affects our well-being, especially with regard to academic performance and overall quality of life. It is hoped that this study adds to the existing research on the effects of sleep deprivation by examining low-energy mechanisms, and how these variables correlate with academic performance. We hypothesized that individuals with higher sleep disturbance would have more fatigue, increased use of low-energy coping mechanisms, and lower GPAs. Seventy-five undergraduate college students participated in our online, self-administered questionnaire. The questionnaire assessed participants' level of sleep disturbance, fatigue, GPA, and low-energy coping mechanisms: coffee, tea, and energy drink consumption; exercise and diet. The analyses revealed that sleep disturbance significantly positively correlated with energy drink consumption and coffee consumption. However, the relationship between sleep disturbance, tea consumption, diet, and exercise proved to be insignificant. This study also examined the relationship between sleep disturbance and fatigue, finding that sleep disturbance significantly positively predicted fatigue. From the results, it can be concluded that coffee and energy drink consumption negatively impact one's sleep quality, while exercise, diet, and tea consumption have no impact. Contrary to the hypothesis, it was found that higher sleep disturbance significantly predicted higher GPA. The results have important implications for the overall quality of life of college students and can potentially be used to help individuals increase their GPAs and sleep quality by not consuming caffeinated beverages such as coffee and energy drinks.

## Examination of Fan Behavior at Youth Sporting Events

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Jinwook (Jason) Chung, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(SPMA 390 - Chung)*

**Student: John Muller**

The purpose of this research was to observe the fan behavior at youth sporting events, focusing on what causes fans to act the way they do at these events. Survey participants consisted of attendees at youth sporting events in the past six months, typically parents of youth athletes. The results of this research indicated that a coach showing favoritism toward a player influenced fans' aggressive and upsetting behavior about the youth sporting event. Kids being yelled at during the game was also a significant factor. This study can help sports managers at youth events to understand the impact of a negative environment created by various factors.

## Kubrick's *A Clockwork Orange* as a Literary Adaptation

Department of English  
Undergraduate and  
Graduate Student  
Conference, Winthrop  
University, March 2020

Faculty Mentor:  
Siobhan Brownson,  
Ph.D.

CAS - Department of  
English

(ENGL 370 - Brownson)

**Student: Nicholas Jadden Bergholm**

Anthony Burgess' 1961 novel *A Clockwork Orange* has been contentious since its initial publication and has sparked debate around its graphic depictions of violence and misanthropy. While the novel itself gained a certain infamy, it garnered even more attention with the release of Kubrick's 1971 film adaptation, to which the novel would forever remain inextricably linked. However, Kubrick adapted the film from the American version of the novel, which did not contain the final chapter. This chapter is the ultimate resolution of the narrative and depicts Alex as a mature and creative individual who is no longer governed by the destructive impulses of his youth. Burgess himself argues that "...the American or Kubrickian *Orange* is a fable; the British or world one is a novel..." because the prior versions do not depict Alex's character development as do the latter versions. However, because the film was adapted from an arguably incomplete version of the novel, arguments of authorial intent are not as relevant in understanding the overall success of the Kubrick adaptation. I argue that the film is a successful adaptation of the American version of the text as it preserves and explores the themes of the human relationship to violence and youth; though it does maintain some of the more problematic aspects of the original work. This includes misogynistic overtones, glorification of violence toward women, and glorification of male sexual conquest.

## Far From Home: Consumption and Personalization in College Dorms

Southern Sociological  
Society (SSS) Annual  
Meeting, Jacksonville,  
Florida, April 2020

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Faculty Mentor:  
Michael Sickels, Ph.D.

CAS - Department of  
Sociology, Criminology,  
and Anthropology

(SOCL 519 - Sickels)

**Students: Mattin Avalon and Kaitlyn Clingenpeel**

For many traditional college students, their campus is the first "home" they will ever choose for themselves. Their dormitories or residence halls are the first spaces they will ever personalize as young adults. This paper examines those personalization processes, and the resulting navigations of institutional control, identity, and reconceptualization of home within the college student population. Data were collected through eight interviews and dormitory tours conducted with full-time campus residents at Winthrop University in Rock Hill, South Carolina. The resulting analyses examined the systematic process of personalizing a dorm room, and how that process is affected by the institution and issues around privacy as a university student. The broader implications of this paper lie in its understanding of how the future generation of homemakers construct identity, and how future consumer values become transmittable elements as college becomes a necessity and a commodity all its own. This research was limited because data came from the student body of only one university; future research should be conducted with additional universities to strengthen the validity of this study.

## *the space in which we exist*

*What Was and What  
Will Be* - BFA Senior  
Exhibition, Rutledge  
Gallery, Winthrop  
University, April 2020

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Faculty Mentor:  
Claudia O'Steen,  
M.F.A.

CVPA - Department of  
Fine Arts

(ARTS 373 - O'Steen)

**Student: Samantha Ross**

"If you were to die today, what items would make you up as a person?" This question was asked of twenty different individuals in order to dive deeply into how people think, feel, and perceive the world that we live in. After selecting their items, participants were told to put the pieces into provided mason jars. They then were asked to explain who they were in their own writing. These written statements could involve their objects, stories about themselves, jokes—anything they could think of. I allowed their replies to be flexible and open. After receiving the jars and statements, I considered my own relationships with the participants by creating word association lists. These words were turned into sketches of simple objects that represented each of the individuals. One sketch for each person was chosen and turned into a soft sculpture. When displayed, the soft sculptures are placed in an environment that mimics a living room to give the viewers a safe and warm place to connect with the work. This placement coincides with the photographs on the walls so the viewers can hold the soft sculptures and see the photos simultaneously. This is a documentary project based on people, their perspectives of themselves, and of the way that I, as an artist, see them. The metamorphosis of these ideas leads to how we as humans change and grow due to our relationships and connections with others.

## Process Goals Raise Academic Confidence and Performance of First-Generation College Students

SAEOPP McNair/SSS  
Scholars Research  
Conference, Atlanta,  
Georgia, June 2019

Southeastern Psycho-  
logical Association  
(SEPA) Annual Meet-  
ing, New Orleans,  
Louisiana, April 2020

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Supported by a Ronald  
E. McNair Post-Bacca-  
laureate Achievement  
Program grant from  
the U.S. Department of  
Education

Faculty Mentor: Donna  
Nelson, Ph.D.

CAS - Department of  
Psychology

**Student: Gabrielle E. McGee**

First-generation college students (FGCS) enter college less academically prepared than their peers. Additionally, FGCS encounter more academic difficulty and earn lower grades compared to their counterparts. As such, it is important to find ways to increase academic confidence and performance among FGCS. One potential avenue for doing so may be to influence their goal orientation when approaching academic work. Process goals focus on the steps needed to achieve a desired outcome, while outcome goals focus on the desired outcome itself. Research suggests that, for difficult tasks, process goals result in greater levels of performance, lower feelings of anxiety, and higher perceptions of self-efficacy than outcome goals. The present study manipulated goal orientation on a difficult task, and then measured confidence and performance with respect to a subsequent pop quiz. It was expected for FGCS to exhibit lower academic confidence and performance compared to non-FGCS when instructed to adopt outcome goals; however, no such differences when participants were instructed to adopt process goals were to be expected. Participants consisted of 29 FGCS and 38 non-FGCS students in introductory psychology courses. All participants completed a challenging anagram task. Students were randomly assigned to either the Process Goal Condition or the Outcome Goal Condition. Results confirmed that FGCS benefited from process goals.



## Optimization of Culture Conditions for the Simultaneous Recellularization of Porcine Internal Thoracic Artery Scaffolds with Multiple Cell Types

South Carolina INBRE Science Symposium, Columbia, South Carolina, January 2020

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by a grant from the South Carolina EPSCoR/IDeA Developmental Research Program, and by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Matthew Stern, Ph.D.

CAS - Department of Biology

**Student: Holdyn C. Ferguson**

The increasing prevalence of ischemic diseases has generated a growing need for heart bypass surgeries. The goal of our research is to tissue engineer vascular grafts from scaffolds derived from decellularized porcine internal thoracic arteries that can be recellularized with patient-specific cells and restore function more effectively than current methods. The ability to recellularize scaffolds with multiple cell types, including endothelial cells (ECs), smooth muscle cells (SMCs), and adipose-derived mesenchymal stem cells (ADSCs) is important for imparting function to an engineered vessel. However, an important question that arises is what type of cell culture media should be used to allow the different cell types to grow together. We hypothesized that mixtures of two media types that support growth of two of the cell types of interest could be identified. To test our hypothesis, we grew ECs in different combinations of 1) EC and SMC medium and 2) EC and ADSC medium. We also grew ADSCs in different combinations of EC and ADSC medium. We monitored the viability of the cells and assessed the expression of CD31 by ECs cultured in different media combinations. In all cases, the growth of the cell type of interest was no different in a 50:50 combination of its medium and the other medium than growth in 100% of its own medium. In addition, CD31 expression was maintained by ECs under all experimental conditions. These results suggest that 50:50 mixtures of culture medium will support the growth of two cell types within our vascular scaffolds.

## Evaluating the Effects of Detergent Concentration on the Ultrastructure and Recellularization of Porcine Internal Thoracic Artery Scaffolds

South Carolina INBRE Science Symposium, Columbia, SC, January 2020

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by a grant from the South Carolina EPSCoR/IDeA Developmental Research Program, and by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Matthew Stern, Ph.D.

CAS - Department of Biology

**Students: Carlos E. Escoto-Diaz and Jesse B. Kooistra**

Heart disease is the leading cause of death in developed countries, leading to an increase demand for coronary artery bypass graft surgeries. Currently, bypass surgery requires either that a vessel is harvested from the patient or that a donor graft is provided. An alternative approach is the use of tissue-engineered vascular grafts. The goal of this study is to evaluate the potential of scaffolds derived from porcine internal thoracic arteries (PITAs) for use in vascular tissue engineering. PITA scaffolds can be produced through the process of decellularization, which uses detergents to remove porcine (pig) cells while leaving behind the extracellular matrix of the tissue. We hypothesized that increasing detergent concentration during decellularization would affect the ultrastructure of PITA scaffolds and be associated with greater residual cytotoxicity. We evaluated the ultrastructure of the scaffolds using scanning electron microscopy and observed that increasing detergent concentration was associated with greater scaffold porosity. We evaluated the residual cytotoxicity of the scaffolds using the alamarBlue viability assay and found that extensive rinsing is required to eliminate scaffold cytotoxicity. We verified the ability of endothelial cells to grow on/in the scaffolds using a combination of the alamarBlue viability assay and fluorescent microscopy. Taken together, our results show that PITA scaffolds with different ultrastructural features can be prepared and repopulated with endothelial cells as long as the scaffolds are properly rinsed. Establishing an effective procedure for recellularization of PITA scaffolds will ultimately aid in the development of a clinically relevant alternative to our current options for vascular grafts.

## P-type Cu:CdS Thin Films as Components of Water Splitting Tandems

Southeast Regional Meeting of the American Chemical Society (SERMACS), Savannah, Georgia, October 2019

Supported by a grant from the National Science Foundation EPSCoR Program (MADE in SC)

Faculty Mentor: Clifton Harris, Ph.D.

CAS - Department of Chemistry, Physics, and Geology

**Student: Blake McCloskey**

Thin films of Cu-doped CdS have been prepared on transparent, conductive oxide substrates pre-coated with a Cu(I)-based hole transporting material. The films are synthesized by cathodic electrodeposition of complexed metallic precursors in the presence of elemental sulfur, dissolved in organic media at elevated temperature. Photoelectrochemical analysis confirms p-type behavior and reveals photosensitivity under moderate bias. Morphological information has been attained from profilometry and SEM analysis. Under suitable conditions, and in the presence of proper co-catalysts, these films show promise as components of tandem solar cells for applications in photoelectrochemical water splitting.

## The Literal Interpretation of Genesis Reevaluated

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: M. Gregory Oakes, Ph.D.

CAS - Department of Philosophy and Religious Studies

(RELG 495 - Oakes)

**Student: Kathryn Priddy**

Whether the theory of evolution can be accepted alongside the belief of an inerrant Bible has been a point of contention in the public sphere for nearly a century. While it might be common for some Christians to assume a literal interpretation of the Bible in terms of morality, spirituality, history, and science, this was not always the case throughout history. The principles of non-literal interpretation are held by both ancient and modern writers. Furthermore, Christians have always held that it is important to believe in truth, whether it is natural or not, so if evolution is true, it is better for the Christian to believe in evolution rather than any other theory.

## The Relationship Between Future Orientation, Social Support and GPA

SAEOPP McNair/SSS  
Scholars Research  
Conference, Atlanta,  
Georgia, June 2019

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Supported by a Ronald  
E. McNair Post-  
Baccalaureate  
Achievement Program  
grant from the U.S.  
Department of Education

Faculty Mentors: Melissa  
Reeves, Ph.D., and  
Matthew Hayes, Ph.D.

CAS - Department of  
Psychology

### Student: Chelsea Harris

Future orientation (FO) is broadly defined as one's perception of one's future. It has been shown to act as a protective factor for adolescents regarding substance abuse, risky behavior, and internalizing problems, as well as promoting greater academic success. Most FO research has focused on children or adolescents, leaving a gap for young adults. Similarly, social support (SS) has been shown to act as a protective factor and promote positive mental health and academic outcomes. FO develops and shapes itself in accordance with an individual's social context, including SS, making it valuable to study the two variables together. This study examines FO in college students and investigates the mediating effect of FO and SS on GPA. Participants were recruited through social media and data were collected through an anonymous online survey. The results indicate higher FO positively correlated with higher overall SS and GPAs; however, SS from a special person had a significant negative relationship with student's GPA scores after accounting for the variance in FO and overall SS. A possible explanation for this could be the type of SS received from those special others and the likely distraction they impose for the student's school work. Implications could include school resource centers drawing attention to these findings to increase awareness in students of how their FO and different sources of SS could be affecting their academic performance.

## Virtual Reality in *The Crucible*

National Council of  
Teachers of English  
(NCTE) Annual  
Conference, Baltimore,  
Maryland, November  
2019

Faculty Mentor: Allan  
Nail, Ph.D.

CAS - Department of  
English

### Student: Krystal Pasciak

I will be presenting at the NCTE Annual Conference, the leading professional conference in English education, that is held in Baltimore, Maryland. I will be presenting on a technologically based project I developed with my Internship I mentor. This project will require the students to engage in interdisciplinary learning through the creation of a virtual reality landscape based on their knowledge of Arthur Miller's *The Crucible*. This project will require the students to learn and use a computer coding program, CoSpaces, to create their virtual reality landscape based on one scene from the play. These scenes will then be combined and shown in class to further develop the students' understanding of the plot and literary elements of the play. The presentation that I will be partaking in is the "The Future Is Now: Exploring 21st-Century Teaching Ideas with the Next Generation of English Teachers" roundtable presentation session that allows undergraduate and graduate students the opportunity to discuss and share innovative teaching techniques. Thus, my presentation will consist of a 10-12 minute discussion generated by a handout that I will provide and my explanation of the technique and project on which my presentation is based.

## Optimization of RNA Isolation Methodology for Gene Expression Analysis of Self-Organizing Three-Dimensional Tissue Structures

South Carolina INBRE  
Science Symposium,  
Columbia, SC, January  
2020

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Supported by a  
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SC INBRE grant from  
the National Institute  
for General Medical  
Sciences (NIH-NIGMS)

Faculty Mentor:  
Matthew Stern, Ph.D.

CAS - Department of  
Biology

### Students: Chandler E. Burt and Nathan Kidd

Three-dimensional culture systems allow for more complex cellular interactions and organization than traditional two-dimensional culture. It has been observed that cells placed on top of collagen hydrogels organize into a donut-like shape called a toroid, while cells mixed into the hydrogels do not organize into toroids. The ultimate goal of this project is to evaluate the signal transduction pathways and cellular mechanisms that are involved in toroid formation. The specific goal of the work described here was to optimize RNA isolation from cells cultured on or in collagen hydrogels - a procedure that is known to be technically challenging - and to use real-time RT-PCR to compare the expression of select genes during toroid formation. We tested and compared several different RNA isolation protocols and found that a method based on the use of cetyltrimethylammonium bromide (CTAB) prior to alcohol precipitation, which is more typically used in isolation of RNA from plants, proved to be the most consistently effective in our hands. These results allowed us to move onto using real-time RT-PCR to compare the expression of two specific genes, *Cxcr4* and *Cxcl12* in mouse adipose-derived stem cells over a 12-hour timecourse of toroid formation. Our results revealed some differences in gene expression during toroid formation. More importantly, they demonstrate the feasibility of conducting similar and/or larger-scale experiments using methods like RNA-sequencing to monitor changes in gene expression during toroid formation and to compare gene expression between different collagen hydrogel-based culture platforms.

## Tracking Trauma: An Analysis of *Sula*

South Atlantic Modern  
Language Association  
(SAML) Conference,  
Atlanta, Georgia,  
November 2019

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Faculty Mentor: Leslie  
Bickford, Ph.D.

CAS - Department of  
English

(ENGL 312 - Bickford)

### Student: Lyric E. Knuckles

This paper analyzes how racism constructs the characters in Toni Morrison's *Sula* and how discrimination can lead to corrupt traits. Through a New Historical lens and a tracing of family history within the text, it becomes clear that the characters are shaped by discriminatory policies such as segregation. In this paper, I trace the characters' lineage to assess how racism infiltrates generation after generation. Although critics such as Ali Salami and Naeem Nadeem argue that the characters are free from their context, my paper demonstrates how trauma functions as an heirloom by creating negative traits, and in turn also causing the traits to affect each descending family member. In conclusion, by analyzing the history of the Black community in America, more recent causes of discriminatory incidents become connected through the context. Viewing *Sula* through this point of view, I demonstrate how it is impossible to view the characters as solely corrupt individuals. Their circumstances, created by an arbitrary concept such as racism, cannot define them alone. Through these means, *Sula* herself becomes a victim rather than the perpetrator.

## The Influence of Common Reminders on Attitudes toward Immigrants

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Matthew Hayes, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 421, 423 - Hayes)*

### Student: Elle Martinez

Xenophobia, the fear of what an outgroup can do to one's community, comes from fear of the unknown. Dual Process Model describes two different pathways to outgroup prejudice and xenophobia. One way involves beliefs that the world is dangerous, and people should value tradition and follow authorities (Right-Wing Authoritarianism), which leads to xenophobia because of the threat outsiders pose to security. The second pathway leads to a competitive jungle in which all groups compete for position in a social hierarchy (Social Dominance Orientation), which leads to xenophobia because outsiders threaten to take resources and push one's group down the hierarchy. Mortality salience, the awareness of one's death, can amplify these negative attitudes, but may not be commonly encountered in daily life. A daily encounter would be social media. In the 2016 election and as President, Trump uses xenophobic language (e.g., "building a wall") on Twitter. This study compared effects of mortality salience and xenophobic tweets on negative attitudes toward immigrants. 158 students who completed an online survey assessed SDO and RWA. Then, participants were assigned to one of the following conditions: read three negative tweets about immigrants from President Trump (condition) or read three tweets on non-immigrant topics (control); write about death and what happens afterward (condition), or write about dental pain (control). Finally, participants completed a version of the modern racism scale modified to assess attitudes toward immigrants. Results indicate that commonly encountered reminders, such as tweets made by President Trump about immigrants and non-immigrants, do not trigger additional anti-immigrant attitudes.

## Silver Nanoparticle Biosynthesis and Calcite Biomineralization as a Precursor to Hydroxyapatite

*SAEOPP McNair/SSS Scholars Research Conference, Atlanta, Georgia, June 2019*

*First Place, Physical Sciences, SAEOPP McNair/SSS Scholars Research Conference, Atlanta, Georgia, June 2019*

*Supported by a grant from the National Science Foundation EP-SCoR Program (MADE in SC) and by a Ronald E. McNair Post-Baccalaureate Achievement Program grant from the U.S. Department of Education*

*Faculty Mentor: Maria Gelabert, Ph.D.*

*CAS - Department of Chemistry, Physics, and Geology*

### Student: Cayla Odom

Antimicrobial hydroxyapatite (HA) offers a preventive measure against surgical implant infection. Embedded silver nanoparticles (AgNP) represent one modification, but reliable synthetic strategies are relatively lacking. This study proposes a novel pathway to synthesize AgNP-doped HA using the fungus *Fusarium oxysporum*. This effort combines AgNP biosynthesis and calcite biomineralization for hydrothermal phosphatization to HA. Calcite biomineralization can be induced by urease-positive fungi, which catalyze the hydrolysis of urea into ammonium and carbonate ions. These carbonate ions can bind to introduced calcium metal ions at the surface of the fungal hyphae to form calcite. Fungal quinones allow for the reduction of toxic silver ions in the environment to silver nanoparticles. Combining these two processes will result in silver nanoparticle-doped calcite. Through the final step of this process, phosphatization, this product can be hydrothermally converted to hydroxyapatite that has retained the silver nanoparticles. X-ray diffraction and scanning electron microscopy enable confirmation of product and examination of AgNP-HA microstructure, where AgNP are expected to attach to the HA crystallite surfaces. Energy dispersive spectroscopy confirmed successful binding of the silver particles to calcite in half of the test samples. Hydrothermal phosphatization to HA was unsuccessful in all samples. The fungal extraction technique used did not allow for a representative diffraction pattern for the samples that contained the largest amount of biomass. Additional extraction techniques will be explored in order to successfully separate the desired product from the fungal surface. This work investigates synthetic and analytical steps for production of safe and reliable implant materials.

## The Mother with a Thousand Faces

*South Atlantic Modern Language Association (SAMLA) Conference, Atlanta, Georgia, October 2019*

*Faculty Mentor: Leslie Bickford, Ph.D.*

*CAS - Department of English*

*(ENGL 320 - Bickford)*

### Student: Owen Medgyesy

The purpose of this paper is to suggest that Eva Peace, the matriarchal figure in Toni Morrison's novel *Sula*, embodies the Jungian archetype of the Great Mother. Although critics like Pessoni and Sokoloff rightly argue that Eva Peace is a generative symbol of the female spirit and affirm her archetypal significance, their arguments do not consider Eva's corresponding destructive nature, and therefore are incomplete in their analysis of her as a mother figure. Eva's power does not lie solely in her capacity to create and care. She represents the full spectrum of femininity precisely because she also has the capacity to devour and decimate her own creations. My argument presented in this paper expands upon the work of previous analyses and shows Eva Peace's hauntingly beautiful force as the matriarch of Toni Morrison's novel *Sula*.

## The Interplay Between Oxidation, Phosphorylation, and Regulation of RitR in *Streptococcus pneumoniae*

SAEOPP McNair/SSS  
Scholars Research  
Conference, Atlanta,  
Georgia, June 2019

Supported by a Ronald  
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Department of Education

Faculty Mentor: Nicholas  
Grossoehme, Ph.D.

CAS - Department of  
Chemistry, Physics, and  
Geology

**Student: Kiera Alexander**

*Streptococcus pneumoniae* functions as a two-component system (TCS), one of the most widespread regulatory systems identified in bacteria. TCS are recognized by a kinase and a response regulator (RR); these two components rely on specific domains that signal inputs and outputs. Kinases are proteins capable of sensing signals/stimuli and autophosphorylating themselves as a response. The RR on the other hand undergoes phosphorylation and then a regulation process for DNA, RNA, or other proteins. When *Streptococcus pneumoniae* senses extracellular iron by its kinase/enzyme (Stkp), the intracellular domain is activated. The kinase then catalyzes the transfer of a phosphate from ATP (Adenosine triphosphate) on to the cell's important regulatory protein (RitR) involved in iron homeostasis, and, when bound to DNA, prevents iron uptake proteins from being expressed. The phosphorylation by the kinase causes RitR to dissociate from the DNA, allowing for the production of iron uptake machinery and permitting excess iron to enter the cell in dangerous amounts. These high concentrations of iron can lead to oxidative stress through the production of reactive oxygen species (ROS) and the production of hydroxyl radicals that attack cellular macromolecules and promote cell death and tissue injury. Along with RitR's phosphorylation mechanism, RitR has also been shown to respond to oxidative stress through a monomer-to-dimer transition, facilitated by oxidants that cause the formation of a disulfide bond. This project aims to further characterize the interplay between oxidation, phosphorylation, and the DNA binding properties of RitR.

## Personalizing Religion: “New Age” Spirituality and Authenticity Online

SAEOPP McNair/SSS  
Scholars Research  
Conference, Atlanta,  
Georgia, June 2019

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
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Supported by a Ronald  
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from the U.S.  
Department of Education

Faculty Mentor:  
Michael Sickels, Ph.D.

CAS - Department of  
Sociology, Criminology,  
and Anthropology

**Student: Mattin Avalon**

Traditionally, spirituality has been understood through uniform religious communities, fixed beliefs, and face-to-face worship in physical spaces. As social media sites begin to rise as a platform for both information and conversation, spiritual identity becomes an individual pursuit and virtual performance. “New age” spirituality comes to the forefront of transcendental conversation as religious practitioners are increasingly encouraged to explore, blend, and pick different beliefs to find their own unique expressions of religious and spiritual selves. This research project explores that pursuit. Three “new age” Reddit communities, oriented around spirituality and religion, are captured in this ethnographic media analysis. 600 threads of conversation were analyzed to explore the processes of identity construction within these communities, what warrants spiritual authenticity in a virtual space, and how one's individual spiritual endeavors personalize the religious experience. The results of this project find a common thread through three different communities: an emphasis on the personal construction of sacred spaces, communication, and a spiritually powerful self. The broader implications of this project lie in the postmodern suggestions of a continuous fracturing of identity and empowerment of the individual that permeates all areas of social life—including the new and virtual.

## The Female Slave Experience

South Atlantic Modern  
Language Association  
(SAMLA) Conference,  
Atlanta, Georgia,  
November 2019

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Faculty Mentor: Leslie  
Bickford, Ph.D.

CAS - Department of  
English

(ENGL 312 - Bickford)

**Student: Christopher Adams**

In this paper, I evaluate slavery from the perspective of female slaves to show how their experience may have been more difficult than that of male slaves. Although most slave narratives have come from the male slave's point of view or from a male author, there may be evidence that the female point of view may be of more importance. To argue this, I use *Incidents in the Life of a Slave Girl* by Harriet Jacobs and *Clotel* by William Wells Brown to show that the slave experience for females was more difficult than the slave experience for males due to the way that they were oppressed. I believe the authors of these two works illustrate this oppression from a fictional and autobiographical view to show how being sexually harassed can affect an individual's psyche, where the fascination with the female slave body comes from, along with how female slaves had to deal with the consequences of resentment from their masters' wives or mistresses. Working from the research of Katie Frye, Seda Peksen, and Ann Taves, I also delve into the psychology in terms of why female slaves had certain feelings and why the mistresses of slave owners had such animosity against female slaves. This evaluation will help scholars and students alike understand that female slaves endured things that male slaves could not even comprehend happening to them.

## College Students' Attitudes More Negative toward Older versus Same-Aged Peers

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Merry Sleight, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 302 - Sleight)*

**Students: Selena Gonterman, Janie Howland, and Olivia Guillen-Blas**

We examined current college students' responses to common college social situations that varied in closeness and age of the target individual. We hypothesized that college students would have more negative attitudes toward older compared to same-aged peers. We hypothesized that a higher fear of death, a higher fear of missing out, or more emotional distance from grandparents would predict more negative attitudes toward older students. Participants were current college students ( $n = 88$ ) with a mean age of 20.90 ( $SD = 1.87$ ). The majority were women (70%) and Caucasian (51%). Participants were randomly assigned to one of four conditions. All of the conditions described the same social situations. Participants were asked to imagine themselves in the situation (e.g., meeting a roommate, working on a group project, playing intramural sports). In one condition, the age of the other person was not specified. The other conditions specified either an 18-year-old, a 30-year-old, or a 50-year-old. Participants responded to scales to assess fear of death, fear of missing out, and closeness with grandparents. Results revealed partial support for our first hypothesis. Traditional-age college students felt more negatively toward close, but not casual, campus interactions with 30- and 50-year-olds compared to 18-year-olds. Our second hypothesis that fear of death and grandparent interactions would predict attitudes, was not supported. These results suggest that traditional-age college students' attitudes toward older peers may be based more on immediate comfort and relatability issues rather than on personal fear of and experiences with aging.



## Age, Race, and Sexism Predict Hostile and Benevolent Ageism

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Donna Nelson, Ph.D.*

*CAS - Department of Psychology*

**Student: Madison DeMott**

The concept of ambivalent sexism demonstrates how both subtle and overt gender prejudice can exert a powerful influence. Ambivalent ageism illustrates how benevolent and hostile prejudice affect how older adults are viewed. I investigated the unique effects of each type of ageist prejudice on reactions to stereotype consistent and inconsistent images. I also investigated associations between sexist and ageist attitudes and differences in each type of prejudice as a function of gender, age, and race. I expected hostile ageism to predict unfavorable appraisals of counter-stereotypical portrayals of older adults and benevolent ageism to predict favorable appraisals of stereotypical portrayals of older adults. Results show that participants spent the most time looking at pictures that were age and gender stereotypical before responding. Higher hostile sexism scores correlated positively with hostile ageism and benevolent ageism. Compared to men, women scored higher on the benevolent sexism scale. Compared to African American participants, Caucasian participants had higher benevolent ageism, hostile ageism, and benevolent sexism scores. In summation, images that confirmed sexist and ageist attitudes were the ones participants spent the longest time looking at. This reflects an effort to react against unwanted biases. Higher hostile sexism scores predicted ageism of any type. This supports the idea that prejudice in one area predicts other forms of prejudice. African Americans scored lowest in both types of ageism, suggesting greater intergenerational support within their communities. Overall, a lack of divide between benevolent and hostile ageism indicates a wider acceptance of various ageist views.

## Theorizing Masculinity in a Post-Patriarchal Society

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: M. Gregory Oakes, Ph.D.*

*CAS - Department of Philosophy and Religious Studies*

*(PHIL 495 - Oakes)*

**Student: Richard Lyda**

This essay explores the ideas of gender construction, performance, and subversion, with special attention to masculinity and its relation to patriarchy. Specifically, this essay addresses the question of whether masculine gender identities could continue to be constructed in a post-patriarchal world. By engaging with Simone de Beauvoir's response to biological determinism, I will explain why biology alone is not a sufficient explanation for masculine identity and its association with male bodies. By exploring drag and Judith Butler's performative theory of gender, I will explain the causal relation that exists between discourse, an idea forwarded by Michel Foucault, and gender construction, and also potential means of subversion of such a discourse. Together, these ideas will demonstrate how, absent patriarchy, new ideas of gender and its social significance will emerge. Though I am not able to predict the exact details of a post-patriarchal world and give a definitive answer to the above-posed question, I can say that, absent patriarchy, gender identities and their construction would be nearly unrecognizable compared to their current schema.

## Thermodynamics-Based Discovery of New K-La-Zr-O Compounds via Hydrothermal Synthetic Methods

MADE in SC Conference, Columbia, South Carolina, September 2019

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by a grant from the National Science Foundation EPSCoR Program (MADE in SC)

Faculty Mentor: Maria Gelabert, Ph.D.

CAS - Department of Chemistry, Physics, and Geology

### Student: Thomas Sullivan

This project investigates aqueous modeling coupled with mild hydrothermal methods (200 °C, 16 atm) for discovery of new compounds, goals for advanced materials development outlined in *SC Vision 2025* and *NSF Big Ideas*. Innovative luminescent materials, such as scintillators, are needed for optoelectronics and other optical technologies. Hydrothermal methods were performed, with thermodynamic guidance from aqueous speciation calculations in OLI Studio, to look for compounds in the K-La-Zr-O quaternary system. This system choice was inspired by several Na-Y-Si-O compounds previously synthesized by supercritical hydrothermal methods. By altering compositions of reactants, it is possible to generate trace amounts of novel crystals of new stoichiometries. In the previous discovery of  $Zn_2EDTA \cdot 2H_2O$ , optimum hydrothermal conditions were just outside of the thermodynamic stability region for ZnO, suggesting that the edges of such stability regions are potential places for discovery work. With OLI Studio, yield diagrams were constructed for the K-La-Zr-O system, with water-soluble metal salts, chelating agent, and base as reactants. Chemical systems readily form thermodynamically stable binary/ternary compounds: in this case, zirconia ( $ZrO_2$ ) and lanthanum hydroxide ( $La(OH)_3$ ). Within Zr and La subsystem yield diagrams, where the concentration ratio of metals is plotted against base concentration, locations just outside of the  $ZrO_2$  stability region were targeted for Zr:La ratios of 1:1 and 4:1. Scanning electron microscopy (SEM) with energy-dispersive X-ray spectroscopy (EDS) revealed polycrystalline morphology with some single crystals ( $\approx 50$  microns) of hexagonal and greater (6+ sides) geometry containing significant amounts of oxygen, lanthanum, and zirconium, suggesting formation of a lanthanum zirconate compound.

## Investigating the Responsiveness of Embryonic Chick Retinal Ganglion Cells to Semaphorin-3A

SC INBRE Science Symposium, Columbia, South Carolina, January 2020

SYNAPSE Conference, Farmville, Virginia, March 2020

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Eric Birgbauer, Ph.D.

CAS - Department of Biology

### Students: Shane Lacanin, Nancy F. Cisse, and Allison T. Reed

During embryonic development, neural connections are made when axons grow over long distances to find their synaptic targets, guided by terminal structures called growth cones. Growth cones either continue to grow or collapse, retracting and growing in a different direction, in response to attractive or repulsive cues. One such axon guidance cue is Semaphorin-3A (Sema-3A). Luo *et al.* (1993) showed that Sema-3A causes growth cone collapse from embryonic chick dorsal root ganglion cells (DRGs) but not from chick retinal ganglion cells (RGCs). However, the experiment was repeated in Dr. Birgbauer's lab, and we found that Sema-3A can cause growth cone collapse of chick RGCs. There are several possible hypotheses on why the results of those two experiments differed. There could be a dose-dependent difference or an age-dependent difference. There could also be a time-dependent difference, since the previous research assay was for 60 minutes while we used a 15-minute assay. We have tested these hypotheses and found a dose-dependent growth cone collapse in chick RGCs. Also, the time response of Sema-3A was investigated, revealing that RGCs exhibited a peak of collapse after 15 minutes, and that they started regenerating at 20 minutes. We also examined the responsiveness of different embryonic ages to Sema-3A, and it was found that as the chick embryo develops, the chick RGCs maintain a significant level of responsiveness ( $p < 0.05$ ). We have also investigated the expression of Sema-3A receptors, Neuropilin-1 and Neuropilin-2, as well as their co-receptors in the chick retina by RT-PCR. We found that all of these are expressed except for Class B plexins and Neuropilin-1. In conclusion, we have found strong evidence that Sema-3A induces growth cone collapse in embryonic chick RGCs. We found that the retinal growth cone collapse is dose-dependent and developmentally relevant. Also, embryonic chick RGC growth cones rapidly desensitize to Sema-3A, explaining the difference from Luo *et al.*



## Perceptions of and Barriers to Help-Seeking Behavior in College Students

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Tara J. Collins, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 302 - Collins)*

**Students: Gary Broadwater, Kelley Horton, and Alexis Turill**

The objective of the current project was to examine the perceptions of - and barriers to - seeking professional mental health treatment in undergraduate college students. Though lower than the non-college population, suicide rates for college students are alarming, ranking suicide as a leading cause of death for 18-24 year-olds. A troubling aspect of this crisis identified by researchers is that only about 20% of collegiate suicides involved help-seeking at a campus facility prior to the event. This research sought to understand what causes students to feel stigmatized and to identify what prevents them from seeking help. Participants were 22 men and 90 women from a southeastern university. Data were collected through a convenience sampling strategy. This study examined attitudes and barriers to seeking help using two standardized measures and one that was developed specifically for this research. It was hypothesized that students who had perceived less stigma and fewer barriers toward seeking help would be more open to seeking treatment and more knowledgeable of campus resources. Five regression analyses were conducted to predict knowledge about resources from perceived barriers and attitudes about seeking help. The results suggest that there is a strong relationship between perceptions of stigma toward treatment and the knowledge a student has of their university's services. It was concluded that the perceptions of and barriers to receiving professional help can ultimately deter a student from seeking professional help. This is compounded by a lack of knowledge or awareness of mental health resources, resulting in fewer students receiving the needed treatment.

## Past and Present Views on Criminal Responsibility

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: M. Gregory Oakes, Ph.D.*

*CAS - Department of Philosophy and Religious Studies*

*(PHIL 495 - Oakes)*

**Student: Calvin Anfinson**

In this paper, I look at the development of laws as they pertain to criminal responsibility. I argue that people's views on criminal responsibility have changed throughout the years, and will continue to change, given the increasing amount of information generated from neuroscience. This investigation ranges from the earliest records of legal systems through contemporary times. I show how laws regarding criminal responsibility have changed over time and how neuroscientific evidence may support laws granting lowered criminal responsibility to specific individuals. In addition, I compare the views of Aquinas and H.L.A. Hart on the relation between morality and law, their justifications of punishment, and opinions on how individuals should be punished.

## Perceptions of Sexual Harassment in Ambiguous Social Media Posts and Comments

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Tara J. Collins, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 302 - Collins)*

**Students: Mary M. Morris and Vanessa Vaughn**

Research has been done over the past few decades to learn more about sexual harassment and the ways in which it impacts its victims. Researchers tell us that sexual harassment consists of sexual attention that is written, spoken, or any sexual action that is unwanted by the victim. While there is information like this, researchers tell us there has been little research on sexual harassment in terms of the digital world. The present study aimed to explain some of these interactions on social media. Manipulated pictures were used to represent Instagram posts to figure out how participants interpreted sexual harassment online. It was predicted that if photo captions were soliciting of sexual behaviors, they would not be interpreted as sexually harassing. This was not supported, as the participants viewed the comments that were sexual as inappropriate regardless of the caption type. Participants were also asked to record their frequency in receiving and participating in online sexual harassment, as well as their emotional responses. Here it was predicted that women would receive sexual harassment more than men but participate less. This hypothesis was not supported, but the data set for men was too small for a viable test. The significant results, that the participants viewed sexual comments as negative and inappropriate, gave some insight into how sexual harassment online is interpreted and accepted, but more research needs to be done for a more thorough understanding.

## Examining the Psychometric Evaluation of How Consumers Purchase Game Day Tickets

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Jinwook (Jason) Chung, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(SPMA 390 - Chung)*

**Student: Gweneshia Wadlington**

Why do consumers use Ticketmaster's ticket purchasing app over other forms of ticket purchasing? Is its use due to its popularity among sponsors who partner with the site to sell their event day tickets? Is its popularity among consumers just coincidental? Or is it only because consumers are unaware of other ticket vendors? The purpose of this research is to focus on why consumers commit to a specific ticket generating app versus buying the tickets elsewhere or purchasing paper tickets from the team they are supporting, and to understand the psychometric evaluation of why the consumers do so. The data for this research were collected by conducting a 14-question survey over the course of three weeks. The survey collected data on demographics, mediums used, and sociological mindsets of respondents. It was concluded that the data collected weren't enough to show any significant difference between either of the four mobile websites that were researched. Results of this study can be used in sports to understand consumers and their thinking, similar to the Elaboration Likelihood Model, and to understand why they gravitate to one specific mobile app and the underlying purpose for their brand loyalty towards that app, evaluating their psychometrics.

## Expression of Endothelial Protein C Receptor in Prostate Cancer

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Supported by the McKay Urology Endowment Fund and by a grant from the Winthrop University Research Council*

*Faculty Mentors: Laura Glasscock, Ph.D.; Kathryn Kohl, Ph.D.; and Kunsiri Grubbs, Ph.D.*

*CAS - Department of Biology*

**Students: Jessika Bonner and Austin Brewington**

Endothelial cell protein C receptor (EPCR) is expressed in the serum of patients with prostate cancer and in a prostate cancer cell line, PC-3. EPCR is normally expressed by endothelial cells in the blood vessel, where it functions as a co-receptor in the anti-coagulant protein C system. The localization and function of EPCR on endothelial cells is well-documented. Our previous studies have shown that the receptor EPCR interacts with thrombomodulin (TM) on endothelial cells. TM is also expressed by prostate tumor cells *in vivo* and *in vitro*, where it regulates proliferation and invasion by these prostate tumor cells. The concentration of TM in patients with prostate cancer is elevated compared to controls. Since EPCR and TM are co-receptors, our goal was to determine the concentration of EPCR in patients with prostate cancer compared to normal controls, and to localize EPCR in PC-3 cells. ELISAs on serum samples from patients with prostate cancer indicated that EPCR concentrations were statistically elevated (82.5 ng/mL to 892.5 ng/mL) compared to control patients (102 ng/mL  $\pm$  0.002) ( $p \leq 0.05$ ). Western blotting of cell media and cell lysates from PC-3 cells demonstrated that EPCR is expressed by the prostate cancer epithelial cells. These data provide additional evidence that the anticoagulant protein C system, specifically, EPCR and TM, are involved in prostate cancer progression.

## Active Shooter Protocols: Perceptions, Preparedness, and Unintended Consequences

*SAEOPP McNair/SSS Scholars Research Conference, Atlanta, Georgia, June 2019*

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Supported by a Ronald E. McNair Post-Baccalaureate Achievement Program grant from the U.S. Department of Education*

*Faculty Mentors: Matthew Hayes, Ph.D., and Melissa Reeves, Ph.D.*

*CAS - Department of Psychology*

*(MCNR 300 - Fortner-Wood)*

**Student: Veronica Worthington**

The national concern about active shootings has pushed schools to implement intense drills without considering some unintended consequences. Studies have found that training had the potential to increase preparedness; however, some studies have found that training increases anxiety. While these findings apply to short-term effects, there is a lack of empirical research on long-term effects of active shooter drills. The present study investigated whether active shooter training completed in high school impacts current levels of anxiety and preparedness of undergraduates. Participants ( $N = 364$ ) completed an online survey and answered questions about their perceived knowledge of protocols, protocol actions, and training methods from high school followed by the same set of questions, this time referring to their current university. Participants then completed an anxiety measure and a preparedness measure. Two hierarchical regression analyses were conducted to predict anxiety and preparedness. This study expanded findings on the effects of active shooter training by demonstrating long-term effects for high school training; evacuation protocols and perceived knowledge positively impact anxiety and preparedness of university students. Experiences at the university level have an additional, larger impact on student anxiety and preparedness, which seem to overshadow the effects from high school. This may be problematic, because the perceived knowledge that leads to higher feelings of preparedness may not translate into appropriate actions in a real-life situation, potentially risking lives.

## Sustainable Development and Environmental Justice: Connecting Students to Global Issues

*SAEOPP McNair/SSS Scholars Research Conference, Atlanta, Georgia, June 2019*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Supported by a Ronald E. McNair Post-Baccalaureate Achievement Program grant from the U.S. Department of Education*

*Faculty Mentor: Wendy Sellers, Ph.D.*

*CAS - Department of Social Work*

**Student: Sierra Davis**

This pilot study will contribute to the literature surrounding study abroad using a new framework to gauge the effect travel has on knowledge of global issues. The United Nations created a list of sustainable development goals meant to rectify pressing issues in the United States and abroad. The goals have been separated into the categories of ending poverty, ensuring prosperity for all, and protection of the planet. Using them as the framework for a quantitative study, data were collected from college-level students around South Carolina on perceptions of global issues through a sustainable lens. The project has had two phases; results and implications of the recent phase will be discussed.



## Willingness to Commit Crimes in Relation to Prior Crime Exposure and Personality

Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Tara J. Collins, Ph.D.

CAS - Department of Psychology

(PSYC 302 - Collins)

**Students: Chloe Rizer, Veronica Skubisz, and Iyegbekosa Siobhan Omoigui**

The main objective of the present project was to study the correlation between exposure to crime in childhood and adolescence, with other weighing factors such as childhood adversities, socioeconomic status, personality, and the acts of criminal behavior in adulthood. 191 individuals participated through an online survey assessing their exposure to criminal behavior in childhood and their willingness to commit crimes in adulthood. Crime was measured by assessing the participants' frequency of witnessing or experiencing crime. Childhood adversities assessed the frequency with which participants experienced those different adversities in their lives. Socioeconomic status was measured to assess the socioeconomic categories the participants fit into in childhood, as well as parental education levels and levels of consistency of legal guardianship in the home. Simple demographic questions were then asked, such as age, race, and gender. It was found that the main hypothesis of exposure to crime had a positive correlation. It was also found that psychological childhood adversities did have a significant correlation to willingness to commit crimes; however, the other childhood adversities such as physical, household substance abuse, and criminal behavior in the home did not. The only personality trait that yielded a positive correlation was conscientiousness; the other four traits did not hold statistical significance. It can be concluded that exposure to crime or criminal behavior in childhood and adolescence does predict an increased likelihood of willingness to commit crimes in adulthood. This can also be due to other factors such as personality type, gender, or childhood adversities.

## Nietzsche's Death of God and the Slave-Revolt in Morality

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: M. Gregory Oakes, Ph.D.

CAS - Department of Philosophy and Religious Studies

(PHIL 495 - Oakes)

**Student: Ryan Haarer**

None of Nietzsche's theses stands out quite as much as his "Death of God" thesis. An argument can be made that the death of God is the result of the changes that the slave-revolt within morality bring about. Drawing on the observations that Nietzsche and scholars have made about the slaves and Christians, it is plausible that certain activities that the groups engaged in led to the unbelievability, or death, of God. The activities that will be given attention within this essay are the slave's and Christian's desire for progress and truth, which have negative and unintentional effects on other aspects of life, namely faith in God. The principal negative effects of progress and truth-seeking, being the death and decay of ideas and values, can be held responsible for decreasing levels of faith in God, while simultaneously being responsible for the increase of faith in science. This switching of faith, then, would be an explanation of how God's existence has become unbelievable, ultimately resulting in what Nietzsche describes as his death.

## An Analysis of Two Perspectives of Queer Christianity

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: M. Gregory Oakes, Ph.D.

CAS - Department of Philosophy and Religious Studies

(RELG 495 - Oakes)

**Student: Sydney Strother**

Queer theology is the process of unsettling the common effort to reduce the experience of God and Christianity into simple heteronormative categories and dismantling binary thinking about gender. Queer theology contains two main perspectives: (1) reparative, which states that queer theology is an active theology that uses the processes of queer(ing) and trans(ing) the sacred and biblical texts to disrupt cis-heteronormative Christianity, and (2) aboriginal, which is the recognition that the sacred and biblical texts are already queer(ed) and trans(ed) and what makes them appear cis-heteronormative are cultural and societal influences throughout history. Theologian P.S. Cheng explains in his book, *Radical Love: Introduction to Queer Theology*, that queering is an active process, that one extracts the queer translations from a text or chooses to experience God as a queer God. Theologian Austen Hartke makes the argument for the reparative perspective that the book of Genesis should be read with the removal of binary gender. To contrast, Teresa Hornsby and Ken Stone make the primary argument for the aboriginal view in their book, *Bible Trouble*, that queerness originates in Christianity from the chaos of creation. Additionally, Elizabeth Edman, in *Queer Virtue*, argues that Jesus is the queer(er) at the historical origin of Christianity. Both viewpoints on the nature of the queerness of Christianity provide insight into the topic, but the aboriginal view provides a better argument overall.

## Motivation to Participate in Adaptive Cycling among Disabilities

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Jinwook (Jason) Chung, Ph.D.

COE - Department of Physical Education, Sport, and Human Performance

(SPMA 390 - Chung)

**Student: Mollie Barron**

The factors that encourage individuals to participate in adaptive sports are often the same motivations a person would have to be part of non-adapted sports. Those individuals motivated to pursue adaptive cycling have a unique perspective of these encouraging factors. Adaptive cycling offers countless variations of equipment, allowing for most any person with a physical restriction to be a part of the sport. Cycling, adapted or otherwise, inspires strength, independence, an escape from normal life, a way to socialize with old and new friends, and a hobby that builds physical capability and internal self-perception. These outcomes are often major motivations an athlete may have. Understanding these motivations could help further the sport industry's inclusion of all athletes, regardless of physical ability, thereby allowing those who may not usually be able to participate in community activities to be welcomed and encouraged to get involved in the ways that matter deeply to them. This level of care goes a step farther than meeting ADA requirements and demonstrates a unique and welcoming perspective to the recreation and sport community. This research will explore the motivations people with and without physical restrictions have to cycle that are deeper than rehabilitation and competition.

## Why Can't Women Win in the Workforce?

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: William Schulte, Ph.D.

CAS - Department of Mass Communication

(MCOM 441 - Schulte)

### Student: Isabelle Schmidt

On average, women in the U.S. earn 20% less than men. In order to close the gender wage gap, the public needs to be made aware of the startling statistics accounting for the gap, the root cause of the gap, and the path our collective society needs to take in closing the gap. There are several underlying factors accounting for the gender wage gap, including education, occupational selection, marital and family status, share of women in the workplace, and women's duties outside the workplace. Over the past several decades, women have made great strides to overcome these underlying factors. For example, there has been a remarkable increase in the labor force participation rate of women, and women have actually surpassed men in educational attainment, and yet the gap remains due to gender discrimination. Pay inequity is a symptom of deep-seated bias and social pressures. Gender bias presents itself in many ways, including stereotyping of children through colors and toys, cultural and media sexualization of women, traditional role of women as caretakers, societal pressure on women's occupational choices, and workplace bias that solidifies gender-specific jobs. The best approach to closing the wage gap is a two-step path. One step is to end gender bias and stereotyping. The other step is to urge the public to enact stronger laws protecting women from wage discrimination. Stricter regulations need to be placed on companies, demanding them to be transparent with their pay practices. The more informed we are, the better chance we have in closing the wage gap.

## Remote Sensing and Decomposition Rates of Forest Succession Plots in the Piedmont of South Carolina

American Geophysical Union Fall Meeting, San Francisco, California, December 2019

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by the Boland Geology Endowment and the Margaret E. Spencer Undergraduate Fellowship

Faculty Mentor: Scott Werts, Ph.D.

CAS - Department of Interdisciplinary Studies

### Students: Dakota Shope and Blake Campbell

The Piedmont of the U.S. is dominated by ultisol soils, which often contain highly weathered geologic materials. Due to the diverse nature of land development in the southeastern U.S., these soils are often under a wide range of developmental stages and, especially in the surface horizons, contain a great deal of spatial variability in properties. In this study, we have begun a decompositional study of four forested plots in various stages of succession of former farmland. Litter bags containing native litter and cellulose paper were placed at each site and collected over two-week intervals in order to compare decomposition rates from site to site. Remote sensing stations were also established at each location to record differences in soil temperature and soil moisture. Initial results suggest that there is high variability of decomposition rates in between all the sites, even when controlled for litter type with cellulose paper. Initial decomposition rates were higher for native vegetation than the litter paper. The most recently established plot showed the highest initial rate of decomposition, followed by the more well established sites. Although soil temperature was higher in the lesser established plots, soil moisture remained lower in all these plots during the decomposition study as well, which may explain the slower decomposition rates.

## Vindication? Grounds for the CIA's Intervention of Guatemala, 1952—1954

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Gregory S. Crider, Ph.D.

CAS - Department of History

(HIST 590 - Crider)

### Student: Bowman H. Taylor

The United States government's motivation and reasoning for the Central Intelligence Agency's coup of Guatemalan President Arbenz's regime in 1954 was anything but precise. Through analysis of an evidentiary base that includes declassified documents, memoranda, interviews, and letters from the CIA, National Security Archives, and the Guatemalan government, these proponents of the CIA's operation in Guatemala have been uncovered. The CIA declared that Arbenz and the Guatemalan government were under Soviet-Communist influence, and that immediate action was necessary to stop the spread of communism in Guatemala for national security reasons. The evidence behind this claim is nearly non-existent, and there is a significant amount of documentation that refutes it. The "why" behind the CIA's coup, otherwise known as operation PBSUCCESS, does not coincide with the evidence of the Guatemalan events or people that the CIA utilized to provide justification for their actions. U.S. intervention in Guatemala in 1954 served as an example of America abusing its sovereignty over the Western Hemisphere in order to fulfill its own agenda throughout the Cold War.



## Modeling the Latent Reservoir in the Dynamics of HIV Infection with CTL Memory

Summer Undergraduate Research Experience (SURE) Symposium and Poster Session, Winthrop University, June and October 2019

UNCG Regional Mathematics and Statistics Conference, Greensboro, North Carolina, November 2019

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentors: Zachary Abernathy, Ph.D., and Kristen Abernathy, Ph.D.

CAS - Department of Mathematics

**Students: Josiah Bauer and Sarah Fleetwood**

In this project, we model the dynamics of HIV-1 latently infected cells under the effects of a natural immune response. Our purpose in this model is to study the long-term effects of CTL memory on viral load. We establish the existence of equilibria and the global asymptotic stability of the disease-free equilibrium based on the rate that cells are latently versus actively infected. We then perform numerical simulations to illustrate the stability behavior of immune-free and internal equilibria. Furthermore, we demonstrate that anti-retroviral therapy can stimulate a memory response and reduce the viral load in the case when all equilibria exist.

## Global Dynamics of the HIV Latent Reservoir with Latency Reversing Agents and Immune Response

**Students: Claire Berchtold and Hannah Mitchum**

In this project, we model the dynamics of HIV-1 latently infected cells under the effects of latency reversing agents (LRAs) to promote a natural immune response. We establish the existence of immune-free and positive equilibria and then utilize Lyapunov functions to prove the global asymptotic stability of each. Numerical simulations are performed to support and illustrate these results. We conclude with a discussion on the model's predicted threshold for LRA effectiveness to stimulate a natural immune response and decrease the size of the latent reservoir.

UNCG Regional Mathematics and Statistics Conference, Greensboro, North Carolina, November 2019

Mathematical Association of America (MAA) Southeastern Section Meeting, High Point University, March 2020

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Second Place, UNCG Regional Mathematics and Statistics Conference, November 2019

Supported by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentors: Kristen Abernathy, Ph.D., and Zachary Abernathy, Ph.D.

CAS - Department of Mathematics



## Isolating, Purifying, and Investigating Mycobacterial Lysogens

Summer Undergraduate Research Experience (SURE) Symposium, Winthrop University, June 2019

Association of Southeastern Biologists (ASB) Annual Meeting, Jacksonville, Florida, March 2020

American Society for Microbiology (ASM) South Carolina Branch Annual Meeting, Greenville, South Carolina, April 2020

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Victoria Frost, Ph.D.

CAS - Department of Biology

**Student: Allyssa Lewis**

Bacteria have shared an entangled evolutionary history with bacteriophages for the past three billion years. Some bacteriophages use a specific type of infectious pathway (lysogeny) that maintains their hosts' viability, thus enabling a mechanism of coexistence. In certain phage genomes, annotation has revealed the presence of immunity-related genes, which suggests a mechanism of how some bacteriophages can protect their hosts and resist superinfection by other related bacteriophages. To investigate this further, two temperate (and previously annotated) mycobacteriophages (ExplosioNervosa and Rhynn) were isolated in an effort to create lysogens in their host cell, *Mycobacterium smegmatis*. Once created, the lysogens were purified and tested against their original infecting phage as well as an unrelated bacteriophage (Haimas) to see if they were able to resist superinfection. Tests showed that both Haimas and the original viruses were still able to infect the lysogens and cause them to lyse. The ability of bacteriophages to lyse their own lysogens raised the idea of spontaneous reversion: the prophages could have reverted to the lytic cycle due to a triggering condition in their environment. The ability of the host-phage relationship to respond to certain environmental signals warrants further investigation, as does manipulation of the genes linked with immunity and infection. Investigating the triggers and unraveling the mechanisms that fuel coevolution help further our understanding of the host-parasite equilibrium that exists today and highlights opportunities for future applications.

## Large-Scale Analysis of HTTP Response Headers

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by funding from Amazon

Faculty Mentors: Andrew Besmer, Ph.D.; R. Stephen Dannelly, Ph.D.; and William Thacker, Ph.D.

CBA - Department of Computer Science and Quantitative Methods

**Students: Connor Leyers, Joshua Paytosh, and Nolan Worthy**

This paper examines trends in the use of HTTP response headers that relate to security, how long it takes for them to become widely adopted after release, and how quickly they are phased out after deprecation. The data come from the Common Crawl's monthly web crawls that collect responses from what we can consider to be the entire internet. They are delivered as JSON in WAT format and analyzed in Python on an AWS EMR cluster running PySpark, which allows the analysis of data in parallel across the nodes in the cluster. For the purposes of this research, the entire dataset will be analyzed, as well as a subset representative of Fortune 500 companies. For each website in the dataset, there will be checking for the presence of 16 different HTTP response headers that pertain to security (e.g., X-XSS-Protection). The presence of each header over several months indicates the speed of adoption or abandonment.

## Diet Analysis of Juvenile Dragonflies Using Group-Specific Polymerase Chain Reaction

Summer Undergraduate Research Experience (SURE) Symposium, Winthrop University, July 2019

South Carolina INBRE Science Symposium, Columbia, South Carolina, January 2020

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Cynthia Tant, Ph.D.

CAS - Department of Biology

**Students: Rachael Rowe and Whitney Player**

Aquatic food webs are complex, and understanding interactions in these food webs can give an indication of ecosystem health and stability, as well as movement of energy and nutrients through ecosystems. Previous studies have utilized both microscopic gut content analysis and stable isotopes to aid in constructing food webs in these ecosystems. However, gut content analysis is time-consuming, stable isotope analysis can be cost prohibitive, and both methods only identify general categories of food items. The application of newer, molecular-based approaches has the potential to provide previously unavailable taxonomic resolution in aquatic food webs (i.e., who is eating whom?). DNA-based methods have been used in other disciplines for diet analyses, but have not been widely applied in freshwater ecology. We collected juvenile dragonflies (Odonata, Anisoptera) from Winthrop Lake in Rock Hill, South Carolina, dissected gut contents, and extracted DNA from individuals in three genera. We amplified DNA via PCR, using group-specific primers targeting mitochondrial CO1 gene regions for midges (Diptera, Chironomidae) and mosquitoes (Diptera, Culicidae) to identify these potential prey in gut contents; we used gel electrophoresis as a presence/absence test for DNA from these prey groups. Occurrence of prey groups in gut contents varied by individual and by genus of dragonfly examined. With further refinement, these methods have the potential to provide previously unavailable detail on predator-prey interactions in these ecosystems.

## Exploring the Link Between Iron Homeostasis and PhpP Activity

Summer Undergraduate Research Experience (SURE) Poster Session, Winthrop University, October 2019

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Nicholas Grosseohme, Ph.D.

CAS - Department of Chemistry, Physics, and Geology

**Student: David Brandyburg**

RitR (repressor of iron transport) is an orphan two-component signal transduction response regulator in *Streptococcus pneumoniae* that is central to iron homeostasis. RitR, however, lacks the amino acid (aspartic acid) that serves as the phosphate acceptor in traditional response regulators - consequently, it does not function in the same way that other response regulators do. Since its discovery, it has been shown that this protein is indeed the target of a Ser-Thr kinase-phosphatase pair, StkP and PhpP. STK has been shown to phosphorylate RitR in response to extracellular iron. This phosphorylation impacts the DNA binding ability of RitR, leading to expression of iron uptake genes. PhpP is an intercellular phosphatase that hydrolyzes the phosphate and effectively reverses the signal. This project aimed to determine whether PhpP could be metal sensitive and, if so, to test the sensitivity. This was accomplished using a standard pNPP (*para*-nitrophenylphosphate) assay. By utilizing this assay, we were able to determine that PhpP is indeed capable of dephosphorylating a chemical substrate and does so in an iron-dependent manner. Steps were taken to develop an assay to monitor the hydrolysis of phospho-RitR; however, optimization is still necessary.

## Bizarre!

Senior Choreography Showcase, Winthrop University, November 2019

American College Dance Association Southeast Regional Conference, Florida State University, March 2020

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Julianna Hane, M.F.A.

CVPA - Department of Theatre and Dance

(DANA 442 - Hane)

### Student: Emmalee Bradley

This choreographic piece stems from research conducted through movement on how individuals of our world treat each other on a daily basis. Whether positive or negative, the way humanity interacts can be seen as truly *bizarre*. Today, there are a number of ways to interact with others, including through social media, text messaging, video chatting, and written communication such as letters. In order for our society to flourish, we rely on these communications, which prove to be both positive and negative. The following questions came to mind when creating this piece. Are our interactions helpful, harmful, or neither? Can our communications be considered a strength? Or is it a downfall on humanity's part? How do we react to our interactions? Do we normalize our interactions, whether positive or negative? How does this affect our society? I hope that through viewing this piece, viewers begin to question their everyday interactions with friends, family, co-workers, or even strangers on the street. What can changing the way we interact with others in society do for our world? This quote from David Yoom helps to bring perspective to the idea behind this piece: "Humanity's greatest strength - and also the reason for its ultimate downfall - is its ability to normalize even the bizarre."

## Culturally Accepted Verbal and Written Shibboleths and their Consequences of Linguistic Insecurity, Anxiety, and Socioeconomic Unbalance

Annual Department of English Graduate/ Undergraduate Research Conference, Winthrop University, March 2020

Faculty Mentor: Jo Koster, Ph.D.

CAS - Department of English

(ENGL 507 - Koster)

### Student: John Robinson

This essay applies multiple literary theories, including linguistic (specifically, sociolinguistic), phenomenological, new historical, postcolonial, Marxist, formalist, and new critical criticism, in order to analyze the current and historical impacts of shibboleths in language cultures, specifically English. I discuss how prescriptivism and prejudice (enacted by Robert Lowth and entities like *The American Heritage Dictionary of the English Language*) toward differing dialectal and linguistical norms result in an overarching presence of linguistic insecurity, anxiety, and socioeconomic disadvantages regarding unassimilated English language users in an environment other than their own. I reference multiple experts in the field of linguistics, such as John Algeo, Thomas Pyles, Taofeek Dalamu, Patricia Donaher, Seth Katz, Stanley Whitley, and Robert Woodhouse, to support my claim that shibboleths, verbal or written, are wrongly enforced in English-speaking cultures, and as a result, yield the consequence of stalemating, or otherwise disenfranchising, the culture's ability to evolve and innovate their own life experiences in a positive way. Additionally, this essay tackles the presence of shibboleths in a variety of places, including commercialism, academics, and everyday discourse.

## Investigation of an Indirect Defense Mechanism of *Chapmannia floridana* in Florida Scrub

Association of South-eastern Biologists (ASB) Annual Meeting, Jacksonville, Florida, March 2020

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by a grant from the Winthrop University Research Council

Faculty Mentor: Jennifer Schafer, Ph.D.

CAS - Department of Biology

### Student: Mackenzie Jenkins

Glandular trichomes (i.e., sticky hairs) that entrap carrion act as indirect defenses in some plant species. The sticky hairs attract predators that consume the carrion. Predators then deter herbivores from harming the plant, leading to an increase in the survival and/or reproduction of the plant. Flowering stems of *Chapmannia floridana* (Florida Alicia), a perennial plant endemic to Florida, are covered in sticky hairs, which may act as an indirect defense. For 84 flowering *C. floridana* individuals across six habitats in the Florida scrub ecosystem, we counted the number of fruits, flowers, and buds present and documented any damage to reproductive structures. In addition, we counted the number of carrion, herbivores, and predators on each flowering stem. There was a positive relationship between the length of the trichome-covered portion of the stem and the number of carrion trapped. Only 19% of flower buds, 15% of flowers, and 10% of fruits we counted were damaged. We found predatory spiders on 6% of flowering stems and herbivores such as grasshoppers and caterpillars on 37% of flowering stems. For scrubby flatwoods and firelane habitats, we found no association between habitat and damage. There was no association between carrion presence and damage; however, the probability of damage to reproductive structures decreased as the number of trapped carrion increased. Overall, our results suggest that herbivory of *C. floridana* reproductive structures is relatively low and that glandular trichomes on *C. floridana* may be acting as an indirect defense.

## Host Range Investigations of Novel Bacteriophages

Association of South-eastern Biologists (ASB) Annual Meeting, Jacksonville, Florida, March 2020

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentors: Kristi Westover, Ph.D., and Victoria Frost, Ph.D.

CAS - Department of Biology

### Student: Bethany M. Wise

Bacteriophages are viruses that infect bacterial cells, using them as hosts to express their genetic material and replicate. Some bacteriophages use a specific strain of bacterial host for this procedure, while others are less host-specific. This study aims to help understand this area of phage-bacteria interaction by investigating the ability of bacteriophages to replicate in alternative hosts. Bacteriophages originally isolated from *Microbacterium foliorum* were tested for their ability to infect and lyse *Microbacterium testaceum*, *Microbacterium paraoxydans*, *Microbacterium liquefaciens*, and *Mycobacteria smegmatis*. Spot titer assays demonstrated plaque formations on alternative hosts by two of the 16 phages (MonChoix and Sirkeiram). Three of the phages (Aries55, BravoCanis and Iann) were able to infect *Mycobacteria smegmatis*. In addition, two novel phages (Ixel and Nebulous) were isolated from the bacterial host *M. liquefaciens*. Using *M. liquefaciens* as the host, the infective abilities of Ixel and Nebulous were compared to those of MonChoix and Sirkeiram. The phenotypic measure of infectivity is termed Efficiency of Plating (EOP) and for both the *M. foliorum* isolated phages, the EOP was less.

## A Breakdown of Visual Online Media and Its Relation to Creativity

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Ginger Williams, Ph.D.

CAS - Department of Interdisciplinary Studies

(IDVS 490 - Williams)

### Student: Spike Rubin

Creativity is important to exercise as it can lead to greater problem-solving skills, emotional well-being, self-expression, work-ethic, originality, and innovation. Eighty-five percent of children in 2008 were less creative than children tested in the 1980's. The overall decline in creativity can be attributed to factors such as online social media and entertainment. To explore creativity on social media platforms, it must first be examined by using the different skills and ideas implemented in online visual storytelling by social media users. A loss of creativity can be explained due to the changing nature of social media platforms and how that has affected visual storytelling methods, reception, and viral-ness. By analyzing through the disciplines of psychology, mass communications, and visual arts, it is possible to arrive at an answer to fix the loss of creativity. Psychology's discipline lens is being used to understand how creativity is measured, its types, and how it is linked to entertainment and environment. The lens of mass communication focuses on engagement and responses to popular videos to explain how websites are being formatted to encourage copying and other behaviors that lead to a loss of creativity. Visual art is being used to break down the visual storytelling elements present in videos and compare different levels of technical skill, which would influence the level of reception and creativity. To understand and improve creative storytelling, its loss must be documented and analyzed over time; then, the current nature surrounding online media and its main issues must be changed.

## Disguised

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentors: Jason Tselentis, M.F.A.; Elizabeth Dulemba, M.F.A.; and Casey Cothran, Ph.D.

CVPA - Department of Design

(VCOM 486, 487 - Tselentis)

### Student: Margaret Feltman-Ruiz

Throughout history, women had to change themselves in order to accomplish their goals. My thesis brings attention to these often forgotten or dismissed women of the past. *Disguised* is a nonfiction children's book that focuses on 12 women from history who disguised themselves as men to further their careers or lives. Each spread contains an illustration of the woman, along with a biography from the research I collected. Separate from the biographies, the book contains extra historical context to shed light on the social climates that these women experienced. The design of the illustrations isn't masculine or feminine, in the hopes of attracting not just 8- to 12-year-old girls, but boys as well.

## Animal Agriculture and Sustainability

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Ginger Williams, Ph.D.

CAS - Department of Interdisciplinary Studies

(IDVS 490 - Williams)

### Student: Ashlyn Allen

The topic for this paper is animal agriculture's impact on sustainability. The rise in animal agriculture leads to a rise in climate change, deforestation, and more environmental issues that affect the human race on an everyday basis, whether we realize it or not. For example, a major issue surrounding animal agriculture is the increase in greenhouse gas (GHG) emissions into our atmosphere. As these gases are emitted, we notice a rise in global temperature, leading to global warming. This in turn can lead to species dying, water temperatures rising, icebergs melting, etc. Due to a large number of animal farms, we notice a decline in sustainability, and it is about time we act on finding more sustainable and ethical ways to produce the food we need without further damaging our world. Therefore, the question is: How can we prevent animal agriculture from causing any further decline in sustainability? In order to answer this question, it is crucial to use an interdisciplinary method. The first discipline is environmental science. With a vast knowledge of the environment, sustainability, and the world as a whole, environmentalists have been able to show the direct effects of animal agriculture. Environmental scientists are the experts who study the rise in global warming and patterns of GHG emissions and study the food patterns throughout the world. The second discipline is agriculture science. This discipline gives insight on the specifics of animal agriculture. From the farming methods practiced to the harmful effects on the environment, this discipline specifies just what about animal agriculture is so harmful toward the environment. After researching, I propose that we can lower the harmful effects of animal agriculture on the environment by reducing meat consumption, practicing productivity-based farming, and utilizing appropriate minerals.

## How Does Dance Education Impact Student Learning?

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Julianna Hane, M.F.A.

CVPA - Department of Theatre and Dance

(DANT 386 - Hane)

### Student: Kensley Brandemuehl

How does dance education impact student learning? Is it simply a fun elective or an after-school activity? This question is personally relevant because this is an ever-growing career, especially in this region. Dance education is much more than that. Because it is my future career, I wanted to know how I will impact my students. In my research, I have found many studies that prove dance and other arts education affect the cognitive function of the brain and strengthen the synapses, as well. Additionally, it has been noted that schools that have added dance into their curricula have seen improvements in behavioral issues, attendance, overall student engagement, and standardized test scores.

## A Guide to African Princesses

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentors: Jason Tselentis, M.F.A.; Alice Burmeister, Ph.D.; Adolphus Belk Jr., Ph.D.; and Jesse Weser, M.A.

CVPA - Department of Design

(VCOM 486, 487 - Tselentis)

### Student: MaKayla Ray

*A Guide to African Princesses* inspires young Black/African American girls and will encourage Black/African American storylines in Hollywood. It includes Princess Yennenga, Queen of Sheba, Queen Amina of Zazzau Kingdom, Kandake, the empress of Ethiopia, and Yaa Asantewa. To achieve this, the guide focuses on having text including each princess's name, lifespan, legacy, and appropriate phonetic transcription. Phonetic transcription is important because the spelling of a word or name does not always tell someone how to pronounce it. The guide also includes decorative elements; the decorative elements, linking back to the culture of each African princess. Research methods include, but are not limited to: artifact analysis, content analysis, secondary research, and prototyping. The purpose of the artifact and content analyses is to aid in approaching the project systemically: systematically observing, examining, and describing the written and visual materials. Secondary research and prototyping of the project will take all information gathered from artifact and content analyses in terms of aesthetics and information gathered from mentors to create a guide of African princesses.

## The Rise in Hostility toward Mexican Immigrants

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Ginger Williams, Ph.D.

CAS - Department of Interdisciplinary Studies

(IDVS 490 - Williams)

### Student: Taylor Jordan

Within the last two decades, Mexican immigration has become a popular political topic within the United States. This new spotlight on Mexican immigration makes this topic critically important to discuss and eventually solve. In the last twenty years, U.S. citizens have blamed Mexican immigrants for bringing drugs or other contraband into the United States, while other Americans have praised the newly available labor force. Citizens throughout the United States are torn on their opinions on immigrants, especially recent Mexican immigrants. These opinions have become louder and more hostile than friendly within the last four years as our current President, Donald Trump, has encouraged hostility. The research question at hand is: In what ways has the growing United States hostility toward Mexican immigrants affected immigrant opportunities in the United States since 2000? To solve this question, the two disciplines of history and political science need to be used. This paper will argue that Mexican immigrants should have the right to education beyond K-12 education; citizenship requirements and applications should be reevaluated so that all immigrants have an equal opportunity to be eligible; border control should have a better system that keeps this branch accountable to stop the rise of violence, family separation, and sexual assault at the border; the U.S. should reevaluate state and national laws and policies that target specific groups of people; and the U.S. should reevaluate the perception media and government officials put out against Mexican immigrants to amend the racial tensions it causes.

## A Sensual Exploration of Melancholy

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentors: Jason Tselentis, M.F.A.; Jesse Weser, M.A.; Tamara LaValla, B.F.A.; and Casey Cothran, Ph.D.

CVPA - Department of Design

(VCOM 486, 487 - Tselentis)

### Student: Rachel Blumer

What does it mean to be melancholy? It is a distinct and personal emotion—a type of sadness and a feeling all its own. Melancholy is not something people usually seek out, but it can be a comfortable, pensive, and creative space to sit in. The beautiful thing about melancholy is how one is able to be both joyful and sorrowful at the same time. I began the project by conducting a survey about what others think sadness smells, tastes, and sounds like. I have also researched poetry and music. I explore melancholy in different mediums and creative techniques, including a melancholy package design, spatial design, a song, prints, interface design, and tattoos. Why do so many people avoid sadness and melancholy when they are sensual, visceral, and natural aspects of life? I want to express how and why I am able to find peace in this form of deep sadness. My thesis will show others that experiencing and thinking about melancholy instead of avoiding it can yield some beautiful results. My thesis is a deep dive into my own subconscious. It is an attempt to understand my own affinity for the emotion just as much as it is a creative project.

## Unhinged: Anthology

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentors: Jason Tselentis, M.F.A., and Elizabeth Dulemba, M.F.A.

CVPA - Department of Design

(VCOM 486, 487 - Tselentis)

### Student: Elizabeth Shepard

*Unhinged* explores women in mythology and religion that are perceived as "evil," but in my telling, are reincarnated as modern, everyday female leads. The theme of *Unhinged: Anthology* is how women fight oppressive forces, not shying away from female identity and power. I've adapted my stories from myths and folklore from other cultures. The first three stories in *Unhinged: Anthology* are: "The Huldra" (Norse), "The Rangda" (Balinese) and "The Maenad" (Greek). I've written these stories in the form of scripts, approved by my committee members. Because traditional black-and-white high contrast adds to the horror aesthetic, the medium for the pages is ink. *Unhinged: Anthology* will be published into a graphic novel, with one version digital and the other printed. Readers of *Unhinged: Anthology* will better understand the idea of women embracing their unfortunate fate, coping with cosmic horrors, and finding a sense of freedom with their instincts and dark desires. Like the horror films of today starring women, *Hereditary*, *The Witch*, *Us*, and *Midsommar*, readers will enjoy *Unhinged*.

## The Changing Face of Racism in America

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Ginger Williams, Ph.D.

CAS - Department of Interdisciplinary Studies

(IDVS 490 - Williams)

### Student: Caleb Clayton

As we trudge deeper into the 21<sup>st</sup> century, racism in the United States continues to present continuous problems to our society. While the biological conception of race and genetic differences between people with lighter or darker pigmentation is a made-up fallacy, we have nurtured a social hierarchy aligning with it, creating very real consequences. Since the 19<sup>th</sup> century, people with white skin have dominated across the political and economic spectrum in the United States. Moving through time, as certain political schemes and institutions have fallen, we have somehow continued to experience this privilege of having white skin. Racism is important today in that our nation continues to present people of color with various disadvantages, even though they don't necessarily appear how they did 250 years ago. In addressing the topic of racism in America, this research will revolve around answering this question: How has the face of racism in America changed from the late 19<sup>th</sup> century to our current society? In order to address this question, history and geography will be essential disciplines in finding results. History will allow the research to draw upon the past, examining efforts put into place to oppress minorities that have real, consequential results in our society today, along with following the evolution of our racism as a nation. Geography will allow the research to provide a spatial awareness and identity for how these people have been oppressed over time. Both are key disciplines in understanding that racism has slowly changed in our country from a mostly individually oppressive system to a system that presents an unconsciously entrenched face of racism over the past 250 years.

## Vern Multilingual Font System

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentors: Jason Tselentis, M.F.A.; Jesse Weser, M.A.; Valerie Jepson, Ph.D.; Kelsey Elder, M.F.A., Rhode Island School of Design; and Kurt Goblirsch, Ph.D., University of South Carolina

CVPA - Department of Design

(VCOM 486, 487 - Tselentis)

### Student: Nathan Zawadzki

Vern is designed in Latin, Cyrillic, and Hebrew for a total of roughly 160 characters or glyphs in this writing system. Based on the research of these systems, a reverse contrast style fits Cyrillic and Hebrew, while normal contrast has more difficulty in adjusting to them. This slab serif, reverse contrast style keeps the look of a traditional serif font in Latin. Vern's unified design across multiple languages works in media such as book text or large-scale signage.

## Impacts of Physical Activity on Sexual Health and Experiences

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Shelley Hamill, Ph.D.

CAS - Department of Physical Education, Sport, and Human Performance

(HLTH 506 - Hamill)

### Student: Holly Ellis

Health and exercise are popular topics in today's media. One aspect not always considered when working to improve overall health is sexual health. Engaging in sexual activity can improve the quality of life and is a core component of developing an intimate relationship. This literature review shows how being physically active impacts sexual health. Exercising and participating in sexual experiences have both been shown to help regulate the cardiovascular system and improve overall mood while decreasing the chance for certain illnesses. Studies analyzed the impact of body weight and body image, the influence of activity levels on body functions, and what influence, if any, exercise has on men's health. Another component of this review focused on the repercussions physical activity has on sexual function. Studies revealed that a positive body image is linked to more enjoyable encounters, particularly in women. Various studies also reinforced the idea that frequent positive sexual encounters can improve internal bodily functions. While one study noted that individuals with higher Body Mass Index (BMI) have more sexual encounters, those encounters were found to be less enjoyable. Women were found to be less sexually satisfied due to poor body image perceptions, while men were determined to lack cardiovascular and respiratory endurance. Sexual activity is present in many peoples' lives. Knowing how being physically active can improve one's sexual health is important.

## Dance as a Tool for Proprioceptive Training for Children on the Autism Spectrum

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Julianna Hane, M.F.A.

CVPA - Department of Theatre and Dance

(DANT 372H - Hane)

### Student: Samantha Mathews

There are many questions on the topic of balance and proprioception in dance, specifically on the subject of children with sensory challenges. Children on the autism spectrum often have difficulty with their balance and proprioception. Could dance help give children the tools to develop these senses? This research paper discusses these questions and focuses on the possible benefits of dance for children who may have sensory issues. How does our sense of balance work, and does every individual's work the same? What is proprioception? Emotional and social dance therapy is common among children on the autism spectrum, but would children benefit if there were more emphasis placed on the physical aspect of dance therapy? Research of dance and its kinesthetic impact on proprioception is used to answer these questions and give an explanation of the physical benefits dance may have for children on the autism spectrum.



## Understanding Insurgencies and Democracy in Hong Kong

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Ginger Williams, Ph.D.

CAS - Department of Interdisciplinary Studies

(IDVS 490 - Williams)

### Student: Ann Carroll

Since the turnover from British colonialism in Hong Kong to Chinese colonialism in 1997, Hong Kongers continue to lack personal influence over what rules govern their region. Deemed a special administrative region, Hong Kong's government operates directly under China through the "One Country, Two Systems" rule. Thus, under Beijing's ruling, Hong Kong and China are the same country, but China operates as a communist country and Hong Kong operates as a hybrid regime. Under British colonialism, citizens of Hong Kong began protesting for more political and economic freedom through political insurgencies that flourished under Chinese rule. Despite these protests, Beijing's firm grasp on Hong Kong's governmental system remains inflexible to change. This article empirically shows the historical precedents that led to the Umbrella Movement by analyzing the work of historians, political scientists, and journalists. This combination of disciplines yields the best results to address why democracy has not been implemented in Hong Kong and why hope for a democratic Hong Kong remains dismal. The research question is: Why have political insurgencies not brought democracy to Hong Kong? Through an examination of the majority student-led protests, Beijing's dismissal of democracy, the use of media, insurgencies in Taiwan and the Special Administrative Region of Macau, and the future of Hong Kong; democracy will remain a foreign concept. As a result of Hong Kong's long history of colonialism under Britain and China, citizens of Hong Kong continue to fight more for an independent political and economic system instead of a democratic society.

## Return-to-Play after Ulnar Collateral Ligament Injuries in Baseball Players

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Aaron Aslakson, M.A.

COE - Department of Physical Education, Sport, and Human Performance

(PESH 381 - Aslakson)

### Student: Heidi Edwards

The purpose of this review of literature is to examine the return-to-play outcomes after ulnar collateral ligament injuries among different levels and positions of baseball players. Differing treatment plans are examined throughout this review to determine which have the greatest return-to-play ratios. Some of the treatment plans include reconstruction, repair, revision, and non-surgical intervention. Ulnar collateral ligament (UCL) injuries are among the most common injuries for baseball players in all positions, especially pitchers. It is important for healthcare providers as well as athletes to know the best treatment plans for their goals.

## Microplastics in the Bahamas: Tiny Plastics, Big Problem

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Diana Boyer, Ph.D.

CAS - Department of Chemistry, Physics, and Geology

(GEOL 551 - Boyer)

### Students: Lauren Forsythe and Norah Mendoza

A big problem the world's oceans are currently facing is plastics being integrated into marine ecosystems. The majority of the plastics found in the world's oceans are identified as microplastics (<5 mm). Microplastics were the main focus for this study conducted in San Salvador, Bahamas, a remote and subtropical island with numerous beaches. This study aimed to provide evidence for the presence of microplastics and to quantify and classify microplastics found on Bahamian beaches with respect to grain size. Samples were taken from the following seven beaches: Rocky Point, Sue Point, Monument Beach, Grotto Beach, Sandy Point, French Bay, and East Beach. From each beach, approximately 150 g of surface sand was collected from the high tide line. A NightSea Royal blue light was used to identify and examine microplastics, as most were <100 micrometers in size. This study focused on refining methods to decrease contamination. The initial results identified microplastics found in all sand samples at every beach. This research lays the foundation for future studies to examine patterns between economic activities and urbanization and the size, abundance, and classification of plastic particles and fibers in the sand. The results of this study revealed that microplastics were ubiquitous, and those of sub-millimeter size were surprisingly abundant.

## The American Opioid Epidemic

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Ginger Williams, Ph.D.

CAS - Department of Interdisciplinary Studies

(IDVS 490 - Williams)

### Student: William Tomlin

America's opioid epidemic is a complex, multifaceted issue that needs to be solved using an interdisciplinary approach. The American opioid epidemic is important because of the recent rise of deaths caused by opioids in America. The CDC states that opioids in America kill roughly 130 people every day. What are the best ways to combat the American opioid epidemic? In order to solve the opioid epidemic in America, we need to implement alternative pain management, stop overprescribing, curtail the illegal opioid market and better educate the public about the dangers of opioid use. The American opioid epidemic can be best combated by using the disciplines of education and psychology. Psychology and education are the two most qualified disciplines to solve the opioid epidemic in America because of their insights into addiction and opioid abuse. The discipline of education is most appropriate for combating the opioid epidemic because we need the public to know the dangers and risks involved when taking opioids. The discipline of psychology is most appropriate because of the insights it gives to addiction and how Americans view pain.

## Stress in College Students and How Athletics Play a Role

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Janet Wojcik, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(EXSC 511 - Wojcik)*

### Student: Taylor Brown

Stress affects individuals often, and it may become a part of their everyday lives. Too much stress can be detrimental to the body, causing an individual's immune system to weaken, possibly triggering depression, anxiety, and high blood pressure. College students undergo daily stressors in both their school work and their social lives. Adults go through different kinds of stress, such as paying bills. The purpose of this review is to evaluate mind and body stress by determining the differences in coping behaviors between college student-athletes and non-athletes, in addition to their cortisol levels and symptoms of psychopathology. The studies used in this review of literature examine multiple ways to cope with stress across different genders within the college setting. The methods in these studies used a collection of saliva samples, multiple questionnaires to assess stress levels and coping behaviors, in addition to 90-minute sessions on cognitive behavioral skills and relaxation responses. Overall, the results showed an increase in cortisol levels 30 minutes after waking up. For coping methods, many individuals use listening to music, exercising, and even meditation to relieve some of this stress. Finding what calms individuals will help decrease stress, and for many athletes, that is exercising, while non-student athletes would rather listen to music. For further research, considering different types of environments such as warmer versus colder states and higher versus lower economic status would help determine different stressors.

## Shoulder Injuries in Volleyball Players

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: David Scharj, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(PESH 381 - Scharj)*

### Student: Emily Wunder

Shoulder injuries are very prevalent in volleyball players, especially in attackers and servers. Shoulder injuries can cause players to have to sit out of play for an average of four to six weeks during a season. Research has shown that most chronic shoulder discomfort and injury is caused by overuse of the shoulder through repetitive arm swings and muscular imbalances. Common chronic shoulder issues include impingement, tears, displacement, and tendinitis. It is crucial for these overhead athletes to maintain strength, stability, and proper range of motion in order to perform at their best and prevent these shoulder injuries from occurring. If shoulder injury does occur, however, there are steps to regain these essential shoulder components through the four main phases of rehabilitation: acute, intermediate, advanced strengthening, and return to play. The purpose of this presentation is to demonstrate why shoulder injuries are so common in volleyball players, to better understand the mechanics of the shoulder in order to prevent these injuries from occurring, and to discuss treatment methods if these injuries do happen.

## Assistance Animals: The Legitimate and Fraudulent Working Animals of America

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Ginger Williams, Ph.D.*

*CAS - Department of Interdisciplinary Studies*

*(IDVS 490 - Williams)*

### Student: Mariah Houser

Assistance animal fraud has become a major issue in the United States within the last decade. People passing off their untrained pets as service dogs, who then go on to attack real service dogs, and illegitimate emotional support animals wreaking havoc on airplanes are all too common in modern society. Legitimate assistance animal teams, whether service or emotional support, should not be punished for the crimes of the fraudulent, however. Creating inaccessibility for the disabled is not the solution to the problem at hand. So, how can we best solve the problem of people misrepresenting their pets and abusing the system for assistance animals *without* harming the disabled people who rely on their legitimate assistance animals? Finding the best way to resolve the issue of people abusing the system for assistance animals is incredibly complex and will require connecting multiple disciplines in order to uncover the solution that will be the most effective and accessible. Political science is important to consider for the policy-making aspect, to consider how laws should be reimagined, erased, or created. Mass communication is crucial to spread information, so that the average citizen can be better informed on what assistance animals are, their differences, and the actual applicable laws (not the fictional ones people like to spread around). Existing state and federal laws need clarification and centralization, and emotional support animals need new regulations and requirements. The general public can be better educated on the topic using television shows and streaming services that are well versed in the different types of assistance animals; hosting fun, educational events at schools; and providing mandatory ADA training for employees.

## Knee Pain and Injury in Volleyball Athletes

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: David Scharj, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(PESH 381 - Scharj)*

### Student: Tori Dube

Today, athletic programs in schools are becoming increasingly popular. Volleyball is one of these popular athletic programs, along with basketball, soccer, and football. Because of the increased popularity of these sports, there have been increased rates and occurrences of injuries. Among the most common injuries recorded are knee injuries, including ACL tears and overuse injuries like patellar tendinitis. Overuse injuries can be quite painful and are linked to increased risk of osteoarthritis. Athletes tend to set aside this pain to avoid missing playing time. However, it is crucial for overall health to implement intervention strategies and programs to treat these types of injuries to induce healing and enhance performance. This presentation will discuss and compare the different types of knee injuries that occur often in volleyball. This presentation will also provide prevention and intervention strategies to treat these injuries.

## The Comparison of Ballistic Stretching versus Other Stretching Methods: A Review of Literature

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Joni Boyd, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(EXSC 465 - Boyd)*

**Students: Jordan Fields, Lillian Peay, Victoria Taylor, Shajeh Horton, and Ashley Parsons**

The purpose of this review of literature was to determine the effects of ballistic stretching on performance in comparison to other methods of stretching, such as static, dynamic, and proprioceptive neuromuscular facilitation (PNF). Ballistic stretching is a way to rapidly stretch muscle fibers and improve muscle activation in athletes who perform more high-velocity movements. The results from the research establish changes in performance due to the use of ballistic stretching. Overall, there were positive effects in utilizing ballistic stretches in the subjects. One article identified static stretching as superior to ballistic stretching for hamstring lengthening. The research also noted that subjects saw an increase in performance and range of motion. This is critical for coaches, trainers, and athletes to understand the importance of the different types of stretching and the effects it has on their physique. Ballistic stretching is often undervalued and misunderstood by the general population. It is also the least researched type of stretching in athletics. This type of research information could potentially inform the public of the important role that ballistic training plays on performance, range of motion, and muscle fatigue.

## Nutrition and the Labor Market

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Louis Pantuosco, Ph.D.*

*CBA - Department of Accounting, Finance, and Economics*

*(ECON 345 - Pantuosco)*

**Student: Jesse Defalco**

Do different income levels affect the foods people consume? It is commonly known that healthier foods are more expensive than unhealthy foods. Those with lower incomes tend to gravitate toward fast food and junk food, with those with higher incomes tend to gravitate toward fruits, vegetables, and healthier options, including having personal chefs and ordering proportioned meals delivered to their homes. Lower income people consuming unhealthy foods potentially leads to health issues such as malnutrition, high blood pressure, obesity, and diabetes. Not everyone is aware of the health side effects of their diets. It is shown that people who are less educated (and more likely to have lower paying jobs) do not know the effects of their diets as well as those who are highly educated. However, some people are still aware of the health effects of their diet but their occupation, such as being a truck driver, for example, requires them to eat on the road more (fast food). There are many statistics that need to be looked at to confirm these statements, including the incomes and jobs of people who consume fast food versus those who eat at healthy establishments. Another factor is the locations of various establishments, and the average income of the area. In conclusion, this research will explore how wealthier people have healthier options than people with lower incomes.

## Environmental Burdens within the Fashion Industry

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Ginger Williams, Ph.D.*

*CAS - Department of Interdisciplinary Studies*

*(IDVS 490 - Williams)*

**Student: Ebony Anderson**

Most people do not know what fashion waste is, nor do they know the current effect that it has on the environment. The fashion industry is one of the leading pollutants in the world. Increased production of clothing made from synthetic fibers, declining longevity, and levels of waste and greenhouse gas emissions greater than the combined effects of flights and international shipping all contribute to fashion-industry pollution. Consumers are shopping 20 times more than before, and as a result of consumer decisions, the fashion industry is forced to discard clothing much faster than before. Chemical based clothing is being discarded into landfills in less fortunate countries, where the waste is being burned by the ton. Due to the burning of clothes, chemicals from textile dyeing and synthetic fibers are released into the atmosphere, shrinking the ozone layer. The purpose of an ozone layer is to be open so that heat can be released, and cool air can enter into the atmosphere. Not only is it affecting the environment, but it is affecting the human population because we are inhaling these toxic chemicals and they are making us sick. The issue must be dealt with immediately for the sake of the entire human population and our existence here on Earth. This has led to the question: What are the best ways to reduce fashion consumption, improve sustainability, and spread awareness on fashion pollution? Although raw materials are limited resources and more costly, they are prized possessions that add tremendous value to the fashion industry. Through consumer consciousness, environmental activism, and ethical business practices the industry could lower the rate of fashion consumption and improve sustainability.

## Historic and Geographic Patterns of Genocide

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Ginger Williams, Ph.D.

COE - Department of Interdisciplinary Studies

(IDVS 490 - Williams)

### Student: Cheyenne Altman

The topic of this interdisciplinary research is historical and geographical patterns of genocide since the 19<sup>th</sup> century. The research question for this topic is what are the historical and geographical patterns of genocide since the 19<sup>th</sup> century? The disciplines that are being used are history and geography. The reason for these two disciplines is because the historical perspective can unveil the causality of why genocides occur at the time that they do and historical context of genocides; and the geographical perspective shows the spatial relevance of two conflict groups and how other concepts of geography can help reveal why these two conflict groups have genocidal tendencies. The historical and geographical patterns of genocide can be shown and eradicated by correcting ethnical, racial, religious, and cultural tensions/differences, imperialistic and colonialist ideologies of genocide, territorial conflicts, the mindset of a group to perform genocidal actions, and ineffective international laws on genocide. Genocide is an important topic to research because since the 19<sup>th</sup> century there have been 46 genocides that have occurred, most of which were committed in the 20<sup>th</sup> century. The majority of modern history has been plagued with these atrocities that has led to the death of over 30 million people of various different cultures, racial and religious groups, and ethnicities. These death tolls from genocide are not based on the highest estimated death toll, but the lowest estimate of those who have died from genocidal actions. Genocide is a practice that needs to be studied so that it can be eradicated in the future.

## The Impacts of Financial Compensation of Student-Athletes in NCAA Division I Men's Basketball on the Labor Market

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Louis Pantuosco, Ph.D.

CBA - Department of Accounting, Finance, and Economics

(ECON 345 - Pantuosco)

### Student: Gabriel Boscardin Dias

The purpose of this study is to identify the impacts that financial compensation of men's basketball student-athletes in the NCAA Division I will have on the market of collegiate athletics. As the NCAA is facing issues involving governmental pressure to allow student-athletes to receive monetary compensation for the use of their names, images, and likenesses (NLI), the consequences will inevitably impact the entire sports industry. The main pressure the Association is facing now involves the compensation of men's basketball student-athletes, as they are part of the sport that brings the largest amount of revenue via sponsors and television contracts. This study is seeking to predict how the changes in the intercollegiate athletic model currently under consideration will affect student-athletes, the professional and amateur competitiveness of basketball, and the sports industry. The study will be based on data collected by trustworthy basketball entities, including the NCAA, NBA, and FIBA, as well as official statements announced by the Association.

## The Shortage of Teachers in America Today

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Louis Pantuosco, Ph.D.

CBA - Department of Accounting, Finance, and Economics

(ECON 345 - Pantuosco)

### Student: Avery Davis

There is a shortage of skilled labor in America today, but there is no sector where this problem is more acute than in education. The news has often covered strikes by teachers' unions across the country, where teachers have been asking for more pay from state governments. It is clear that teachers are underpaid compared to other college graduates; this makes the profession of teaching much less attractive. This is because of the nature of the labor market for teachers, causing them to be underpaid as a whole. Teachers' salaries are 21 percent below the median salary for other college graduates as of 2018. The main reason for the shortage of teachers is the uncompetitive salary of teachers when compared to other occupations for college graduates, leading to a shortage of people who want to become teachers. Many school districts in 2018 reported having job vacancies, and across America, school districts have had to cope with this shortage by hiring under-qualified individuals or increasing class sizes. This has led to a decrease in the quality of education in many places across America. The quality of education is extremely important to this country and could have adverse impacts on the nation as a whole and individuals in the future. The places where these problems are felt the most is in high poverty areas. The goal of this paper is to identify the effects of the shortage of quality educators in America. It will analyze education statistics across states and present possible solutions that can make teaching a more attractive career choice for college graduates.

## Social Work Students' Knowledge and Attitudes toward Autism

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Monique Constance-Huggins, Ph.D.

CAS - Department of Social Work

(SCWK 473 - Constance-Huggins)

### Students: Hannah Buckner and Jenna Kutz

The number of children with autism is on the rise, which means that, increasingly, social workers must be prepared to practice with this population. In fact, it is reported that 75% of social workers work with clients who have developmental disabilities, including autism. The attitudes they hold toward people with autism will invariably shape their approaches and practice. Accordingly, social work students need to build an awareness of the needs and struggles that people with autism face in society, so that they can be equipped to serve them at all levels of social work practice. Despite the significance, little is known about social workers' knowledge, perceptions, and attitudes toward this population. The current study seeks to address this gap by exploring the attitudes that Bachelor's of Social Work (BSW) and Master's of Social Work (MSW) students hold towards people with autism. These students, who are enrolled at a liberal arts university in the Spring 2020 semester, are being assessed using the Societal Attitudes towards Autism (SATA) Scale. Preliminary results show variation in attitudes based on demographic and educational factors. These results hold implications for social work practice, teaching, and research.

## The Efficacy and Convenience of Different Means for Improving Blood Pressure

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: David Scharj, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(PESH 381 - Scharj)*

### Student: Zain Anderson

As of 2016, hypertension affects 33.2% of adults over 20 years old. Many people know that lifestyle changes, such as increasing physical activity through exercise, can improve their blood pressure. Sadly, more than 80% of adults do not meet the recommended guidelines for weekly aerobic and resistance training activities. People who do not already exercise might struggle with adherence to new, regimented programs, or they might find gyms to be intimidating, unfamiliar places. There is a need to inform this population of how they can improve their blood pressure most effectively without compromising other aspects of their lives. There are many forms of physical activity that can meaningfully improve blood pressure, including the use of hand grippers, aquatic training, and other more traditional forms of aerobic and resistance exercise. There are also passive means of improving blood pressure that do not require the use of pharmaceutical intervention, which can negatively impact an individual's quality of life. This paper evaluates the efficacy and convenience of different means for improving blood pressure for a general population that does not regularly exercise, with the goal of providing approachable recommendations to get more people physically active while combatting hypertension.

## The Survival of the American Beef Farmer in Today's Market

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Louis Pantuosco, Ph.D.*

*CBA - Department of Accounting, Finance, and Economics*

*(ECON 345 - Pantuosco)*

### Student: Zackary Heustess

Once the world's agriculture leader, the United States has lost dominance over recent decades to international competitors, specifically Brazil. Since the number of American farms reached its peak at 6.8 million in 1935, this number has fallen drastically to 2.1 million by 2002. This paper will touch on one specific area of this field, beef cattle farming. Even with annual beef consumption continuing to increase in the United States, some developing trends might threaten farmers even further in the near future. These trends include the rapid scaling of corporate farming, the increased concern over the environmental impact from red meat, and health concerns. This paper will research how the American farmer can survive in today's quickly changing market, with a focus on beef cattle farming. To do this, analysis of the United States Department of Agriculture (USDA) data and scholarly articles will occur to evaluate the current status and future trends for consumption and the farming market. After thorough evaluation, recommendations for how farmers can make the necessary adjustments to survive moving forward will be presented.

## Artificial Intelligence and the Trucking Industry: How Many Jobs Are at Stake?

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Louis Pantuosco, Ph.D.*

*CBA - Department of Accounting, Finance, and Economics*

*(ECON 345 - Pantuosco)*

### Student: Tyrrell Keim

As of 2018, the trucking industry in America employed over 3 million drivers and brought in almost \$800 billion dollars. The industry's labor cost is a third of this amount, with the average driver making about \$22 an hour. How much of this cost could be minimized with the use of artificial intelligence in order to make the industry more profitable? Andrew Yang, an early candidate for the Democratic nomination for the U.S. Presidency, was the first political candidate in recent memory to speak of the potential pitfalls and job loss that automation could potentially bring to an industry, specifically for truckers. Could automation truly put a lot of workers in this industry out of a job? If so, when can we expect these changes to occur and at what rate? Furthermore, is it possible for these truckers to find employment in a new industry in order to keep their jobs and continue to provide for themselves and their families? This paper will discuss the potential overall impact that artificial intelligence could have on the trucking industry and its employees in the near to intermediate future.

## What Immigration Means For U.S. Employment and Wages

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Louis Pantuosco, Ph.D.*

*CBA - Department of Accounting, Finance, and Economics*

*(ECON 345 - Pantuosco)*

### Student: Lilibeth Lopez

Immigration has a significant impact on U.S. economic growth. Immigrants account for 14.4% (over 44 million) of the U.S. population. Their success has an important impact on the U.S. economy. This paper will focus on the impact of immigration on employment and wages. The Center for Immigration Studies shows that immigration has impacts on wages and employment. The negative effect of immigration on wages is primarily confined to native workers in low-skilled occupations. Immigration lowers wages for those at the bottom of the economic scale. Factors such as technological change and globalization have also played a role in the deterioration in wages for lower-skilled workers. Lower wages increase unemployment, which leads to fewer natives wanting to accept lower wages. Even with lower wages, the introduction of immigrants in the labor force increases consumption, spending, and investing, which leads to an increase in GDP and economic growth. This paper will address the benefits and costs of immigration on the U.S. labor market.

## Digital Access as a Socioculturally Minded Process: A Literature Review

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Chen Chen, Ph.D.

CAS - Department of English

(WRIT 501 - Chen)

### Student: Anslie Vickery

"Access" has many meanings in digital media and rhetoric studies, and many scholars approach it differently. This literature review seeks to highlight the need for greater awareness of a more cultural approach to access. It is crucial to understand the presence of the physical human body, even in digital spaces, as identity often defines how we approach and interact with media and digital discourses. In studies of access to digital information, we approach a crucial question: how present is the human body in online spaces? When we enter digital spaces, does the body fade? How does our sociocultural status affect our access to digital information? Free and "available" information that is not adapted to as many bodies as possible still fails to be accessible. Accessibility is also a continuous practice, requiring continued study and adjustment to provide access to as many people as possible. This poster reviews and synthesizes past and current approaches to media accessibility, focusing on scholarship in digital and cultural rhetorics such as Angela Haas' "Toward a Digital Cultural Rhetoric" and other scholarship from disability and accessibility studies, such as work by Melanie Yergeau. This project seeks to highlight the need for a more process-oriented view of access in digital media, ultimately concluding that the study and practice of media accessibility must become more socioculturally contextualized.

## The Efficacy Of Mindfulness Interventions in the Treatment of Chronic Diseases

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Janet Wojcik, Ph.D.

COE - Department of Physical Education, Sport, and Human Performance

(EXSC 511 - Wojcik)

### Student: Zak Butt

Healthcare costs in the United States have reached approximately \$3.5 trillion each year, with the majority of costs arising from the physical treatment of chronic disease patients, including surgeries, radiotherapy, physical therapy, and medication interventions. Chronic disease patients (e.g., cancer, HIV/AIDS, coronary heart disease patients) are afflicted with a significant amount of physical complications (e.g., pain, fatigue, nausea), which are the primary targets of medical treatment; however, these physical complications often coincide with cognitive and psychological complications including stress, anxiety, and anger, all of which remain heavily untreated among many patients. Mindfulness, a technique that can be traced back to the early rise of Hinduism, has been suggested as a process that can assuage both the physical and cognitive complications of chronic disease patients. The mindfulness techniques most commonly discussed in recent literature refer to "present moment practice," or methods in which an individual dedicates a non-judgmental awareness and cognizance to the present moment. The purpose of this literature review is to analyze the effectiveness of mindfulness techniques in chronic disease patients who suffer from a plethora of somatic and cognitive complications. Among prostate cancer, HIV/AIDS, and coronary heart disease patients, the practice of MBSR (Mindfulness Based Stress Reduction) has been found to assist in treating not only the psychological complications but also the physical complications that chronic disease patients face. The findings of this literature review suggest that nonmedical and non-pharmaceutical interventions such as mindfulness practice could play a significant role in the future treatment of many chronic conditions.

## Switching Suitcases: Holden's Novel for the Proletariat

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Leslie Bickford, Ph.D.

CAS - Department of English

(ENGL 300 - Bickford)

### Student: Beth Warnken

J.D. Salinger's *Catcher in the Rye* has a difficult structure to pin down. This paper argues that this is because Holden exists outside of society's superstructure, and although he has familial ties to the bourgeoisie, he longs to be a part of the proletariat. He makes this novel in an attempt to participate in Louis Althusser's concept of production theory, and to establish an alternate hegemony. Holden's rejection of prep schools, phoniness, and all the things that are representative of the bourgeoisie solidify his longing to become a member of the proletariat, and his symbolic swapping of suitcases highlights his desire to detach from his possessions. Although society's control is ultimately too strong for Holden to overcome in the end, it is an enlightening novel on the reality of the intense struggle between the dominant hegemony and those attempting to revolutionize an alternative one.

## Student-Athlete Stigmatization of Mental Illness

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: David Schary, Ph.D.

COE - Department of Physical Education, Sport, and Human Performance

(PESH 381 - Schary)

### Student: Sara McGuire

There is a strong stigma toward mental health and illness among collegiate student-athletes because of the expectation that they are mentally and physically tough. The stigma surrounding seeking help for a mental illness is only one of the barriers that deters student-athletes from taking control of their own mental health. The demands put on student-athletes, both on the field and off, put them at an increased risk to suffer from a mental illness, yet they shy away from seeking help. Athletes who are both physically and mentally healthy create a successful team on and off the field, thus emphasizing the importance of good mental health. This presentation will discuss the student-athlete stigmatization of mental illness, including perceptions of mental health and attitudes toward seeking professional help.

## Characterization of *Microbacterium liquefaciens* Bacteriophages Isolated from the Local Soil Environment on the Winthrop University Campus

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by a grant from the Howard Hughes Medical Institute for the SEA-PHAGES Program

Faculty Mentors: Kristi M. Westover, Ph.D., and Victoria J. Frost, Ph.D.

CAS – Department of Biology

**Students: Hunter Tristen Cannon, Ayden Maxwell Dybik, Nicole R. Garcia, Joel A. Haley, Caleb M. Meyerand, Dallas Nivens, Lauren E. Patterson, Alexis A. Ramirez, Jordan N. Rucker, and Laela A. Walker**

In the fourth year of Winthrop University's involvement in the HHMI SEA-PHAGES program, two new bacteriophages were discovered and annotated using the host *Microbacterium liquefaciens*. Bacteriophages Mercedes and Leafus were isolated from soil on the Winthrop University campus in Rock Hill, South Carolina. DNA from each phage was isolated, and restriction enzyme digests were performed. Phage structures were also described using TEM microscopy. Once isolated, the DNA was sent to the University of Pittsburgh for genomic sequencing. DNA Master software and other programs, including Glimmer, GeneMark, Phamerator, the NCBI Blast Local Alignment Search Tool, the HHPred Bioinformatics Toolkit, and Starterator, were used to annotate and identify the functions of genes by comparing the sequences to other phages. The Mercedes genome length was found to be 40,230 base pairs (bp) long in a circularly permuted organization containing an estimated 59 genes. The Leafus genome length was found to be 42,000 bp long, also in a circularly permuted pattern containing an estimated 64 genes. While Leafus is a member of the EA1 subcluster, Mercedes has not been placed into a subcluster yet. The completed annotation should be able to shed light on its phylogenetic relationship with other EA cluster phages. The two most closely related phage sequences based on nucleotide similarity and gene structure are Neferthena, and EA5 subcluster phage and Chepli, an EA6 cluster phage. SEA-PHAGES research allowing for exploration of mycobacteriophage genomes will help researchers to ultimately develop gene libraries for biomedically relevant bacteriophages.

## Characterization of *Microbacterium foliorum* Bacteriophages Isolated from the Local Soil Environment on the Winthrop University Campus

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by a grant from the Howard Hughes Medical Institute for the SEA-PHAGES Program.

Faculty Mentor: Kristi M. Westover, Ph.D., and Victoria J. Frost, Ph.D.

CAS – Department of Biology

**Students: Hunter Tristen Cannon, Ayden Dybik, Nicole R. Garcia, Joel A. Haley, Caleb M. Meyerand, Dallas Nivens, Lauren E. Patterson, Alexis A. Ramirez, Jordan N. Rucker, and Laela A. Walker**

This is the fourth year that Winthrop University has offered a two-semester undergraduate research course as part of the SEA-PHAGES (Science Education Alliance-Phage Hunters Advancing Genomics and Evolutionary Science) program sponsored by the HHMI Science Education Alliance. Throughout the course of two semesters, soil bacteriophages were extracted and characterized. DNA from each phage was isolated and restriction enzyme digests were performed. Phage structures were also described using TEM microscopy. High-titer lysates for DicSamson, Kelcole, FebrisSpissus, Canminer, GRamsey, Jante, Bethany, Mosston, and Rucker were archived, and one DNA sample was sequenced at the University of Pittsburgh. The genome of the bacteriophage Kelcole was annotated using DNA Master software and other programs, including Glimmer, GeneMark, Phamerator, the NCBI Blast Local Alignment Search Tool, the HHPred Bioinformatics Toolkit, and Starterator. Kelcole is a member of the EG subcluster, with 62,821 base pairs and 77.2% GC content. To date, we have identified several gene functions, including a ribbon-helix-helix DNA binding protein, a terminase protein, a portal protein, a capsid maturation protease and MuF-like fusion protein, a major capsid protein, a major tail protein, a phosphoesterase, a head-to-tail adaptor, a tail assembly chaperone, a tape measure protein, three minor tail proteins, three membrane proteins, a lysin A, two HNH endonucleases, and a RecA-like DNA recombinase. Collectively, this research-based program seeks to gain a deeper understanding of the functions and structures of a wide range of potentially biomedically valuable bacteriophage genomes, and to provide opportunities for incoming freshmen to do early-career research.

## Ethics in the Global Village

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: William Schulte, Ph.D.

CAS - Department of Mass Communication

(MCOM 412 - Schulte)

### Student: Ashley Holbert

Technological progress and far-reaching access to information have made media writer Marshall McLuhan's prophesy of a global village a reality, but these advancements have introduced tremendous ethical complications to the field of international reporting. Mass media practitioners with the greatest reach are given the responsibility of interpreting natural disasters, human rights atrocities, soccer games and scenes of war on a global stage, as the world gathers around their televisions or smartphones to watch. Disparities in media coverage and a lack of native context leave a fractional picture of life beyond the reach of the Western world, and reporters in offices scattered across London and New York serve as the gatekeepers to information about countries they have never visited. The methods used to examine this issue in the following research included a comprehensive literature review focused on global media ethics and a textual analysis of three years of international news coverage regarding the country of South Sudan as reported by the *New York Times*. The research uncovered that sources local to South Sudan were used only a third of the time, and Western experts and reports dominated exponentially more space in the majority of articles. Additionally, reporters writing from South Sudan were far more likely to include local sources in their narratives than reporters located in Western cities across the globe. The purpose of this report is to emphasize the need for cosmopolitan journalism and greater local representation in the global news cycle.

## Unusual

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Kelly Ozust, M.F.A.

CVPA - Department of Theatre and Dance

(DANT 301 - Ozust)

### Student: Megan E. Smith

For my piece, I looked at how normal people move on a daily basis, incorporating those weird and quirky movements that people don't realize they do into a creative movement piece. The challenge for my dancers was to tune into doing movement that normal people might do, but also the dancing movement, and to somehow keep the balance of it.

## The Middle Class Problem

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Louis Pantuosco, Ph.D.

CBA - Department of Accounting, Finance, and Economics

(ECON 345 - Pantuosco)

### Student: Ahmad Jones

This paper addresses the issue of why the middle class is shrinking in the U.S. After defining the "middle class," statistics will be provided on this shrinking section of American families. The following section will review factors such as the occupations of people who are considered middle class, and their levels of income. This section will shed light on factors such as the types of jobs people work and the impact those jobs have had on the shrinkage of the middle class. Literature and data will be used to show the effects of job choice and how it relates to increasing income disparity. Another question that will be addressed is why income growth among the middle class is stagnant. This paper will also explore how location affects disparity and the impact on the next generation. With a problem this complex, there are multiple solutions and potential long-term effects we can explore. A simple solution such as raising wages seems easy enough to propose, but that leads to other issues, such as remaining competitive. Also, raising wages would just lead to inflation, and people wouldn't gain any actual wealth. Another example could be taxing the rich more heavily so that wealth can be redistributed to lower income families; this may sound good on paper, but in reality, it would cause some negative externalities. In this paper, these possible solutions will be analyzed from an economics cost-and-benefit perspective.

## Rehabilitation of Anterior Cruciate Ligament injuries

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: David Schary, Ph.D.

COE - Department of Physical Education, Sport, and Human Performance

(PESH 381 - Schary)

### Student: Taylor Robinson

The anterior cruciate ligament (ACL) is a major tissue that is found in your knee joint that connects your femur to your tibia. ACL injuries occur when too much stress is placed on the knee. Different motions can cause your ACL to tear (e.g., landing awkwardly from a jump, a collision directly to your knee, changing directions quickly). While thousands of people tear their ACLs every year, the injury is especially common in athletes. When an individual tears his or her ACL, he or she must undergo surgery and then attend rehabilitation. Rehabilitation is vital in gaining back the stability and mobility of the knee. Many people recover from ACL injuries differently. There are many exercises that can be helpful in the rehabilitation process (e.g., lunges, squats, running, walking, box jumps). This presentation will discuss the rehabilitation process of ACL injuries. It will also explain the most effective way to gain back your mobility and stability, as well as strategies to prevent this injury.



## Islamophobia and the Muslim Other

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Ginger Williams, Ph.D.

CAS - Department of Interdisciplinary Studies

(IDVS 490 - Williams)

### Student: Alexandria von Eberstein

I chose to discuss attitudes toward Muslims in the United States since September 11, 2001. There are currently 3.45 million Muslims living in the United States, of which about 75% were born Muslim, and they typically face discrimination every day. The discrimination ranges, but it exists on the most extreme and the mildest levels. The FBI reported in 2017 that, of those 3.45 million Muslims in the United States, nearly 20% suffered from a religious hate crime. That is 690,000 Muslims suffering a hate crime that only occurred due to their religion and was bad enough to report to the police. To understand this phenomenon, I researched with a specific question in mind: How have attitudes toward Muslims changed in the United States since September 11, 2001, and what can we do to end discrimination against them? To do this, I used sources from historians, geographers, and sociologists. Historians helped me understand how public policies and historic relations between the U.S. and the Middle East have affected Americans' perceptions of Muslims. Geographers helped me see where the discrimination occurs the most, and why. Sociologists helped me recognize how factors like education and mass communications affect Americans' perceptions of Muslims. Attitudes toward Muslims have negatively changed in the United States since September 11, 2001, with increased discrimination against the Muslim population, and we can end this discrimination through more well-rounded education and protective public policy, achieved through a nation-wide social movement.

## The Western Impact on Human Trafficking

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Ginger Williams, Ph.D.

CAS - Department of Interdisciplinary Studies

(IDVS 490 - Williams)

### Student: Madison Ervin

This research paper will address the global issue of human trafficking and the factors that have contributed to its continuation across time and space. Human trafficking is an important global issue, because, despite its illegality in every nation, it is estimated that about 40.3 million people are victims of modern-day slavery around the world. The Federal Bureau of Investigation has also stated that human trafficking is the third largest criminal activity globally. This infringement upon human rights has severely and negatively impacted millions of vulnerable people who suffer from various forms of inequality. This paper will focus on the question: How have Westernized perceptions toward inequality spurred the continuation of human trafficking across the globe? The disciplines that will be utilized to frame this issue are history and geography. Historians analyze events from the past and attempt to demonstrate the ways in which the past can be relevant and useful in today's world. Geographers, however, focus on global patterns and the implications that those patterns have on both humans and their environment. These disciplines allow insight into the issue of human trafficking by analyzing how it has continued across time and space. More specifically, these disciplines help scholars to understand how Western perceptions of inequality and victimhood have impacted policy and rescue efforts across the globe. The thesis of this paper states: Human trafficking is a global phenomenon that has persisted across space and time due to Westernized perceptions toward inequality that have influenced policies and response efforts.

## Shoulder and Elbow Injury Prevention in Baseball Pitchers

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: David Schary, Ph.D.

COE - Department of Physical Education, Sport, and Human Performance

(PESH 381 - Schary)

### Student: Taylor Charlton

Shoulder and elbow injuries are extremely common in baseball pitchers due to overuse and extreme stress. To assess the risk factors for these injuries, adolescents were chosen to complete testing on strength and range of motion. Many pitchers do not pay attention to the risk of injury while playing, but the longer they pitch without prevention programs, the higher their risks for future injury. The literature finds that posterior shoulder weakness and rotator cuff weakness are the leading causes of injury in adolescent pitchers. Athletic trainers, coaches, and/or parents have the ability to take athletes through prevention programs with the goal of strengthening weak aspects of the shoulder and elbow. This presentation will discuss how weaknesses in the shoulder and elbow increase injury risk, and how prevention programs can lower the risk of injury.

## Caffeine Consumption among Adolescents

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: David Schary, Ph.D.

COE - Department of Physical Education, Sport, and Human Performance

(PESH 381 - Schary)

### Student: Meredith Howey

Caffeine is a commonly consumed compound that can provide an individual with energy, attentiveness, and focus, among lots of other factors. However, many people tend to ignore the negative effects of caffeine due to the positive, but temporary results it brings. Adolescents should be consuming around 100 mg of caffeine. However, it is very common that adolescents are seen consuming well over that amount. Caffeine consumption has taken a major toll among this age group with too much overuse. This can be a dangerous, misused drug that adolescents need to have proper education about. This presentation will describe the adverse symptoms of caffeine consumption and explore why adolescents are among the top consumers of caffeine.

## Determining the Effects of Corporate Social Responsibility Programs and Wages on Turnover Rates for Fortune 500 Companies

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Louis Pantuosco, Ph.D.*

*CBA - Department of Accounting, Finance, and Economics*

*(ECON 345 - Pantuosco)*

### Student: Jacob Wacaster

Over the last few decades, the turnover rates for employees of Fortune 500 companies have continued to rise. As this rate continues to get higher, companies begin to lose efficiency, as they have to devote more time to training new employees and less time toward production. My research project involves looking at the effects of Corporate Social Responsibility programs and wages on turnover rates for Fortune 500 companies, in order to assess whether investing in CSR programs or raising wages will better help address the turnover issue. To determine the effect of CSR investing, I will compare the median tenure of employees in Fortune 500 companies versus their CSR score to determine a correlation coefficient between tenure and CSR score. I will then use the same process to determine the effects of wages on job satisfaction, swapping CSR scores for median pay within the same companies. Once I am able to isolate the effects of CSR scores and wages on median employee tenure, I will be able to perform a cost-benefit analysis to determine whether it would be more efficient for these companies to invest in CSR programs or raise median pay to increase median tenure and reduce employee turnover. From this analysis, conclusions will be drawn about how a Fortune 500 company should invest capital should it wish to reduce turnover in an effort to increase productivity and efficiency.

## Underwater Treadmill Training on Different Populations

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Joni M. Boyd, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

### Student: Ashley Erwin

There are many populations of people who need rehabilitation but sometimes normal treadmill and overground rehabilitation can bring more pain than help. This is because of the gravity and weight that is being put on the body and this causes patients to stop going to therapy because they are in pain and the cycle of deterioration begins. This is when it would be beneficial to try underwater treadmill training, which is using water's buoyancy to take pressure away from the body. The goal of these studies was to find which population would be affected by completing underwater treadmill training over certain periods of time. Each study used the Hydrotrak treadmill or one of the top leading underwater treadmills competitors. The hypotheses that were shown in the articles all showed the want to improve gait, balance, and overall personal mental health. Many different populations were being tested, such as, athletes, stroke patients, spinal cord injuries, cardiovascular patients, obese patients, and healthy patients. They almost all reacted positively to the training, and this shows that underwater training is used for more than what is known for with stroke patients. We have seen that even when the water is up to the navel it relieves the pressure of gravity up to fifty percent, and when it is up to the xiphoid process it relieves more than sixty percent. This presentation will discuss the different populations this training could be used for, as well as different activities that can be done in the water for rehabilitation.

## The Bridge

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Bryan McFadden, M.S.*

*CAS - Department of Interdisciplinary Studies*

*(ENVS 495 - McFadden)*

### Student: T.J. Peeler

Rock Hill is expanding. Long term projections for growth in and around the City of Charlotte mean that people will continue to move to the City of Rock Hill. Recently, the Carolina Panthers announced the purchase of 200 acres for development of a practice facility, restaurants, hotels, office space, and residential expansion. Rock Hill has hosted national competitions in numerous sports, and has recently hosted a world competition in biking. Infrastructure must be improved to help support a growing population and increased visitation. This project focuses on the location of a new bridge crossing over the Catawba River between the Highway 21 Bypass bridge and the Highway 5 bridge, which would help connect the Indian Land, Weddington, Waxhaw, and Monroe areas to Rock Hill. This bridge would promote visitation to the soon-to-be 1,900-acre Destiny Park that will be constructed at the end of Nealy Store Road. It also has the potential to increase Rock Hill's economic interest, by allowing easier access to Destiny Park, the Panthers' practice facility, and Rock Hill shopping areas. Using geographic information systems and public data, I will investigate a potential bridge site to identify sensitive habitats, parcel ownership, and accessibility.

## Methods for Mapping Algal Blooms: Do They Produce Similar Results?

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Bryan McFadden, M.S.*

*CAS - Department of Interdisciplinary Studies*

*(ENVS 495 - McFadden)*

### Student: Paige Denney

Algal blooms occur when there is an overabundance of algae in a freshwater or saltwater body. Algal blooms often have negative effects on human health, the environment, and the economy. They increase during summer months due to heightened water temperatures. With the climate warming gradually, the occurrence of algal blooms will likely increase. Mapping algal blooms using geospatial data and analysis methods is incredibly important to understanding where algal blooms happen and how they have increased over time. In my research project, I use geospatial data to map an algal bloom in Lake St. Clair, Michigan. My data originate from the satellite Landsat 8 and were collected on July 14, 2019. I use the Blue Normalized Difference Vegetation Index (BNDVI) and the Surface Algal Bloom Index (SABI) for my analysis of the data. I combine each of these, as well as the original data, with a supervised classification. The purpose is to determine whether similar results can be derived from each of these methods.

## Managing Mental Health in Schools

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Ginger Williams, Ph.D.

COE - Department of Interdisciplinary Studies

(IDVS 490 - Williams)

### Student: Isaiah Drayton

Mental health includes our emotional, psychological, and social well-being. It affects how we think, feel, and act. It also helps determine how we handle stress, relate to others, and make choices. Mental health is important at every stage of life, from childhood and adolescence through adulthood. Mental illness is closely associated with poverty, wars, and other humanitarian disasters, and in some cases, leads to suicide, one of the most common causes of preventable death among adolescents and young adults. Mental illness is the pandemic of the 21<sup>st</sup> century and will be the next major global health challenge. Adolescents' mental health issues are on the rise due to community poverty, limited affordability and access to mental health services, and lack of family education or awareness of mental health concerns. These issues are well known hindrances in many adolescents' lives. The goal is figure out how school districts can manage and improve the mental health services provided in their schools and communities. I will be using the disciplines of psychology and education to provide contextual information to examine what services and methods can be implemented to help manage and reduce mental health issues for children in high-poverty and urban schools. I will argue that, with the right framework, implementation of health services, and validity of results, schools will be efficient and successful as they continue managing and reducing the number of adolescents who are in need of services.

## Improving BMD in Elderly Women with Osteoporosis

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: David Schary, Ph.D.

COE - Department of Physical Education, Sport, and Human Performance

(PESH 381 - Schary)

### Student: Hadasah Hoffmann

Osteoporosis is a major public healthcare problem affecting the elderly population, especially women. Osteoporosis means porous bone, and it is a disease in which density and quality of bone are greatly reduced. The bone disease is preventable, and can be managed if diagnosed. Although osteoporosis is not a new disease, many women believe they are not susceptible to developing the bone disease, but researched preventative steps should be considered by young women. Based on research, the best method to prevent and treat osteoporosis in elderly women is weight-bearing exercise activities providing high impact at high loading rates to the bone. This presentation will discuss what types of weight-bearing exercises should be done by elderly women with osteoporosis to increase their bone mineral density and reduce bone loss.

## Wild Apparel: A Sustainable Clothing Line

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentors: Jason Tselentis, M.F.A.; Elizabeth Dulemba, M.F.A.; Jamey Boiter, B.F.A., Bolt Group; and Jake Nickell

CVPA - Department of Design

(VCOM 486, 487 - Tselentis)

### Student: Jogvan Jacobsen

The fashion industry has increasingly contributed to environmental waste through production and distribution of crops, fibers, and garments that are dumped every day, polluting our water, soil, and air. My sustainable clothing line does the opposite, with clothes and packages built from recycled materials. With Wild Apparel, I will create casual streetwear clothes with a subconscious focus on being sustainable, contributing to bettering our earth, although not in a protesting or reprimanding way. The clothes are made from recycled plastic, driven by solar powered machines and fair wages to the employees. Wild Apparel will be working with organizations around the world that help cleaning plastic waste, by taking in some of the waste as a resource to our clothes. A percentage of the profit made from clothes created from a given organization will go right back to the organization, in an attempt to close the loop of the sustainability circle. In recent days, fast fashion - inexpensive and rapidly produced clothes - has taken over and is polluting the Earth more than ever. These clothes are made specifically for people to buy cheaply and replace within a year or two, only contributing to generating more waste. My brand stands out as a role model for slow fashion that highlights durability and style, while simultaneously battling fast fashion.

## Updating of USGS Data for Large Scale Land Use Analysis

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentors: Bryan McFadden, M.S., and Scott Werts, Ph.D.

CAS - Department of Interdisciplinary Studies

(ENVS 495 - McFadden)

### Student: Sara Rose Mulligan

Geospatial technologies are tools that can be used to map, measure, and monitor data about the surface of the earth. Data can be collected from satellite and aerial sensors, or locally from field observations. Combining these various pieces of information allows for the creation of a detailed, large-scale dataset that can be used to better understand local area patterns and issues. Highly detailed geographic datasets can be analyzed to track change over time and better understand the impacts of land-use change. This project will consist of integrating various geospatial datasets acquired from federal, state, and local entities. Specifically it will involve acquiring soil survey data from the U.S. Department of Agriculture for a local property and updating the information based on soil samples and profiles collected from the site. Combining field samples taken from a local South Carolina site and geospatial analysis techniques will help to update the database and allow for a more specific and detailed survey of the local soils and potential land-use impacts. The large-scale local study provides project-based analysis to be able to compare and map different aspects of soil samples such as type, drainage, and vegetation. Highly detailed information creates a more useful catalogue of soils, allowing for widespread use of the updated, more accurate data.

## Minimum Wage Effects on Seattle's Economy

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Louis Pantuosco, Ph.D.*

*CBA - Department of Accounting, Finance, and Economics*

*(ECON 345 - Pantuosco)*

### Student: Charles Seinsheimer

The Seattle minimum wage ordinance of 2014 set out to slowly increase Seattle's minimum wage to \$15 an hour by 2021. At \$15 an hour the wage would be higher than any other city in America. Depending on the size of the business and the benefits provided to the employee, the minimum wage increase will be phased in incrementally to soften a sizable increase in labor cost to the businesses. The signing of the ordinance has been a subject of some controversy in politics and in academic literature. Some workers in Seattle noted that a 7-year implementation period was too long; they wanted \$15 per hour immediately. While the vote in the city council passed unanimously, the ordinance was highly controversial across the country and locally. Beyond general controversy, academic papers published surrounding the ordinance have shown contradictory views of how Seattle's business climate was affected. This paper will try to find connections between research and data to better understand how a city like Seattle was able to handle a sizable minimum wage increase. Studying the impact of minimum wage increases on Seattle workers will allow researchers to estimate how increases will impact other cities.

## Student Loan Debt and the Impact on the Labor Market

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Louis Pantuosco, Ph.D.*

*CBA - Department of Accounting, Finance, and Economics*

*(ECON 345 - Pantuosco)*

### Student: Christopher Simpson

This paper examines the economic impact of student loan debt at the personal and national level. This issue is of high importance. There are several issues surrounding student loan debt that college students do not always consider. Collectively, the impact of these issues, particularly including the increased time that students take to get degrees, affects a large majority of college graduates. The U.S. student loan market stands at approximately \$1.5 trillion—the second largest consumer debt market in the country behind mortgage debt. The American higher education system relies on loan funding as the prevailing method by which American families pay for college. Student debt spills over on individuals and communities, as well. The impact of student debt provides different outcomes on the labor market, including wages, hours of employment, and working hours. Finally, this paper examines important differences in the performance of the labor market for people who receive student loans compared to those who do not.

## Death Bakes Pies: An Exploration of Creative Burnout and Procrastination

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentors: Jason Tselentis, M.F.A., and Elizabeth Dulemba, M.F.A.*

*CVPA - Department of Design*

*(VCOM 486, 487 - Tselentis)*

### Student: Alexis Simmons

*Death Bakes Pies* tells the story of a student from my point of view, a student who struggles with mental health and burnout. These tongue-in-cheek stories, shown as webcomics, feature myself and a supporting character named Death. The latter is an ironic analog for the emotional support systems and positive relationships necessary to stave off depression and apathy caused by burnout. As much as this thesis is about the end product, it's also about the process. A large inspiration for this project sprouted from my struggles working on, and procrastinating on, my personal thesis project. And so, a component of the project was finding successful methods of remaining productive and rekindling the joy I originally felt in illustration. Accessibility and ease of understanding are important components, as well. My experiences are something anyone could go through and many people do go through. I want to present my work in an unpretentious, approachable manner. I want people to see parts of themselves in my experiences.

## Measuring Efficiency in The Soviet Union Labor Market

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Louis Pantuosco, Ph.D.*

*CBA - Department of Accounting, Finance, and Economics*

*(ECON 345 - Pantuosco)*

### Student: Angelica Urrego

Efficiency is loosely measured by accounting for the levels of productivity and costs involved for labor. This paper seeks to lay out the efficiency of the labor market during the height of the U.S.S.R.'s command system economy. Various literature on the subject argues that, contrary to common knowledge, the Soviet Union had an efficient economy. To effectively measure efficiency, this paper first examines the characteristics of the Soviet labor market from 1922 - 1991 and highlights important topics of productivity, employment, and supply and demand distinctions. A special focus is placed on the widespread shortages that gravely affected Russians throughout the years. The focus then shifts to an analysis of the lives of laborers, noting how their work days transpired and the level of discipline that the labor market conditioned them for. Finally, this paper compares the labor market trends of the U.S.S.R. with the trends of modern day Russia. Here, I examine the key changes in the labor market that have allowed for productivity to improve within the last three decades.

## Transitioning Theme in Chbosky's Adaptation of *The Perks of Being A Wallflower*

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Siobhan Brownson, Ph.D.

CAS - Department of English

(ENGL 370 - Brownson)

### Student: Haleigh Altman

In his 1999 coming of age novel *The Perks of Being A Wallflower*, Stephen Chbosky tells the exciting yet heartfelt story of Charlie's first year of high school following the sudden suicide of his best friend, Michael, and his own continued trauma from his aunt's molestation of him as a young boy, as well as her subsequent death. The 2012 film adaptation, directed by author Chbosky, neglects to give screen time and voice to Charlie's mental health struggles and trauma, even though he does open up the narrative to include more of his best friends' (Sam's and Patrick's) issues with belongingness and interpersonal conflict, ultimately creating a more PG-13 friendly version of Charlie's story. While both the novel and the film resonated with those partial to the young adult genre, the film adaptation allows Charlie and the audience alike to dissociate from his ever looming trauma in favor of explorations of identity and what it means to fight for themselves and for each other. While this trauma is something no child should have to bear, it is important for entertainment media to give visibility to familial trauma and how adolescents can face that trauma while entering adulthood.

## Through

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Kelly Ozust, M.F.A.

CVPA - Department of Theatre and Dance

(DANT 301 - Ozust)

### Student: Brenné Forst

This is a piece that explores the seven stages of grief: Shock and Denial; Pain and Guilt; Anger and Bargaining; Depression, Reflection, and Loneliness; Upward Turn; Reconstruction; Acceptance and Hope. It is performed by dancers each representing a stage of grief, as one goes through each stage, experiencing a plethora of emotions, both in solitude and in camaraderie.

## Student Loan Debt: The Pursuit for a Brighter Future

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Ginger Williams, Ph.D.

CAS - Department of Interdisciplinary Studies

(IDVS 490 - Williams)

### Student: Christopher Simpson

This research paper examines the issues surrounding the student loan debt crisis in America from an educational, economic, and political point of view. Also, the research helps gauge the impact of student loan debt at the national level. The issues of high importance surrounding student loan debt impact the lives of every American, whether they have a post-secondary education or not. Also, these issues continue to impact a large majority of college graduates further, even if they did not require student loans in order to finish college. The rising costs of tuition and fees are the most prevalent driving force behind the growing student loan debt crisis in America. Therefore, new students naturally assume more debt with each passing year. The repeating cycle of higher tuition and fees, along with more Americans than ever seeking higher education, perpetuates the issue of student loan debt further. Most all Americans seek to improve their economic influence or range through some manner of education, but the issues around student loan debt place college students in an immediate hardship upon graduation, if they graduate at all. This paper focuses on finding better solutions to the issues surrounding the American student debt crisis. Experts suggest some courses of action that students can use to improve their economic footprints surrounding student loan debt. The research seeks to provide concrete solutions to help the ever growing student loan debt crisis in America.

## Injuries to the Shoulder Complex in Professional Tennis Players

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: David Schary, Ph.D.

COE - Department of Physical Education, Sport, and Human Performance

(PESH 381 - Schary)

### Student: Connor Williamson

Tennis at a professional level is highly impactful on the body. Every tennis professional has encountered some type of injury across his or her career. Common injuries in professional tennis players can vary from muscle sprains, joint pain, torn tendons and ligaments, to career-ending surgeries. My research has concluded that the most common injuries occur in the lower extremities; however, the most common injuries in tennis players are injuries to the shoulder complex. This is because the most forceful strokes in tennis, such as the serve and ground strokes all come from the use of the shoulder. In this presentation, I will discuss the causes of injuries to the shoulder complex, what the most common shoulder injuries in tennis are, treatments, and prevention strategies.

## Implicit Bias: What We Can Do to Change the Narrative

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Ginger Williams, Ph.D.

CAS - Department of Interdisciplinary Studies

(IDVS 490 - Williams)

### Student: Naomi McQuiller

Implicit biases are unconscious prejudices that we have about other groups of people and their experiences. Bias affects how we see the world and how we interact with those around us. This research focuses on implicit bias in the Pre-K through age 8 classroom, or infant classrooms through third grade. This topic is vital to our development as a country that wants to move toward peace, healing, and the understanding of multiple perspectives. The question at hand is, knowing that bias exists, how can classrooms be modified to be more inclusive, and how can we train teachers to recognize their own personal biases. The purpose of the research is to provide methods that have been proven to help reduce implicit bias. It also will take experts and scholars from more than one discipline to come together and form a potential solution. Implicit bias is an issue that is seen across the board in multiple disciplines, including education and social work, which are the two disciplines used to construct this paper. Scholars from both fields of study have written research that supports this. Social workers and educators arguably have the most interaction with and influence on young children in our schools. After conducting extensive research, it can be said that by ridding ourselves of the "savior complex," using anti-bias curriculum and culturally responsive instruction and activities, and constantly reviewing our own personal biases through an accountability system, implicit bias can be reduced, and eventually eliminated in the classroom setting.

## Relationship Norms in China versus the U.S.

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Shelley Hamill, Ph.D.

COE - Department of Physical Education, Sport, and Human Performance

(HLTH 506 - Hamill)

### Student: Allee Campbell

The purpose of this research is to examine Chinese and American relationship norms. Research shows that while relationships in China used to be controlled by parents, the power is beginning to shift to the children, primarily through the introduction of online dating. These relationships are now more of an emotional involvement rather than a business deal. Young adults in America, on the other hand, have experienced sexual freedoms since the 1920s, beginning with the invention of the car. Additionally, the number one reason for marriage in America is love. Research also shows a difference in the age in which children in these countries start dating. Previously, youth in China started dating sometime after high school and rarely engaged in premarital intercourse. Recently, though, the number of hookups among college students in China has steadily increased; however, the experiences they have are fewer in number than those of American youth. In a particular study in North America, it was found that 60-80% of college students had experienced a hookup. In another study, it was found that 32% of seventh, ninth, and 11<sup>th</sup> graders reported having sexual intercourse. Premarital sex and casual sex are common and generally accepted practices in American culture. This research shows how different countries have different practices with regard to relationships.

## Millennial Influence on Labor in the Pet Industry

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Louis Pantuosco, Ph.D.

CBA - Department of Accounting, Finance, and Economics

(ECON 345 - Pantuosco)

### Student: Taylor Hendrix

The pet industry employs over a million people in the United States alone and has continued to grow and flourish every year, without taking a dip or standstill during a recession. This paper dives into the psychology and millennial influence in the pet industry. Janice Arenofsky from the Sage Business Researcher has stated that "the pet industry is considered virtually recession-resistant." It is rare that any industry doesn't take a hit during a recession. According to the American Pet Products Association, within the past ten years, the pet industry has nearly doubled in growth every year. The APPA also found that Americans tend to spend more on their pet care than milk, bread, or chicken. It's come to the conclusion that most millennial households, which usually have children later in life, choose pets and treat them as part of the family. When money is limited, families continue to fund pet-related expenses for their "fur babies."

## Student Attitudes toward Campus Mental Health Services

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Wendy Sellers, Ph.D.

CAS - Department of Social Work

(SCWK 473 - Sellers)

### Student: McCayla Partain

The attitudes that students hold toward the mental health services on campus impact service utilization and overall student well-being. This project, which is currently awaiting IRB approval so that it can move into data collection, seeks to discover campus-wide attitudes toward campus mental health services, as well as student knowledge of the services that are available to them. Since these attitudes and knowledge of what services are available and how to receive them impact service utilization, and other research shows that college is a vulnerable time for student mental health, it is important to see how these factors combine in order to improve services and their availability to students. The goal of this study is to see how students view the services that are being offered to them and to see if they know how to access those services, so that both the services themselves and the process of accessing them can be improved to provide for the best interest of students.

## Injury Prevention for Lower Extremities in Basketball: A Literature Review

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Faculty Mentor: Joni  
Boyd, Ph.D.

COE - Department  
of Physical Education,  
Sport, and Human  
Performance

(EXSC 465 - Boyd)

**Students: Javon Koiner, Whitney Carter, Emily Denardo,  
Zavier Mattison, and Dabreon Benson**

Basketball is a very demanding sport. This fast-paced sport requires ballistic movements, agility, maximal anaerobic power and endurance, and upper/lower body strength, leading to many opportunities for injuries. Research shows that more than 1.6 million injuries are caused from basketball. In addition, a study of NBA players shows that out of 12,594 reported injuries, 62.4% were lower extremities. The most common injuries reported were ankle sprains and ACL injuries. The studies in this literature review discuss injury prevention programs that focus on reducing common lower-extremity injuries. These studies focused on proprioceptive control, hip-joint function, and improving neuromuscular based on a sport-specific basketball training program to help with injury prevention for ankle sprains and ACL injuries. To improve proprioceptive control, the studies implemented exercises concentrated on unilateral training for the lower body. The hip-joint function was enhanced through improving hip strength, balance, and executing appropriate technique for jump-landing maneuvers. The neuromuscular training program included jump training, dynamic warm-ups, and flexibility exercises, in addition to speed, endurance, agility, acceleration, and strength drills. The studies showed reduction in those common injuries. In addition, they showed improvements in performance, stability, and movement control. These studies show that strength and conditioning coaches, athletic trainers, and physical therapists can implement these exercises in their training and rehab programs to reduce those common injuries and reduce the re-occurrences of those injuries.

## Emotional Maturity in Athletes

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Faculty Mentor: David  
Schary, Ph.D.

COE - Department  
of Physical Education,  
Sport, and Human  
Performance

(PESH 381 - Schary)

**Student: Ashlynn Harris**

Emotional maturity is the ability to handle and assess situations without escalating them. This is a key lesson that most athletes learn at an early age due to the higher demands placed upon them. The age that one matures plays a role in decision-making, behavior, regulation, and methods of emotional expression. Those four components are the key aspects of emotional maturity. Previous research conducted by Tamminen (2016) has shown that athletes feel that their emotional expression has an impact on others around them. This is important to study, as the emotional side of athletes is often overshadowed by their physical performance. This presentation will discuss the difference in emotional maturity in athletes versus non-athletes.

## The Man Who Cried Whale

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Faculty Mentor: Kelly  
Richardson, Ph.D.

CAS - Department of  
English

(ENGL 310 - Richardson)

**Student: Bailey Babb**

Captain Ahab from Herman Melville's novel *Moby Dick* is an enigmatic character. Perhaps even more enigmatic are the "forces" surrounding his obsession with the Whale. Is Ahab a pawn of fate? Is he a victim to God's wrath? Is the Whale the embodiment of evil, a supernatural force that curses Ahab? Or is it Ahab's "monomania," his madness, that drives him to pursue Moby Dick? If any of these are true, Ahab is not completely at fault for the deaths of the crewmen of the *Pequod* and instead is a victim to forces beyond his control. This essay seeks to prove that Ahab is in control of Ahab and that he is solely to blame for the tragic ending of his men, his ship, and himself. Each claim to innocence (fate, God, prophecy, curse, the Whale's supernatural ability, and madness) is called into question. Using the text as well as scholarly research, each of these is vindicated as being the puppeteer behind Ahab's drive to hunt and kill the Whale. Instead, Ahab is left exposed to the reality that it is his actions and his arrogance that lead to destruction, and that each of these "forces" are truly only shields, used to deflect the full extent of the blame.

## Digital Rhetoric in Library Websites: How Do We Change the One in Five Statistic?

Sixth Annual Showcase  
of Undergraduate  
Research and Creative  
Endeavors (SOURCE),  
Winthrop University,  
April 2020

Faculty Mentor: Kelly  
Richardson, Ph.D.

CAS - Department of  
English

(ENGL 494 - Richardson)

**Student: Lily Barfield**

In the United States alone, over 43 million adults struggle with literacy, which is a compellingly large number. One of the ways that we can combat this extremely high number is by providing resources to libraries and allowing them to step in where other services cannot. The importance of communities receiving opportunities to thrive in their success and learning abilities is monumental in the success of an equal society, and one way to ensure this happens is by providing adequate funding for libraries to have correct digital rhetoric skills displayed throughout their web pages. The analysis of library websites, paired with the treatment of these libraries, is the main focus of this project. This essay will analyze the ways that digital rhetoric is used successfully across different library websites, such as Charlotte Mecklenburg County, Anderson County, and Abbeville County. The devices used to accurately display information and make that information easily remembered by the public is the main focus of this project, and the culminating factor of success for the communities where the libraries are located. This essay will also look into the successes of these specific libraries, as well, taking note as to how the libraries are funded in direct relation to the success of the websites being analyzed. Ultimately, this essay will show that an increase in positive literacy ratings has a positive correlation with good digital rhetoric skills in their library pages, which can only be achieved through appropriate library funding.

## Optimization of RNA Isolation Methodology from Three-Dimensional Collagen Hydrogel Culture Systems

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by a grant from the South Carolina EPSCoR/IDeA Collaborative Research Program and by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Matthew Stern, Ph.D.

CAS - Department of Biology

### Students: Nathan C. Kidd and Chandler E. Burt

Three-dimensional culture systems allow for more complex cellular interactions and organization than traditional two-dimensional culture, which better replicates an *in vivo* environment. Interestingly, cells placed on top of collagen hydrogels organize into a donut-like shape called a toroid, while cells mixed into the hydrogels do not organize into higher order structures. The goal of our project is to evaluate the signal transduction pathways and cellular mechanisms that mediate toroid formation. The specific goal of the work described here was to optimize RNA isolation methodology from cells cultured on or in collagen hydrogels - a procedure that is known to be technically challenging - and to use real-time RT-PCR to compare the expression of select genes during toroid formation. We tested and compared several different RNA isolation protocols and found that a method based on the use of cetyltrimethylammonium bromide (CTAB) prior to alcohol precipitation, which is more typically used in isolation of RNA from plants, proved to be the most consistently effective in our hands. We went on to conduct a twelve-hour time-course experiment where RNA was isolated from adipose derived stem cells cultured under toroid-forming conditions every two hours. This enables us to compare gene-expression profiles of cells during toroid formation via methods like real-time RT-PCR and RNA sequencing in the future. Such comparisons will provide valuable insight into the mechanisms of toroid formation and self-organization by stem cells in developmental and regenerative contexts.

## Developing a Multicomponent, Three-Dimensional Culture Model of Esophageal Cancer

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Matthew Stern, Ph.D.

CAS - Department of Biology

### Student: Connor B. Hogan

Esophageal cancer is an uncommon form of cancer, making up just 1% of cancer diagnoses in the United States. While rare, a diagnosis of esophageal cancer carries a poor prognosis, with only 45% of patients surviving five years. One of the ways to improve cancer treatment is to improve the experimental models used to study cancer and to test different treatment strategies. Despite a recent trend toward the use of three-dimensional culture models in cancer research, few such options exist for esophageal cancer. We hypothesized that a three-dimensional, multi-component tissue model could be created utilizing commercially available advanced cell culture platforms. We initially attempted to use cell sheet technology to assemble a three-dimensional model; however, the human esophageal epithelial cells we intend to employ could not be effectively collected and transferred as cell sheets. We moved on to exploring the use of the RAFT system by Lonza, which concentrates cell-seeded collagen hydrogels in a way that facilitates constructing composite tissue models. We have succeeded in culturing multiple cell types within the RAFT system. One of the key features of our theorized model is the fluorescent labeling of each individual cell type in order to monitor the fate of different cell types within the model and facilitate the use of fluorescence-activated cell sorting to isolate and study each cell population separately. We are currently using a combination of selective culture and cell sorting to generate esophageal cancer cell lines that express a fluorescent marker protein for use in our novel model.

## The Connection between Mental Health and Physical Activity

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: David Schary, Ph.D.

COE - Department of Physical Education, Sport, and Human Performance

(PESH 381 - Schary)

### Student: Rachel Fisher

There is a significant connection between mental health and physical activity. Correlations between severe mental illnesses (SMI), such as anxiety, depression, and bipolar disorder, have shown to have a relationship with physical activity. Mental illness alone is something hard to overcome, but research has shown that physical activity can decrease the severity of the illness. Along with the impact that physical activity has on mental health, studies have shown that those who block out physical activity in their lives have higher chances of developing a severe mental illness. Many treatments can be prescribed for a SMI, but one treatment that can significantly decrease the rate of development of a mental illness is one that does not need a prescription. This presentation will discuss the clear-cut examples of SMIs and the effects that physical activity has on this topic.

## Developing Microfluidic Devices for Assisted Reproductive Technologies

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentors: Alireza Abbaspourrad, Ph.D., and Amir Mokhtare, B.S., Cornell University

CAS - Department of Chemistry, Physics, and Geology

### Student: Darien K. Nguyen

The gaining popularity of Assisted Reproductive Technologies (ART) such as In Vitro Fertilization (IVF) and Intracytoplasmic Sperm Injection (ICSI) calls for the introduction of more affordable and less tedious processes rather than the typical manual operations. In order for ICSI to occur, the Cumulus Oocyte Complexes (COCs) retrieved from the ovaries must be processed in order to remove the tightly-packed cumulus cells surrounding them. As of yet, this tedious and unstandardized process is being done manually by skilled embryologists, which results in variability and unavailability. The focus of this project is to develop microfluidic devices to denude the COCs for ICSI, in order to reduce the tyranny of manual operations and push toward automated, reproducible operations. These microfluidic devices are fabricated through conventional PDMS microfluidic processes and tested using automated magnetic pumps controlled by a microcontroller. To date, actual microfluidic devices have been developed and successfully tested using particles similar to COCs.



## Growth : Apart :: Loss : Reconnection

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Kelly Ozust, M.F.A.

CVPA - Department of Theatre and Dance

(DANT 301 - Ozust)

### Student: A'Vionne Richardson

My dance explores how people grow up and grow apart, but then losing someone brings them back together. In my dance, the dancers begin as individuals; then, they eventually meet one another and develop a friendship. Throughout the dance, the grow up and apart, which will be portrayed through spatial design. Once they grow apart, the idea of excuses or believing you have time to reach out and reconnect will be portrayed through dialogue within movement. As this portion of the dance heightens, there will be the sound of a growing heartbeat in the background to signify the arrival of a climax. One of the dancers will exit (pass away), and this will change the dynamic. Once she passes away, each of the remaining dancers will be distraught in different emotions that will be portrayed through movement and dialogue, as well. As they move through this demonstration of loss, the dancer who exited previously will reappear spiritually. She will affect them through movement without actually touching them. As she interacts with the other dancers, she will eventually lead them back together. The idea behind this sort of leaves a space to self-reflect about why we as humans often have to lose someone to realize that togetherness is necessary. Often, this happens with families, friends, workplaces, and more. It usually takes some traumatizing events to lead people to be together as one. This is a story inspired by the loss of my own loved one in my sophomore year of college. I decided to portray an observation made through movement. I also plan to use this to help me heal in my mourning process.

## Lust, Hunger, and Class in Émile Zola's *The Belly of Paris*

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Anna Igou, Ph.D.

CAS - Department of World Languages and Cultures

(FREN 360 - Igou)

### Student: Margaret Davis

Emile Zola's nineteenth-century novel *The Belly of Paris* gives a rich commentary on the relationships between people, using food as a medium to illustrate socioeconomic values and gender dynamics. In this paper, I will closely examine how Zola breaks his characters into two groups, *les maigres* (the Thins) and *les gras* (the Fats), whose socioeconomic differences and political views are also reflected in the foods with which the author associates them. This also plays into how Les Halles, the marketplace which is also the eponymous setting of the novel, is illustrated as a belly in which the characters may be consumed in order to uphold the status quo or be expelled as revolutionaries.

## A Full View of Sin in Tolstoy's *Anna Karenina*

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Leslie Bickford, Ph.D.

CAS - Department of English

(ENGL 300 - Bickford)

### Student: Jacob Stiling

Within literature, a favorable theme, element, and motif is sin. However, as often as sin appears in literature, it is just as common for sin to be portrayed in a shallow form when compared to hamartiology. Hamartiology is the study of sin in theology and philosophy. It is common for literature to focus on a singular concept or facet of sin; thus, sin portrayed in literature is unbiblical or non-theological. However, when criticized from a structural lens, it can be seen that Tolstoy's use of sin is both biblical and theological from a hamartiological view. The portrayal of sin in *Anna Karenina* is both realistic and genuine. Among its characters and relationships, readers can see the progression, acts, consequences, and guilt of sin. Moreover, there is a parallel to these acts that clearly reflect and copy the progression, acts, consequences, and guilt of sin of characters in the Bible. The characters specifically being analyzed are Anna and Vronsky. It is in these characters that sin is fully fleshed out and developed. In doing so, Tolstoy creates a story with characters that are remarkably relatable and realistic to the human struggle and existence.

## Mental Health Effects on Young Athletes: A Comprehensive Review

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Joni Boyd, Ph.D.

COE - Department of Physical Education, Sport, and Human Performance

(PESH 381 - Boyd)

### Student: Katie Moore

Just like physical health, mental health is important for any young athlete. Significant focus on mental health is imperative, as mental illness continues to rise in individuals ages 10-24, in addition to the demands that come with playing a competitive sport. The purpose of this review of literature was to observe how mental health affects young athletes and their methods of seeking help. Statistics have shown that mental health has taken a toll on younger populations in recent years, and it is important to consider how the components of being an athlete can weigh in. Methods throughout these studies consisted of various scales, surveys, and questionnaires to research how mental illnesses such as depression and anxiety have an effect on young individuals who participate in sports, and specifically their outlook towards receiving help they may need. Results showed that there are significant differences of mental health concerns between athletes and non-athletes, especially when there are other factors such as academics involved. Stigmas attached to mental health also showed to be a concern when it came to seeking counseling services, and many said that positive attitudes from figures like coaches would help. This review can be useful for implementing mental health programs and services designed specifically for athletes, and for bringing more awareness to this issue.

## Soil Skirmishes: A Study of Political Violence in Kenya and Uganda

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Bryan McFadden, M.S.*

*CAS - Department of Interdisciplinary Studies*

*(GEOG 471 - McFadden)*

### **Student: Michael Kendree**

This study seeks to determine if there is any underlying correlation between soil quality and the environment in the countries of Uganda and Kenya and outbreaks of violence within the two countries. Outbreaks of violence in Kenya and Uganda, spanning from 1997 to 2018, have been catalogued, geographically plotted, and briefly described. Various environmental and soil metrics have also been recorded, including soil pH, soil cation exchange, bulk density, water storage capacity, and precipitation levels. When analyzing the distribution of skirmishes, it is important to note any patterns related to their geographic locations. Especially in Uganda, there are geopolitical factors which might explain the distribution of skirmishes. For instance, friction with the Democratic Republic of the Congo to the west of Uganda has always been a source of turmoil. Additionally, the presence of paramilitary and terrorist organizations, such as the Lord's Resistance Army in Uganda and al-Shabaab in Kenya, will add to conflict frequency in the areas in which they operate. Given Kenya's and Uganda's status as developing nations, it is likely that overpopulation in urban areas coupled with underdeveloped infrastructure also contribute to strife and conflict. It is the goal of this study to evaluate to what degree environmental factors augment, or even influence, the prevalence and spread of violence with relation to the aforementioned geopolitical causes. This analysis will examine both constant (e.g., cation exchange) and temporal (e.g., precipitation per year) factors and will relate them to the prevalence of violence in a given timeframe and geographic area.

## Understanding the Economic Impact of the Carolina Panthers Training Facility on Rock Hill

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Louis Pantuosco, Ph.D.*

*CBA - Department of Accounting, Finance, and Economics*

*(ECON 345 - Pantuosco)*

### **Student: Jeremiah Hart**

In June 2019, the construction of both a new training facility and headquarters for Charlotte's largest sports franchise was announced. Rock Hill, South Carolina, was selected as the new site for the facilities. This decision was notable for a number of reasons: foremost, the number of new residents that would be drawn into the region via jobs created by the construction of the new facilities. In order to better understand the outcomes of the Panthers' investment, this paper will examine similar investments in other locales by other professional sports teams. These include "The Star," a facility constructed by the Dallas Cowboys in Frisco, Texas, and the planned "Viking Lakes" project in Minnesota. This paper will assess how different types and levels of sports facility investments impact the local job market of a city. Some notable points of focus are: What types of jobs are created? Do different types of sports facilities induce higher paying jobs? Is it possible to find a relationship between spending by the sports team and the number or type of jobs? Are they higher income jobs, or lower income? I plan to approach this topic by utilizing case studies of well-documented incentive programs and the aftermath, and, if possible, public data to provide a more quantitative approach.

## Concerns Pregnant African American Women Face within the Healthcare System

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Aaron Aslakson, M.A.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(PESH 381 - Aslakson)*

### **Student: McKenzie Mosley**

African American women are one of the most underrepresented and mistreated groups of people in the United States today. Whether it is in the home, workforce, social setting, or even within the healthcare system, they may have to fight social trespasses to be able to be seen and treated equally. There is a crisis going around in the United States today involving pregnant African American women. They face a higher rate of birth complications, infant deaths, and pregnancy failures than any other race. In an attempt to examine why, this research will explain what African American women of middle and especially low socioeconomic status go through while pregnant, one of the most vulnerable times in a woman's life.

## Examining Economic Impacts of Terrorism in Nigeria

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Hye-Sung Kim, Ph.D.*

*CAS - Department of Political Science*

*(PLSC 350 - Kim)*

### **Students: Joseph Yakabowskas, Vincent P. Wasner, and Broderick E. Nicewonger**

In recent years, many violent conflicts have plagued the state of Nigeria and have posed a major risk to the citizens who live there. In this research, we examine the relationship between economic growth and the conflict risks in Nigeria. We use time-series data from the World Bank's World Development Indicator (WDI) dataset and the Systemic Peace's Major Episodes of Political Violence Index, for the time period between 1960 and 2012. Our dependent variable is the Major Episodes of Political Violence index, the independent variable is per capita GDP growth, and the control variables are total population, population density, CPI-based inflation rate, unemployment rate, GDP per capita, and the percent of the industry in the GDP. We hypothesize that, as the per capita GDP growth increases, major episodes of political violence will decrease. We use multiple regression models to test our hypothesis.

## Orthopedic Injuries in Athletes

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Aaron Aslakson, M.A.

COE - Department of Physical Education, Sport, and Human Performance

(PESH 381 - Aslakson)

### Student: Cameron Adams

When thinking of athletes and orthopedic injuries, we often associate these injuries with more physical sports such as football, basketball, or even soccer. What we don't realize is that an injury of any degree can occur in any sport, regardless of the level of physicality. An orthopedic injury is any injury to the bones, muscles, or joints of the musculoskeletal system. These injuries include, but are not limited to, ACL tears, meniscus tears, broken bones, muscle tears, sprains, dislocations, or fractures, obtained during a sport. Most injuries of this nature are hard to ignore, but depending on the area and severity of the injury, some may go unnoticed or be mistaken for another issue. If not properly examined and treated, the injury could severely worsen. Orthopedic doctors and surgeons typically examine, treat, help to prevent, and provide rehabilitation services for patients with orthopedic injuries. Since their main priority is to treat and rehabilitate patients, all treatments are provided with the intent of the patient returning to normal activities of daily living or his or her respective sport profession. This presentation will discuss the specific types of orthopedic injuries that can occur, how they are obtained, what age/gender group is most likely to obtain an orthopedic injury, the sports we most see them within, and lastly how they are examined, treated, and rehabilitated.

## Impact of Student Loan Debt On Low-Income Black Students

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Anthony Hill, Ph.D.

CAS - Department of Social Work

(SCWK 473 - Hill)

### Student: Arrion Rogers

African American students from low-income communities who are often plagued with generational poverty have limited options for paying for higher education. Student loans are often the only viable option for this population. These students are less likely to have access to external resources, which furthers their hardship. Loans are an essential tool as a means of receiving higher education. Ultimately, students are forced to choose between borrowing themselves into debt, delaying obtaining higher education, or dropping out due to the financial burden. The literature identifies the consequential effects of student loan debt on African American students. On a larger scale, student loan debt hinders economic growth and obstructs future investments, including purchasing a home. Other consequences of student loan debt include impacts on credit, further debt, and loan defaults. The impact of student loan debt needs to be addressed on the micro, mezzo, and macro levels to prevent generations of African American children from falling into debt or delaying their educations. This presentation takes a multifaceted approach to addressing the impact of student loan debt on African American students from resource-limited communities.

## Foreign Language and Mathematical Ability Predict Cognitive Performance

Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020;

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Merry Sleigh, Ph.D.

CAS - Department of Psychology

(PSYC 302 - Sleigh)

### Student: Katya Engalichev

The present study examined logical reasoning and lexical ability of college students in light of their foreign language and mathematical skill levels. Factors chosen to compare were foreign language proficiency with math proficiency, based on pre-existing research which shows that improved mathematical ability predicts enhanced working memory and increased processing speed, as well as better logical reasoning ability. It was also desired for the present study to examine students' beliefs about how their math and language experiences impacted their performance. The participants were 100 adults with a mean age of 21.21 ( $SD = 6.21$ ). The majority were Caucasian (70%) and women (75%). Participants were asked to solve a logic puzzle and a lexical (word) puzzle in a restricted time period. They then responded to items to assess their proficiency in both foreign language and mathematics, cognitive flexibility, and resilience. The predictions were partially supported. Math ability predicted better performance on the logic and lexical puzzle, while foreign language proficiency predicted better performance on the lexical puzzle only. Ironically, participants believed that their foreign language ability was influential in facilitating their puzzle performance, but did not perceive their math ability as being helpful. Perhaps the minimization of math's usefulness reflects college students' frequently documented math-anxiety. Cognitive flexibility, resilience, race, and gender did not predict performance on the puzzles. In other words, cognitive performance was linked more closely to experience with math and foreign language than any of these other variables, supporting their educational value.

## Effects of Brain Training on Brain Function

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Aaron Aslakson, M.A.

COE - Department of Physical Education, Sport, and Human Performance

(PESH 381 - Aslakson)

### Student: Jeanae Williams

Over one million Americans are diagnosed with brain diseases or disorders each year. This means brain disease is very common, and because most brain diseases are incurable, it is vital that more information on prevention is provided. Brain training is a program of regular activities that claims to maintain or improve one's cognitive abilities. Cognitive abilities are brain-based skills required to perform various mental tasks, from the simplest to the most complex. This presentation will discuss the effects that brain training activities have on cognition and brain function.

## Reviewer Comparisons of Popular Books and the Associated Film Adaptations

Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020;

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Darren Ritzer, Ph.D.

CAS - Department of Psychology

(PSYC 302 - Ritzer)

**Student: Elizabeth Johnson**

Almost a quarter of the top-grossing movies across the world have been adapted from books. The goal of this research was to explore the link between the movie and publishing industries, addressing the common query of whether the book was better than the movie. Because books frequently drive movie production (and not the reverse), it was hypothesized that books would receive more positive ratings than film adaptations. The research began by identifying four movie genres, and then identifying three authors in each category whose best-selling novels were successfully adapted for the screen. Public reviews posted through sites for Amazon, Barnes & Noble, Rotten Tomatoes, and IMDb were then collected. Previous research indicated that reviews on Amazon tend to be longer and more impactful than those on Barnes & Noble. A paired sample t-test comparing movie reviews (Rotten Tomatoes and IMDb) to book reviews on Amazon found that books were rated more positively than were the associated movies,  $t(85) = 4.48, p < 0.01$ . The same test comparing movie reviews to book reviews on Barnes & Noble found no significant difference,  $t(62) = 0.31, p > 0.05$ . These findings provide some support for the hypothesis. It is worthy to note that movies were never rated higher than books. At the very least, this research has provided some initial evidence that the book may be better than the movie, a tentative outcome that is likely to appeal to avid readers across the globe.

## The New Kid on the Block: How the Dominican Republic Intimidated Lyndon B. Johnson into His Biggest Mistake

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Gregory S. Crider, Ph.D.

CAS - Department of History

(HIST 590 - Crider)

**Student: Tiffany Owens**

In 1965, just two years into Johnson's presidency, the Dominican Republican government led by Juan Bosch found itself in a civil war with the Dominican Revolutionary Party. Johnson's decision to send American troops to the Dominican Republic is one of his most regretful choices of his presidency, but he indicated on record that he would do it again if he had to. This paper contends that Johnson had personal and economic motives for intervening in the Dominican Republic but used the guise of protecting the United States and the West from communism. It also argues that Johnson was intimidated by the small island country just as he was by Cuba, and that he feared that the rest of Latin America was beginning to contend in the world power arena. The paper then analyzes voice memos and transcripts from the National Security Archives and the Lyndon B. Johnson Presidential Library, along with telephone conversations between President Johnson, the Secretary of State, Secretary of Defense, and the U.S. Ambassador in the Dominican Republic. These voice memos and phone conversations provide insight into Johnson's motives. The use of official memoranda between Johnson and his administration pertaining to activity in the Dominican Republic is deployed to compare the confidence of Johnson on paper compared to reality.

## “What’s Yours Is Mine If I Pull Hard Enough”: Neo-Colonialism in Africa By China

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentors: Christopher Van Aller, Ph.D., and Adolphus Belk Jr., Ph.D.

CAS - Department of Political Science

(PLSC 490H - Van Aller, Belk)

**Student: Sauliha Mitchell**

This research looks at whether China is engaged in neo-colonialism in Africa. China seems to be attempting to take advantage of a power vacuum created by the withdrawal of western powers inside of Africa. This is not something that has occurred out of nowhere. China has constantly engaged in activities over the years that reveal a pattern of exploitation rather than mutually beneficial economic development.

## Castro and the United States during the Cuban Missile Crisis

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Gregory S. Crider, Ph.D.

CAS - Department of History

(HIST 590 - Crider)

**Student: Dayseanna Able**

This research focuses on the relationship between Fidel Castro and the United States during the Cuban missile crisis. It argues that the imminent threat of communism and covert operations by the United States government ultimately led to the world being on the brink of catastrophe. It then gets to the root of the deep issues that the two countries have with one another, specifically focusing on the Castro regime and the United States government and where those issues stem from. The study focuses on covert assassination plots on Fidel Castro, such as Operation Mongoose, and the exclusion of Castro during negotiations of the crisis. Utilizing several sources, including CIA documents, letters written by Castro and Khrushchev, and newspapers supports the overall objective of this paper.

## How Party Affiliation Affects Perceptions toward Undocumented Immigrants: A Research Survey of University Students

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentors: Hye-Sung Kim, Ph.D., and Scott Huffmon, Ph.D.

CAS - Department of Political Science

(PLSC 514 - Kim, Huffmon)

**Student: Catalina Harmon**

Today's political climate is extremely polarized in several issues, including the topic of immigration. Democrats and Republicans, for example, show very different views on immigration policies, overall, as well as ones toward undocumented immigrants. In this study, using a "within-variation" experiment, the first action is to measure the extent to which people's support for immigration is affected by various characteristics of immigrants, such as immigrants' country of origin, age, legal status, education level, reason for coming to the United States, and risk of life in the country of origin. Then, using conditional analyses, this study will also explore how support for undocumented immigrants varies by partisan affiliations of respondents for the given characteristics of immigrants. For the country of origin characteristics, immigrants' country of origin varies among five countries, Mexico, China, Iran, Philippines, Germany and Nigeria. The data will be collected via an online survey with a target population of students (ages 18-24) from Winthrop University and the Citadel, using a convenient sampling. It is expected that, in both university samples, party affiliation will have a significant impact on respondents' support for undocumented immigrants, with less polarization than among general population samples. It is also expected that support for undocumented immigrants from Mexico will be less than support for those from other countries, particularly from Germany, but only among the respondents who identify themselves as republican.

## Magneto as an Allegory for Golem

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Jason Tselentis, M.F.A.

(VCOM 392 - Tselentis)

**Student: Spike Rubin**

*X-Men* are well known for their entertainment value as comic books and movies; however, they can also offer commentary on different societal issues and give insight on a time period's values. Originally, *X-Men* was created by Stan Lee and Jack Kirby, and in the early comic book issues, the storylines and characterizations were very straightforward and one-dimensional. Later, Chris Claremont became the writer for the series and gave the characters and plot more complexity. One such change was to the X-Men's archenemy, Magneto, whose characterization shares various elements with Golems from Jewish folklore - monsters that are created from malleable material in order to protect their communities. This research investigates the ways Magneto and the Golem have contextual and visual similarities across *X-men* movies and comic books.

## The Relationship between Social Dominance Orientation and Ethnocentrism: The Case of Attitudes toward Illegal Immigration

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Hye-Sung Kim, Ph.D., and Scott Huffmon, Ph.D.

CAS - Department of Political Science

(PLSC 514 - Kim, Huffmon)

**Student: Elle Martinez**

This study investigates individuals' ethnocentric attitudes. Using the within-variation survey experiment, the extent of ethnocentrism is found by measuring the effect of responding to the phrase "illegal immigration," as opposed to "immigrants." The present study also measured Social Dominance Orientation attitudes in this survey, by asking a short, six-question assessment that will assess an individual's ideology, which is divided into Group Based Dominance and Anti-Egalitarianism categories. Using this measure, conditional analysis was conducted to see whether the effect of "illegal immigration" on individuals' support for immigration varies by their Social Dominance Orientation attitudes measures. To this end, an online survey was conducted to collect the data. The survey consisted of questions on Social Dominance Orientation (SDO), the experimental questions on "illegal" immigrants, and sociodemographic information on individual respondents. The data were collected using a convenient sampling among Winthrop University students. It is hypothesized that a respondent with a high-level SDO will tend to show more ethnocentric attitudes. In particular, It was hypothesized that the negative effect of "illegal immigrants" would be greater among individuals with high-level SDO compared to those with low-level SDO.

## Seven-Step Linear Synthesis of Racemic Nicotine Highlighting the Grubbs' Ring-Closing Metathesis

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Aaron Hartel, Ph.D.

CAS - Department of Chemistry, Physics, and Geology

(CHEM 351 - Hartel)

**Student: Ellie Burns**

Nicotine is a common alkaloid that is predominantly found in tobacco plants and other members of the Solanaceae family. It is a pharmacologically important molecule due to its known stimulant properties and the potential medicinal benefits of its analogues. Nicotine analogues have previously been identified as having the capability to alleviate symptoms of diseases including Alzheimer's and Parkinson's. Racemic nicotine has been produced via a seven-step linear synthesis appropriate for an advanced level academic synthesis lab. The synthesis produced an overall yield of 1.02% and features a Grubbs' Ring-Closing Metathesis (RCM) reaction in Step 5 for the formation of the pyrrolidine ring.

## Opinion Survey of South Carolina Public School District Superintendents Concerning the Education Freedom Scholarships and Opportunities Act and Potential Outcomes for Public School Systems

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Hye-Sung Kim, Ph.D., and Scott Huffmon, Ph.D.*

*CAS - Department of Political Science*

*(PLSC 514 - Kim, Huffmon)*

### **Student: Richard Lyda**

In order to understand the present attitudes of South Carolina public school administrators and staff toward the proposed Education Freedom Scholarships and Opportunities Act, this study directly surveyed South Carolina's 81 district superintendents, along with a convenient sample of other staff working within the districts. The administered survey focuses primarily on the opinions of state superintendents regarding how the proposed bill may affect their districts and the overall public education system in the state. Education Freedom Scholarships were first introduced by United States Secretary of Education Betsy DeVos, along with Republican Senator Ted Cruz of Texas and Republican Representative Bradley Byrne of Alabama in February 2019. The bill, which has 109 republican cosponsors, was introduced in the House of Representatives on February 28, 2019, and was sent to both the Committee on Ways and Means and the Committee on Education and Labor. The proposal would create a \$5 billion nonrefundable, dollar-for-dollar tax credit to encourage individual and corporate taxpayers to contribute to state-identified scholarship-granting organizations. It is hypothesized that superintendents and staff members who perceive their districts to be inadequately funded are more likely to oppose the bill, while superintendents and staff members who perceive their districts as well funded are less likely to oppose it. It is also hypothesized that, while political alignment will affect likelihood to oppose or support the proposal, perceptions about state funding to the school district will be a more reliable indicator of a respondent's position regarding the Education Freedom Scholarships and Opportunity Act.

## Ways of Prevention and Rehabilitation from Spinal Injuries in Contact and Non-Contact Sports

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Joni Boyd, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(PESH 381 - Boyd)*

### **Student: Alisa Soloveva**

The purpose of this research is to describe the most common ways of prevention and rehabilitation for spinal cord injuries within college athletes. Spinal injuries are one of the most common health issues in the athletic world. Approximately 8.7% of all spinal cord injuries are caused by sport-related activities. These types of back-related injuries can be either traumatic or non-traumatic. The main sports that experience the most traumatic injuries are American football, hockey, wrestling, snowboarding, and skiing. The most non-traumatic sports include gymnastics, swimming, golf, and tennis. The main examples of serious back injuries are fractures, disk hernias, and acute cervical sprains. There are multiple ways of prevention. The most effective ones are informing people about the importance of their spinal health and exercising, in combination with some therapy. One of the most common causes of non-traumatic spinal injuries is completing physical activities using incorrect or poor technique. Informing is the best solution for any type of health problem. Another common cause of spinal injuries is overloading. Athletes who perform rotational types of sports frequently have to deal with spinal injuries due to the lack of muscular support and increased pressure on their spines. Exercising helps stabilize the spine and build extra muscles to support vertebrae. Certain types of therapy, such as massage, acupuncture, swimming, and stretching are proven to be beneficial for muscular relaxation and pain relief. The main idea of this review of literature is how to keep the spine strong and healthy and how to avoid back injuries as an athlete.

## The 1871 Ku Klux Klan Trials: A Legacy of Injustice

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: O. Jennifer Dixon-McKnight, Ph.D.*

*CAS - Department of History*

*(HIST 509 - Dixon-McKnight)*

### **Students: Tiffany Owens and Zaria McBride**

In 1871, Columbia, South Carolina, became the arena for one of the largest trials in American history. Over 200 members of the Ku Klux Klan were brought to the courts on charges of inciting violence against African Americans. These various acts of violence were a form of resisting African Americans being free and having rights during the Reconstruction Era. White supremacist groups influenced every institution in America, from politics to education. These trials set a precedent for how African Americans would be tried in the American criminal justice system over time, and how the system has been used to keep African Americans oppressed and white Americans superior. We contend that, due to the formation of the Ku Klux Klan, Reconstruction was a failure, which resulted in the continuous failure of the American government in its duty to protect African Americans per the 14th amendment.

## The Effects of Competition and Student Ability on Achievement Goals

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Matthew Hayes, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 302 - Hayes)*

**Students: Kelsey L. Allen, Gabrielle E. McGee, and Shannan Keianna Goodwin**

The present study examined whether the effect of competition on achievement goals depends on student ability. The 129 college students who participated in this study received a packet that included a short learning activity with corresponding questions, an achievement goal questionnaire, and demographic items. Half of the packets contained instructions that had students answer the questions to the best of their ability, which created a non-competitive environment. The other half contained instructions that had students do the best that they could, because their scores would be ranked against those of their classmates. This facilitated classroom competition. Afterward, the students completed a questionnaire to assess the achievement goals used to complete the learning activity. Finally, the students answered demographic questions. Self-reported GPA was used to measure student ability. The results found that competition did not affect achievement goals for any students; it is possible that the competitive manipulation was not strong enough or that achievement goals are more trait-based than state-based in nature. It was found that low-ability students tended to have approach motivation, as they either wanted to learn the material or do better than their peers. Overall, students exhibited more performance goals than mastery goals. Students who did have mastery goals tended to have an approach motivation, meaning that they wanted to learn the material from the activity. This indicates that student learning at the collegiate level is not entirely performance-oriented for all students. It can be concluded that competition does not affect students' achievement goals when facilitated through instruction.

## Dual Process Model and Perceptions of Gendered Communication

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Matthew Hayes, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 302 - Hayes)*

**Students: Megan Herbst and Elle Martinez**

The dual process model (DPM) specifies two drivers of prejudice. One is rooted in beliefs that the world is dangerous, to which people respond with respect for authority and tradition (right-wing authoritarianism; RWA); the other is rooted in beliefs that the world is a competitive jungle, to which people respond by supporting group-based social hierarchy and opposing efforts to redistribute resources away from their group (social dominance orientation; SDO). The present study examined whether more stereotypically masculine (versus feminine) gestures interacted differently with SDO and RWA to affect perceived masculinity and femininity ratings of a male actor. Participants were 168 undergraduate students. Participants were randomly assigned a 30-second video of a male actor displaying either feminine or masculine body language. Following the video, participants used the Short-form Bem Sex-Role Scale to assess the masculinity and femininity of the actor. This was followed by two ideology measures. SDO measured two views on intergroup hierarchy: group-based dominance and opposition to equality (anti-egalitarianism). RWA measured an individual's alignment with three core values: submissiveness to authority (conservatism), compliance to traditional ideals (tradition), and authoritarian aggression (authoritarianism). The results revealed significant differences in aspects of SDO and aspects of RWA, rather than the ideologies as a whole. Individuals high in dominance rated masculine behaviors as more masculine, whereas individuals high in traditionalism or authoritarianism gave lower masculine scores for masculine gestures. Feminine gestures didn't interact with our ideology variables. This study contributes to how SDO and RWA may impact how others are perceived and therefore judged.

## Motivations behind Joining Social Movement Organizations

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Matthew Hayes, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 471, 472 - Hayes)*

**Student: Katy Osborne**

This study examined the effect of uncertainty and life history strategy on whether people join a Social Movement Organization (SMO) for sanctuary or agency. While previous research has identified sanctuary and agency as two main reasons people join SMOs, no studies have examined factors that might affect which reason would be more influential. Life history (LH) theory predicts that people coming from stable childhood (slow LH) would be more likely to invest effort in long-term change (agency), while people from harsher, more unstable childhood (fast LH) would be more likely to join a SMO for short-term benefits (sanctuary). Based on Uncertainty Identity Theory, greater uncertainty should magnify these effects. All 215 participants belonged to at least one SMO and completed three online measures assessing LH strategy, reasoning for joining their SMO (sanctuary or agency), and current uncertainty. As predicted, fast LH strategy leads to stronger sanctuary motives; however, greater uncertainty did not intensify this effect. Instead, greater uncertainty reduced sanctuary motives among slow LH participants. Contrary to prediction, this same pattern of results was observed for agency motives. The results suggest that fast LH strategy increases both agency and sanctuary motives; however, these motives are unaffected by uncertainty. Whereas Uncertainty Identity Theory predicts that greater uncertainty should drive people to greater group affiliation, the present results suggest that greater uncertainty has the opposite effect for those with slow LH strategy, prompting greater disengagement.

## Relationships between Family Values, Academic Motivation and Performance

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Tara J. Collins, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 302 - Collins)*

**Students: Kahdaijah Williams, Jarismary Polo, and Taji Mayberry**

Although everyone has different outlooks on what motivates them, scholars have found that when it comes to students and motivation, they are related. The primary goal of this study was to examine the ways in which motivation, family values, and performance has a positive significance on academic performance. College students, primarily from Winthrop University, were surveyed to see the ways in which their experiences from home and school life influenced their academic performance. The constructs that were measured were (a) family values, (b) reading comprehension, and (c) motivation (intrinsic/extrinsic). Overall, it was found that reading comprehension held no significance in determining a student's academic performance, nor was there a significance in a student's family values held to be statistically significant on the construct levels of general attitudes and curiosity, making our main hypothesis to be partially supported. From the results, it can be concluded that academic performance is measured by things other than just the student, but that they are influenced by external factors as well. The things that were assumed to be related were not significant, which was unexpected since it was hypothesized that there was a positive significance between all variables and academic performance. These findings may suggest that the more a person is curious about his or her work, and the more positive the guardian's general attitudes, the better the child is likely to perform.

## Childhood Obesity in Relation to Low Socioeconomic Status

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: David Schary, Ph.D.*

*COE - Department of Physical Education, Sport, and Human Performance*

*(PESH 381 - Schary)*

**Student: Nathaniel McLean**

Childhood obesity is a crisis in our country. Over the decades, there has been a significant increase in sedentary behavior and unhealthy lifestyles. This rise in sedentary behavior has increased in obese individuals, especially children. In the United States alone, 18.5% of children and adolescents were diagnosed as obese in 2019. Childhood obesity has become an epidemic in our country and worldwide. Obesity is more prevalent among children who come from low-income households. Socioeconomic status is a key indicator of a child's health. The goal of this research is to better understand the relationship between socioeconomic status and childhood obesity, understanding how variables like lack of nutritional education, limited access to healthy food, and lack of resources negatively affect children from low-income households and ultimately affect their weight.

*UNCG Regional Mathematics and Statistics Conference, Greensboro, North Carolina, November 2019*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Supported by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)*

*Faculty Mentor: Arran Hamm, Ph.D.*

*CAS - Department of Mathematics*

**Students: Paul Hazelton and Suzanna Thompson**

Ramsey Theory, one of the most well-studied branches of Combinatorics, can be paraphrased as the pursuit of "order amongst chaos." The Fundamental Theorem of Ramsey Theory (for graphs) states that, for any two graphs  $G$  and  $H$ , any large enough red/blue edge-colored complete graph contains a red  $G$  or a blue  $H$ . The Ramsey number for  $G$  and  $H$ , then, is the smallest complete graph with this "unavoidability" property. Recently, the star-critical Ramsey number was introduced, which is a slightly sharper measure on the unavoidability property. Our work focused on the generalized fan, which is formed by taking disjoint copies of a fixed graph  $H$  and joining each to a vertex. Recently, researchers have investigated Ramsey and star-critical Ramsey numbers involving this kind of graph which motivated our work. We computed both parameters for a type of generalized fan versus a complete graph, a type of generalized fan versus disjoint triangles, and a type of generalized fan versus a complete graph on four vertices.



## Women's Rights on a National Level: Worst versus Best States for Women to Reside

Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Darren Ritzer, Ph.D.

CAS - Department of Psychology

(PSYC 302 - Ritzer)

**Students: Kiara Brown, Khaila R. Moss, Alanna M. O'Brien, Sadarria T. Hall, and Tayler S. Leone**

According to the Pew Research Institute in 2019, more women vote in United States election than men, and this difference has held since the 1990s. Consequently, women's issues can be a critical element of a politician's platform. For example, reproductive rights were heavily promoted in the November 2019 mid-term elections. Politics heavily influence the culture of a geographic region. News and social media contributors have recently attempted to identify pro-woman states, focusing on issues such as employment equality, equal rights, and women-friendly policies. The goal of this study was to examine different states using a range of variables that directly impact women, including: the number of abortion clinics, domestic violence incidents, life expectancy for women, graduation rates, and the income/wage gap. It was hypothesized that women-friendly states would cluster in the Northeast and the West Coast. Scores were standardized across variables and summed to create an overall score for each state. The highest possible score was 255. Results revealed that the most pro-women states were New York (202), Vermont (196), California (195), Connecticut (190), Massachusetts (181), Florida (180), Maryland (176), New Jersey (176), New Mexico (175), Iowa (171), and New Hampshire (170). The worst scoring states were Kentucky and Utah, both with scores of 54. The hypothesis about regional clustering was supported. In general, a larger number of northeastern states were represented among those most pro-woman, while a higher proportion of southeastern states were ranked as less woman-friendly.

## Perceptions of Professional Women's Eurocentric versus Afrocentric Hair

Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Merry Sleight Ph.D.

CAS - Department of Psychology

(PSYC 302 - Sleight)

**Students: Keonna Jordan, Chance Walcott, and Jamesia Morris**

The present study examined men's and women's perceptions of their own hair and that of women in the workplace. It was hypothesized that Afrocentric hair on a black woman would be perceived as less professional than Eurocentric hair on either a white or black woman. It was also hypothesized that black women would have higher hair esteem than white women. Participants were 125 young adults with a mean age of 20.01 ( $SD = 4.61$ ). Seventy-six percent were women, and 24% were men. 44% of participants were white, 43% were black, and the remainder reported other ethnicities. Participants were randomly assigned to one of three experimental conditions where they viewed one image: black woman with Afrocentric hair, black woman with Eurocentric hair, or white woman with Eurocentric hair. (The depicted women wore the same business suit.) Participants provided their perceptions of the pictures and then responded to a hair esteem scale as if they were the pictured woman and then as themselves. Social dominance, subtle prejudice, and symbolic racism were also assessed. Matching the hypothesis, black adults seemed to have very positive attitudes about black hair. However, they simultaneously expressed concern over how they were perceived by others. Overall perceptions of the black women were more positive than that of the white woman, with the Eurocentric hair garnering more favorable ratings than the Afrocentric hair. This favoritism suggests that Eurocentric standards of beauty still exist. White people who perceived black hair poorly had more racist attitudes toward black people in general.



## Photoredox-Mediated Alkylation of Imines with Potassium Organotrifluoroborates in the Presence of an Organic Photocatalyst

Southeast Regional Meeting of the American Chemical Society (SERMACS), Savannah, Georgia, October 2019

NC Photochem, Boone, North Carolina, October 2019

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Second Place, Best Undergraduate Poster, NC Photochem, October 2019

Supported by the Donors of the American Chemical Society Petroleum Research Fund, and by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentor: James M. Hanna Jr., Ph.D.

CAS - Department of Chemistry, Physics, and Geology

**Student: Evan H. Thibodeaux**

Recently, the use of visible light combined with a suitable photocatalyst to promote key bond-forming steps in organic synthesis has emerged as a viable strategy to achieve a number of important synthetic transformations. The photocatalyst involved is often a ruthenium or iridium polypyridyl complex, which absorbs light in the visible range to give a relatively long-lived excited state, which may engage organic substrates in a series of single-electron-transfer (SET) events. The organic radicals thus generated participate in downstream reactions leading to the final product(s). During previous research, this strategy for the alkylation of aldimines with potassium organotrifluoroborates using transition-metal photocatalysts was deployed. However, because of the much lower cost of organic photocatalysts (approximately \$50/mmol for acridinium-based catalysts versus \$1,000/mmol for Ir-based catalysts), it was desired to explore the use of organic photocatalysts in this transformation. Optimization studies using the reaction of potassium isopropyltrifluoroborate with benzalaniline revealed that the photocatalyst 9-mesityl-10-methylacridinium tetrafluoroborate (**Mes-Acr-Me**) in dichloromethane gave the best yields of alkylation product, *N*-(2-methyl-1-phenylpropyl)aniline. In this presentation, the results of current efforts to expand the scope of the protocol to other imines and potassium organotrifluoroborates will be described.

## Synthesis of Diarylpyridines as Aggregation Inhibitors for Alzheimer's Amyloid- $\beta$ Peptide

South Carolina Academy of Sciences Annual Meeting, Greenville, South Carolina, March 2020

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentors: James M. Hanna Jr., Ph.D., and Robin K. Lammi, Ph.D.

CAS - Department of Chemistry, Physics, and Geology

**Student: Kendall J. Claxton**

Amyloid- $\beta$  peptide (A $\beta$ ) self-assembles into neurotoxic,  $\beta$ -structured aggregates, which are the primary component of the extracellular senile plaques characteristic of Alzheimer's disease. A variety of small molecules have been shown to inhibit the aggregation process; typically, these contain aromatic groups and one or more hydrogen-bond donors. Previous studies have demonstrated that terphenyltetrols exhibit some degree of efficacy as A $\beta$  aggregation inhibitors. For example, *o*-terphenyl-3,3",4,4"-tetrol is a moderately effective inhibitor of A $\beta$  aggregation (IC<sub>50</sub> = 2.7 $\pm$ 0.3X). Recent modeling studies suggest that binding of small molecules to A $\beta$  may occur via several types of intermolecular interactions, including both hydrogen bonding and  $\pi$ - $\pi$  interactions (i.e.,  $\pi$ -stacking). In addition, other studies indicate that  $n$ -interactions between benzene and electron-deficient heterocyclic aromatic rings are stronger than similar benzene-benzene interactions. Based on these observations, it is hypothesized that incorporation of a pyridine unit as the central linker in the above-described tetrahydroxyteraryl scaffold may lead to increased inhibition of A $\beta$  aggregation. Therefore, the present study set out to synthesize a series of bis(dihydroxyphenyl)pyridines via Suzuki coupling of 3,4-dimethoxybenzene-boronic acid with an appropriate dibromopyridine, followed by demethylation in refluxing aqueous HBr. In this poster, progress toward this goal and future plans for evaluation of these compounds will be discussed.

## Student Views on and Concerns Regarding Campus Safety

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Michael Sickels, Ph.D.

CAS - Department of Sociology, Criminology, and Anthropology

(SOCL 519 - Sickels)

**Students: Jada Givens and Jasmine Ellis**

This study examines how campus safety is constructed as a part of the student experience by students at Winthrop University. At Winthrop, campus safety has been a recurring topic amongst students, so in order to learn how students actually feel about safety on Winthrop's campus, we conducted 12 one-on-one interviews. The participants ranged in class standing (excluding freshmen) and gender. We found that both men and women at Winthrop University do contemplate safety and how they can feel safer on campus. Women are more likely to feel unsafe at night while alone and more likely to carry something with them to protect themselves. Men are likely to feel unsafe when they believe that campus police do not take them seriously; however, they fight against these feelings because the social construction of gender makes them believe that they must be strong and unafraid. We suggest improving building design, police presence, self-defense classes, and lighting in outdoor areas in order to improve campus safety.

## Satan and Ahab: Milton's Influence on Melville's Greatest Work

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Faculty Mentor: Matthew Fike, Ph.D.

CAS - Department of English

(ENGL 513 - Fike)

### Student: Cameron Davis

Herman Melville's annotations of *Paradise Lost* reveal an underlying theme that Ahab shares with Satan - a tendency to tie their misfortunes to the concept of fate. Whereas John Parke and Robin Sandra Grey deal with the theme of Providence and Satan/Ahab as tragic figures, the present essay develops the theme of Providence and examines Satan's attempt to place blame on God with Ahab's consistent anger at the universe. Not only did Milton inspire Melville's character, but Melville also applied Milton's idea of predestination to Ahab's mistaken belief that fate is the same as Providence. Many of the lines Melville comments on in his volumes of *Paradise Lost* are reflected in *Moby Dick* through major symbols connected to Captain Ahab, such as his lightning-shaped scar and its similarity to Satan's scars from the battle in Heaven. Ahab's journey from the loss of his leg to the sinking of the *Pequod* parallels Satan's role in his own demise - by corrupting the garden, he brings about his own transformation into a snake and ultimately Christ's mission to redeem mankind. In the end, Ahab refuses to acknowledge his own failures, and arrogance leads him to fall into the depths of the sea in much the same way as Satan falls from Heaven. Ahab's error in judgment is to confuse fate with Providence, which suggests that Melville shares Milton's theological beliefs and explains the allusions to *Paradise Lost* throughout his novel.

## Measuring Heat Related to the Disassembly and Reassembly of Ferritin using Isothermal Titration Calorimetry

Southeast Regional Meeting of the American Chemical Society (SERMACS), Savannah, Georgia, October 2019

SC INBRE Science Symposium, Columbia, South Carolina, January 2020

Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020

Supported by a CRP grant from the South Carolina EPSCoR/IDEA Program, and by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentors: Nicholas Grosseohme, Ph.D., and F. Wayne Ouiten, Ph.D., University of South Carolina

CAS - Department of Chemistry, Physics, and Geology

### Students: Brandon Ellison and Alexandra Perez

Ferritin is an iron storage protein responsible for the accumulation of excess intracellular iron. Native ferritin self-aggregates into a nanocage structure containing a ferroxidase center that regulates the uptake and release of iron. In recent years, researchers have begun to explore using ferritin as a component in drug delivery. Ferritin is an attractive candidate because it is a native human protein that has the ability to encapsulate small molecules. Furthermore, it can be chemically or genetically modified to target very specific cells. One major limitation of drug delivery by ferritin lies in its inherent stability: harshly acidic conditions are needed to drive the disassembly of the nanocage. It was recently discovered that replacing the E-helix of human light chain ferritin with a GALA peptide repeat (hFtnL-GALA) would allow for the pH-induced disassembly to occur at a pH below 6, thus rendering ferritin a more attractive drug carrier under physiologically relevant conditions. This project aims to express and purify hFtnL-GALA with a subsequent thermodynamic characterization of the disassembly and reassembly of the nanocage. The chimeric protein is largely isolated in an insoluble form; consequently, the published protocol failed to produce enough protein for subsequent experiments. An alternate protocol was developed that leveraged urea to resuspend the insoluble fraction, followed by slow dilution to allow the protein to fold properly. Chromatographic analysis of the sample was consistent with an intact nanocage structure. Ongoing efforts are focused on developing a strategy that yields sufficient protein for further analysis.

## Teacher Wellness: Building Hope for the Future Today

National Council of Teachers of English (NCTE) Conference, Baltimore, Maryland, November 2019

Faculty Mentor: Allan Nail, Ph.D.

CAS - Department of English

### Student: Shelby Peek

Given the three-year national average for classroom teaching careers, the present study will examine the problems associated with the lack of teacher wellness and propose research-based strategies to implement wellness into the teaching profession. By presenting a personal case study paired with a literature review, this study will propose several common challenges teachers face. Then, it will give a literature review of current research of teacher wellness in public schools in the United States. It will conclude by proposing research-based strategies for improving wellness as it relates to the teaching profession.

## Communication and COVID-2019: A Review of Transdisciplinary Communication Scholarship

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Chen Chen, Ph.D.*

*CAS - Department of English*

*(WRIT 366 - Chen)*

### Student: Jadden Bergholm

During a crisis event, communication is crucial to the safety and survival of the people who are directly impacted. Global disaster events such as earthquakes, epidemics, and nuclear meltdowns require the swift and efficient spread of accurate information for the purposes of awareness, aid, and safety. Scholars of technical communication and intercultural rhetorics, such as Huiling Ding and Jingwen Zhang, have studied how cultural backgrounds impact the informational narratives. Others have conducted research on the usage of digital media platforms such as Twitter and how hashtags and other tools affect the spread of information in an international environment. Scholars recognize the important role of social media and online discourse in an international crisis event. Through this literature review, it is intended to illustrate the role of digital media in the international and intercultural circulation of information during global crisis events. This project will review literature from a breadth of scholarship from transnational technical and professional communication, risk communication, health communication, and rhetorical studies. It argues that this review of the existing transdisciplinary literature is crucial to the current understanding of how communication has been and continues to be conducted in regard to the current COVID-19 epidemic. Events like the current outbreak provide a chance to critically analyze the digital cultural discourse in a global crisis context, which is vital to social justice and advocacy.

## Spanish in the Workplace

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Jo Koster, Ph.D.*

*CAS - Department of English*

*(ENGL 507 - Koster)*

### Student: Sandra Reyes

Language in America is, and has always been, as diverse as the American population. Never has one language been the sole language of America. However, it is a common belief that English is America's official language. This misconception has caused issues throughout America, and this essay will discuss how this misconception affects Spanish speakers in the workplace. It will also discuss how implementing English-only policies in the workplace not only hurts Spanish-speaking employees, but how it hurts American business, as well. The sources that have been used throughout the essay range from The United States Business Bureau, The Department of Labor, court cases of Spanish-speaking employees suing against discrimination, Pew Research Center, various reports of the continuously growing Spanish-speaking population, to Benjamin Franklin. From this research, it can be concluded that Spanish in the workplace is necessary and essential for the growth of American business and prompts diversity in various ways. Since America is experiencing a growth in a minority that has normally been disrespected, it is normal for Americans to want to prevent changes from happening; however, this hesitation toward the changing of America is harmful and prevents the growth of America as a whole.

## Creating a Cult: How the Canterbury Monks Capitalized on the Myth of Thomas Becket in Popular Culture, Visual and Textual Imagery, and Branding

*College Art Association (CAA) Annual Conference, Chicago, Illinois, February 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Winner, Trimmer Travel Awards, Council on Undergraduate Research (CUR), December 2019, and Art History PALS Award, Winthrop University Department of Fine Arts, December 2019*

*Faculty Mentor: Kyle Sweeney, Ph.D.*

*CVPA - Department of Fine Arts*

*(ARTH 380X - Sweeney)*

### Student: Martha Whiteman

The brutal murder of Archbishop Thomas Becket in his own cathedral sent tremors throughout medieval Europe, prompting a subsequent interest in Canterbury Cathedral. Immediately following Becket's death, people began to proclaim miracles in his name. Thus, the cult of Becket originated. Over the next four centuries, Canterbury would be a primary pilgrimage site, drawing pious pilgrims and curious spectators alike. This rapid influx of pilgrims can be linked to both the myth of Thomas Becket in popular culture and the Canterbury monks' superiority in cultivating a cult culture. This research addresses three key points. One is the importance of miracle accounts in creating a populist cult. Laypeople were the first to convey miraculous accounts. In this way, they appropriated the miracle experience and attached themselves to the cult of Becket. The second key point is the superior marketing techniques the monks at Canterbury employed in attracting the masses. This includes capitalizing on the pilgrimage experience, which can be seen in an array of souvenirs produced near Canterbury (e.g., pilgrimage badges). The third key point is creating a sensorial environment that must be experienced. By engaging the pilgrim's senses at every station of the cathedral, the monks strategically heightened the feeling of awe one feels at experiencing something spectacular. Much of this sensorial environment is created through the cathedral's visual culture. This essay will provide new readings of the use of visual and textual culture in the manipulation of the pilgrim's experience - an issue relevant to both the medieval and modern pilgrimage experience.

## The Effects of Media on Gender Identity/Sexual Orientation Comfort and Attitudes toward the LGBTQ+ Community

*Southeastern Psychological Association (SEPA) Annual Meeting, New Orleans, Louisiana, April 2020*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Faculty Mentor: Tara J. Collins, Ph.D.*

*CAS - Department of Psychology*

*(PSYC 302 - Collins)*

**Students: Katherine Harper and Jaylan Luvene**

The main hypothesis was that after viewing a lesbian-appearing profile, participants would have a more positive view of the LGBTQ+ community, compared to participants who viewed a heterosexual-appearing profile. Additionally, it was hypothesized that more media representation of LGBTQ+ and prevalence of LGBTQ+ role models would produce a positive correlation with attitudes. Participants were 16 men, 55 women and nine participants who did not gender identify. The participants' ages ranged from 18-50+. Through an online survey, using various questionnaires, participants' attitudes toward the social media profiles (one profile appearing heterosexual and the other lesbian) were assessed. It was found that there were significant negative correlations between feelings towards LGBTQ+ role models and condemnation, and between LGBTQ+ role model prevalence and perceived immorality. Independent samples t-tests were used to examine the effect of profile condition (heterosexual vs. lesbian-appearing) on attitudes about being pursued by a member of the same sex. It was found that the participants who viewed the lesbian profile expressed significantly less discomfort with receiving romantic attention from same-sex individuals compared to the participants who viewed the heterosexual profile. There was also a significant difference in the profile means. Beliefs about transgender people were affected in a similar way, with participants who viewed the lesbian profile having more transgender-affirming beliefs compared to those who viewed the heterosexual profile. Thus, it can be theorized that the manipulation of one "relationship status" photo in the profiles initiated a change in the participants' acceptance of and contact with the community.



## Artifact Classification and Value Promotion in Makerspaces

*UNCC Research Experience for Undergraduates (REU) Poster Presentation, Charlotte, North Carolina, July 2019*

*Sixth Annual Showcase of Undergraduate Research and Creative Endeavors (SOURCE), Winthrop University, April 2020*

*Second Place, UNCC REU Poster Presentation, Charlotte, North Carolina, July 2019*

*Supported by a Research Experience for Undergraduates (REU) grant from the National Science Foundation*

*Faculty Mentors: David Wilson, Ph.D.; Johanna Okerlund, B.S.; and Madiha Tabassum, B.S., University of North Carolina, Charlotte*

*CBA - Department of Computer Science and Quantitative Methods*

**Student: Dominique Exley**

As makerspaces are becoming more prevalent, the artifacts produced within them will have an increasing impact on the world. Thus, determining commonalities in what and why makers are creating is important to the promotion and expansion of communities that partake in socially relevant activities. This study analyzes maker artifacts in an attempt to discover underlying latent themes. Topic modelling by means of LDA is used as the primary tool to conduct the analyses. Additionally, attention is placed on the potential to apply these themes to graphic designs, with the purpose of expanding maker activities and further promoting the central values and ideals of Human Centered Design (HCD).



# 32nd ANNUAL UNDERGRADUATE JURIED EXHIBITION

Due to current social distancing efforts and the closure of campus to stop the spread of COVID-19, Winthrop University Galleries will present the 32nd Annual Undergraduate Juried Exhibition on a virtual platform. This virtual exhibition will give students the chance to showcase and be awarded for their talent, despite the campus and galleries being closed. Mounting this exhibition online opens up new opportunities for students, faculty, and viewers to interact with student work. Not only does a virtual exhibition allow for the presentation of three-dimensional and two-dimensional work, but it also expands the ability to show digital art, media, websites, and videos. The work will be displayed and promoted on [Instagram](#) (@UJEWinthrop) and a temporary webpage, <https://galleries96.wixsite.com/ujewinthrop>. Monetary awards will be presented through a virtual opening reception on Instagram Live, to be held on Friday, April 24, 2020, at 5 p.m.

## **Karen Derksen, M.A.**

*Director, Winthrop University Galleries  
Instructor, Department of Design and Department of Fine Arts*



# DEPARTMENT OF DESIGN:

## *Get Out the Vote Mural Project*

2020 will see a vibrant election season, but how do we get young voters interested? Illustration students at Winthrop University are creating a nineteen-foot long mural called *Get Out the Vote* in the breezeway between Rutledge and McLaurin. The mural is an outreach project to their fellow classmates that encourages civic awareness and political participation. This project coincides with a visit by street artist and poster designer, Shepard Fairey, who is visiting to create a mural in downtown Rock Hill. He will also visit the Winthrop campus and talk to students about his exciting creative history. The mural is partly in honor of Shepard Fairey and his work, but it is also an opportunity for young creators to reach out to young voters with graphics and images that will invite curiosity, exploration, and wonder. The mural is a parade of diverse characters coming together to make their voices heard at the ballot box. The project will be deemed a success if it gets Winthrop students to the ballot boxes as well.

**Elizabeth Dulemba, M.F.A.**

### **Illustrators:**

**David P. Beck**

**Joy M. Heil**

**Tana M. Hogue**

**Erin N. Jones**

**Joshua A. Lively**

**Cager E. McHone**

**Isabel L. Wallace**

**Sierra C. Wheeler**

**Jogvan Andreas A. Jacobsen**



# Final Mural Images:





# DEPARTMENT OF DESIGN:

## *The Treehouse Project*

The Illustration studio on the 3<sup>rd</sup> floor of McLaurin used to be called "The Clubhouse." But a clubhouse conjures up signs of "Keep Out" or "No Girls Allowed." Hence, The Clubhouse is going through a rebranding. It is now called "The Treehouse." Treehouses hold endless possibilities for design, exploration, and habitation. The Treehouse space has been rearranged in a way to promote student gatherings in a laid back environment, where they can hang out, get to know each other, and create friendships and alliances that will remain with them and be valuable resources to them throughout their careers. In celebration of this rebranding, students have embraced their new treehouse symbol and created images of their most epic treehouses to share with visitors to the space. Images are created in various media, from traditional media such as pencil or pen and ink, to digital. The designs reflect the individual imaginations of their creators, from secret passageways to hidey-holes. No matter the media, all of the designs represent a joyous place in which to create and connect, which is what we hope The Treehouse will be.

**Elizabeth Dulemba, M.F.A.**



**Sierra C. Wheeler**

### Illustrators:

**David P. Beck**

**Joy M. Heil**

**Tana M. Hogue**

**Erin N. Jones**

**Joshua A. Lively**

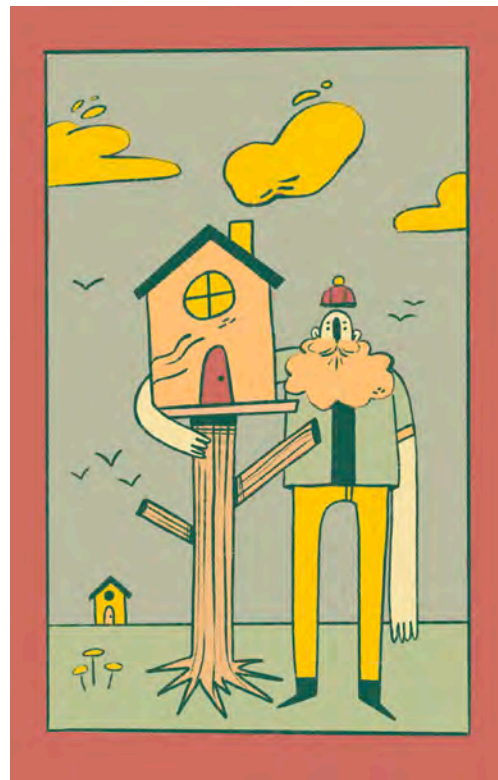
**Cager E. McHone**

**Isabel L. Wallace**

**Sierra C. Wheeler**

**Jogvan Andreas A. Jacobsen**

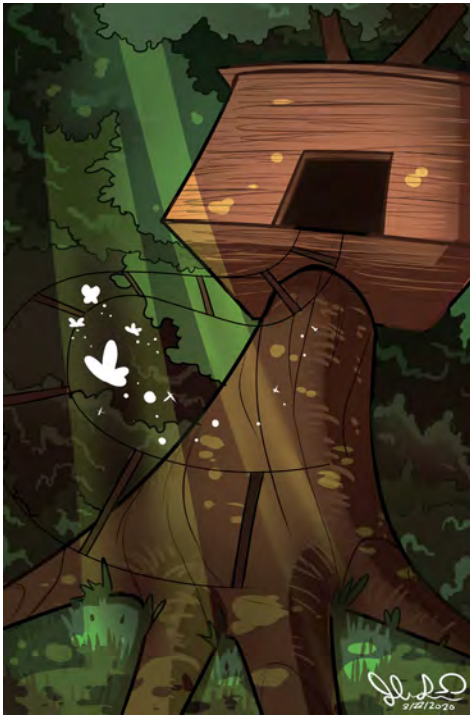
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**Cager E. McHone**



**Jogvan Andreas A. Jacobsen**



Joshua A. Lively



Isabel L. Wallace



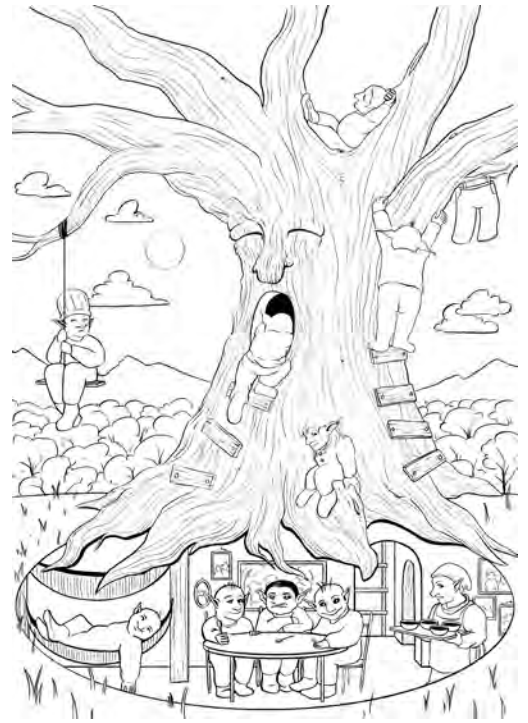
Joy M. Heil



Tana M. Hogue



Erin N. Jones



David P. Beck

# DEPARTMENT OF DESIGN INTERIOR DESIGN SENIOR PORTFOLIO SHOW

## Designer Statements:

### **Mallory Alexander**

This project is a lobby view of a capsule hotel located in New York City. A capsule hotel is a type of hotel developed in Japan that features rooms the length and width of the bed. Rooms can be stacked side-by-side and two units high. The concept of developing a capsule hotel in New York comes from the idea of creating an environment that embodies community interactions and is ideal for the convenience of travelers.

### **Sadhbh Barry**

Live Oak is an assisted living facility that will provide care and a variety of treatments for patients. Live Oak strives to promote interaction with natural and organic elements to encourage inhabitants' independence and socialization through interior environments. The outdoor spaces consist of sunroom seating, courtyard, and gardening area where residents can invest their time. The design is a transitional style that mixes traditional design with modern elements. This view is of Live Oak's lobby.

### **Alex Carbaugh**

Fizz is a small boutique located off North Davidson in Charlotte, North Carolina, that will sell locally sourced bodycare. There will be a modern and simplistic townhome attached to the top for the owner to rent out. The entire structure will be made of recycled shipping containers to add to the sustainability of the town.

### **Jessica DeGray**

Located in Savannah, Georgia, the Forsyth Hotel embodies the lively and colorful attitude that surrounds this art-filled city. With bright colors and sustainable materials, it embodies the culture of Savannah. The hotel has a restaurant and a gift shop that sells local student art work as a way to support the community.

### **Emma FitzGerald**

The FitzGerald Hotel, to be located in downtown Buffalo, New York, will serve as a sustainable, cutting-edge space for guests and residents of the city, through its transitional design style and hip bar/restaurant. Inspired by the history of the city's early acceptance of electric power and the abundance of night life in Buffalo, the FitzGerald Hotel will incorporate natural colors with vibrant accents of yellow - which is indicative of light and warmth. Overall, the hotel will place emphasis on lighting, color, and sustainable materials and practices to provide its guests with enriching and fun experiences during their stay. By providing a sustainable experience, individuals that come in contact with the hotel will leave with a deeper appreciation for both design and sustainability.

### **Claire Guza**

The upscale Knick River Hotel in Anchorage is designed to take inspiration from the Alaskan landscape surrounding the Knick River. The lobby (seen in the rendering shown) will use the view of the natural landscape as a focal point for the space. The hotel will be a modern take on traditional lodge design, using wood and stone materials.

### **Becca Kane**

Historic luxury hotel project The Charles Royale is centered in Charleston, which will preserve and revive the bold colors and patterns seen in the Federalist Period. From a sustainability aspect, the hotel is renovated and historically preserved from city building in town, capturing the spirit of this coastal city. Architectural elements of the Federalist Period and the Lowcountry culture will be used, in conjunction with a mixture of modern fixtures to create a luxurious trip back into Charleston's rich history.

### **Maggie Maidl**

NEXT Hub is a space that is part of a higher education learning institution located in Washington, D.C. The purpose of this space is to encourage people of all ages to participate in furthering their knowledge. This space, the Learning Commons, is meant to encourage collaboration and socialization in between class periods. The range of seating is meant to support social connections between students and faculty, and to allow individuals to be able to focus and study. NEXT Hub encompasses vibrant, stimulating colors such as purples, yellows, blues, and oranges. Invigorating colors and contemporary design are evident within the space to emphasize the exciting nature of learning and show that learning is for everyone.



**Sadhbh Barry**, *Live Oak*



**Mallory Alexander**, *Capsule Hotel*



**Jessica DeGray**, *Forsyth Hotel*



**Emma FitzGerald**, *The FitzGerald Hotel*



**Maggie Maidl**, *NEXT Hub*



**Alex Carbaugh**, *Fizz boutique*



**Becca Kane**, *The Charles Royale Hotel*



**Claire Guza**, *The Knick River Hotel*

# DEPARTMENT OF FINE ARTS B.F.A. SENIOR EXHIBITION

## *What Was & What Will Be*

Rutledge and Lewandowski Student Galleries  
March 30 - April 10, 2020

*What Was & What Will Be* features the work of 17 graduating B.F.A. seniors from the Department of Fine Arts. Working across a variety of media, these artists explore themes unique to each of them. Uniting them is their nostalgia for what was and their hope for what will be. As the culmination of their journey at Winthrop, this exhibit not only reflects the skills gained from their time as a student but also their personal growth as artists. *What Was & What Will Be* embodies the joy and sadness that these graduates feel during this transitory period. They look towards an exciting future with unknown artistic endeavors ahead and reflect fondly on their time in school. Together, these 17 artists present their final works to you, a symbolic farewell to their time here at Winthrop.

**Faculty Coordinator: Claudia O'Steen, M.F.A.**  
**Exhibition Statement by Martha Grace Whiteman**



**Amanda Campbell**



**Caroline Burdett**



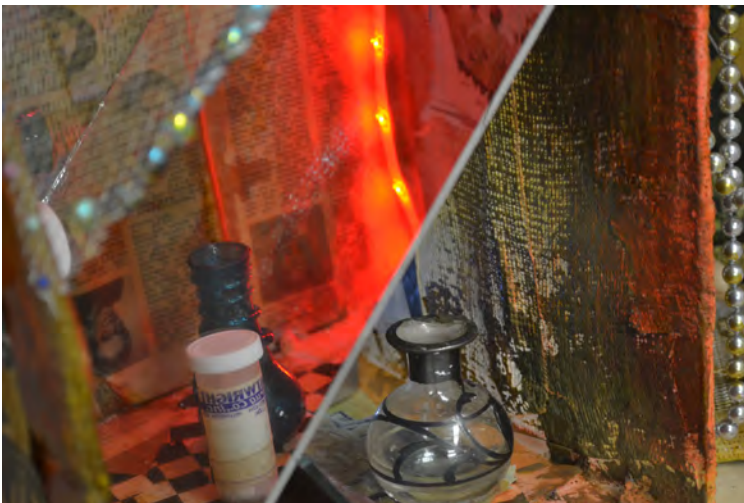
**Amari Brazel**



**Amber Wade**



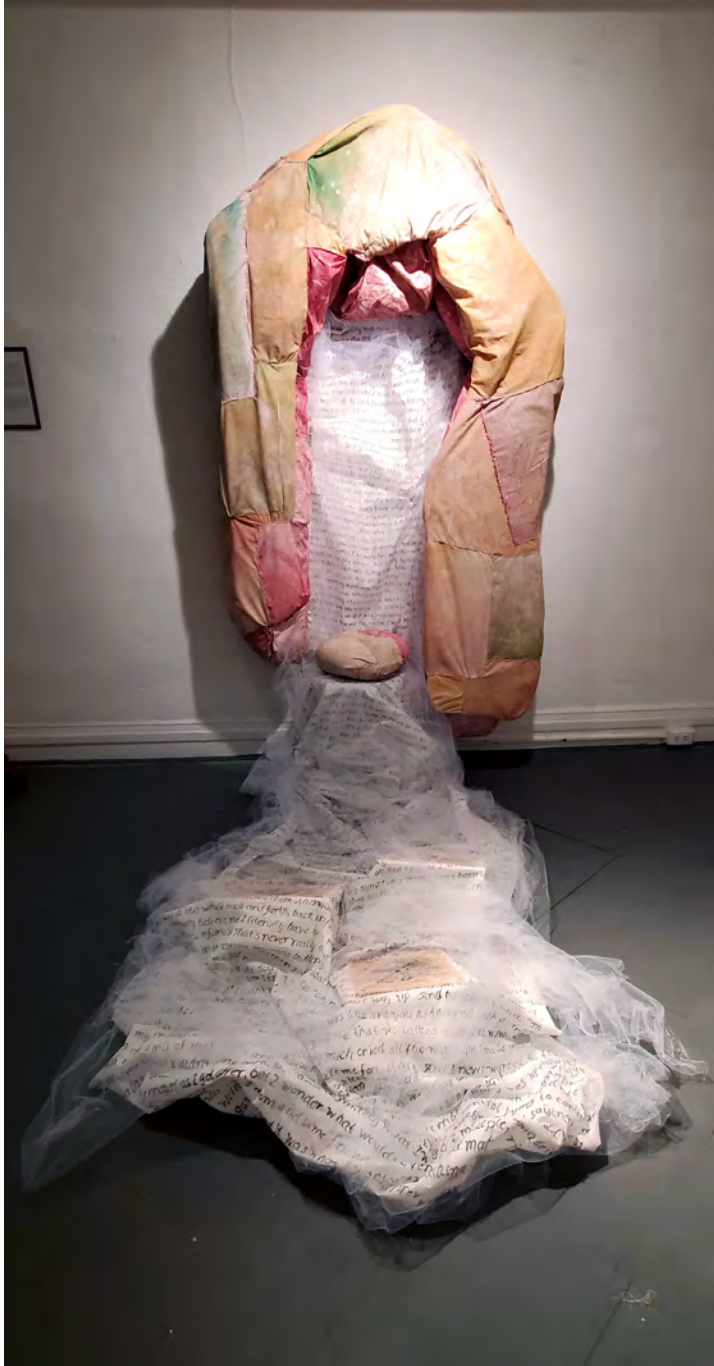
**Elizabeth DeLong**



**Jennifer Kirk Hamilton**



**Erin Powell**



**Kaitlyn G. Rogers**



**Dave Harris**



**Katie Karban**





**Maggie Claytor**



**Marisa Fields-Williams**



**Rachel Goldie**



**Anne McLean**



Halie Neyhard



Sam Ross



Jessie Jenkins

# DEPARTMENT OF THEATRE AND DANCE FESTIVALS AND SHOWCASES

## Fall Student-Directed One-Act Festival, November 2019

Faculty Coordinator: Sarah Provencal

*A lively, entertaining, and eclectic mix of one-act plays directed by advanced theatre students*

*Sinkhole* by Eric Moore,  
directed by **Joseph Caleb Smith**

*Equinox* by Jonathan Graham,  
directed by **Alyssa Farris**

*Choose Your Own Apocalypse* by Claire Rice,  
directed by **Taylor Evans**

*The Cowboy* by Patrick Holland,  
directed by **Jessica Clapper**

*Wilf* by James Odin Wade,  
directed by **Shane O'Reilly**

*I Didn't Want a Mastodon* by Halley Feiffer,  
directed by **Michael Williams**

*I Dream Before I Take the Stand* by Arlene Hutton,  
directed by **Kersey Hanna**

*A Circular Play - A Play in Circles* by Gertrude Stein,  
directed by **Hailee Beltzhoover**

## Spring Student-Directed One-Act Festival, April 2020

Faculty Coordinator: Matt Ferrell

*A lively, entertaining, and eclectic mix of one-act plays directed by advanced theatre students*

*The True Love Story of My Parents* by Elizabeth Merriweather,  
directed by **Calista Schultz**

*The Proposal* by Anton Chekhov,  
directed by **Caleb Hinkley**

*Lobster Boy* by Dan Dietz,  
directed by **Wren Brooke**

*Here We Go* by Caryl Churchill,  
directed by **Ally Baumgartner**

*The Loveliest Afternoon of the Year* by John Guare,  
directed by **Coby Bloomer**

*Enigma Variations* by David Ives,  
directed by **Emily Hayes**

*Rules of Comedy* by Patricia Cotter,  
directed by **Dale Fox**

*Savage/Love* by Sam Shepard and Joseph Chaikin,  
directed by **Chloe Wright**

## Senior Choreography Showcase, December 2019

Faculty Coordinator: Julianna Hane

*This showcase of modern dance works features the choreographic talents of senior dance majors.*

*I Love You, Too!*  
choreographed by **Christal Ross**

*Discomfort*  
choreographed by **Katelyn Haney**

*Over Thinker*  
choreographed by **Emily Bolinger**

*Unmasked*  
choreographed by **Kylah Gunter**

*Bizzare!*  
choreographed by **Emmalee Bradley**

## Student Choreography Showcase, April 2020

Faculty Coordinator: Kelly Ozust

*Enjoy modern dance works choreographed by advanced dance majors.*

Student choreographers:

**Nykira Allen**

**Charity Moore**

**Kensley Brandemuehl**

**Brooke Nelson**

**Serena Connelly**

**Daphne Oliver**

**Jameel Creech**

**A'Vionne Richardson**

**Semira Daniels**

**Kyla Smith**

**Brenné Forst**

**Megan Smith**

**Donovan Granville**

**Justin Tillman**

# ADDITIONAL PROJECTS



## Sartre's Ethics of Radical Choice

Faculty Mentor: M.  
Gregory Oakes, Ph.D.

CAS - Department  
of Philosophy and  
Religious Studies

(PHIL 495 - Oakes)

**Student: David Truesdale**

In *The Humanism of Existentialism*, Jean-Paul Sartre describes a theory of radical choice: when one legislates for oneself, one legislates for mankind. I attempt to show how Sartre's radical choice theory might emerge as social contract theory after viewing radical choice through a number of lenses. Initially, I show how radical choice parallels the universalization found in Immanuel Kant's categorical imperative. Then, I examine how radical choice could be applied to the development of communal obligations in Georg Hegel's social command theory. Hegel's theory then lends itself to understanding how Sartre's argument regarding the universalization of individual actions can be realized through social contract theory. After comparing radical choice with John Rawls's justice as fairness - an example of a universalistic conception of rationality - I argue that it is better realized through Gauthier's morals by agreement: a maximizing conception of rationality that argues that individuals engage in contractual relations as a result of mutual constraint for the achievement of greater aggregate benefit. This understanding of Sartre's radical choice as a form of social contract theory provides an answer for how ethical frameworks might emerge in a world without eternal values.

## Game Day Attendance: Examination of Sportscape Factors between College versus Professional Football Stadiums

Faculty Mentor:  
Jinwook (Jason)  
Chung, Ph.D.

COE - Department  
of Physical Education,  
Sport, and Human  
Performance

(SPMA 390 - Chung)

**Student: Elizabeth Conley**

The overall purpose of this research is to determine the issues with game day attendance at college versus professional football games, and to identify various sportscape factors. Several sportscape factors such as parking, accessibility to the stadium, concessions, seating, merchandise, crowd control, restrooms, helpfulness of staff, jumbotron/scoreboard, ticket price, alcohol consumption, security line, clear bag policy, and student sections were identified and evaluated in this study. The results of this study indicated that there were no significant differences between college and professional football stadiums. However, it was identified that sportscape factors do have positive influence on game day attendance. For professional football stadiums, jumbotron/scoreboard, crowd control, and restrooms were the most important factors. For college football stadiums, jumbotron/scoreboard, helpfulness of staff, and seating were the most important factors. Through these findings, sport managers can identify various needs of football fans for both venues.

## Examination of College Life and Experience of LGBTQ+ Student-Athletes: Comparison between LGBTQ+ Student-Athletes versus Non-LGBTQ+ Student-Athletes

Faculty Mentor:  
Jinwook (Jason)  
Chung, Ph.D.

COE - Department  
of Physical Education,  
Sport, and Human  
Performance

(SPMA 390 - Chung)

**Student: Jeremy Falwell**

The world of college athletics is home to many different people from all demographics. One of the most overlooked and taboo demographics in the industry is athletes who identify as LGBTQ+. The purpose of this study was to gather information about the experiences of LGBTQ+ athletes and compare them to their non-LGBTQ+ peers. Once the information was gathered on these individuals, the sports industry, particularly intercollegiate athletics departments, could use it to help better the experience for this demographic. The sports industry needs to do better in accepting the LGBTQ+ community. It is important to improve understanding of LGBTQ+ student-athletes' obstacles to success both on and off the field. Thus, comparing non-LGBTQ+ student-athletes' perceptions about LGBTQ+ student-athletes with what LGBTQ+ student-athletes actually experience will improve understanding of the community.

## A Sports Psychology Approach to Exercise and Athletic Participation in Individuals with Physical or Mental Disabilities: A Comprehensive Review

Faculty Mentor: Joni  
Boyd, Ph.D.

COE - Department  
of Physical Education,  
Sport, and Human  
Performance

(PESH 381 - Boyd)

**Student: Rachel McLaughlin**

The purpose of this review of literature was to investigate the effects of sports and performance psychology techniques and theories when applied to athletic and non-athletic populations with physical or mental disabilities. Sports psychology is often utilized with elite athletes to serve as a competitive edge to increase their likelihood of excelling in their respective sports through improved mentality. Research is lacking within a large area of the athletic community: athletes with physical and mental disabilities. Additionally, physical activity is important for individuals with physical and mental disabilities. Implementing sports and performance psychology findings can help promote exercise and physical activity within inactive populations, as well. Doing so offers an outlet for frustrations surrounding the disease and promotes a healthy lifestyle. This review serves to investigate the research available as it pertains to the motives and stressors of athletes (more frequently elite athletes) with disabilities and the benefits that these findings and exercise in general can have on this population. The studies within this review of literature examine imagery, motivational factors, self-talk, stressors, and engagement. The results found can help to increase athletic performance, increase participation in athletic events, and promote physical activities and an increased quality of life through both physical and mental health in persons with physical and mental disabilities.

## Examining the Impact of Social Media and Technology on the College Athletic Recruiting Process

Faculty Mentor:  
Jinwook (Jason) Chung,  
Ph.D.

COE - Department  
of Physical Education,  
Sport, and Human  
Performance

(SPMA 390 - Chung)

### Student: Teyah Floyd

Social media can be used both positively and negatively as a recruiting tool for student-athletes. The purpose of this research was to investigate how student-athletes communicated with college coaches and built names for themselves as athletes on social media, and how coaches utilized it as a recruiting tool for college athletics. Data were collected from the most popular social media platforms for high school and college student-athletes, Instagram, Facebook, and YouTube. Social media messages were categorized into types of contents and posts. Based on the findings, a survey was created to identify factors that were perceived as most important among current student-athletes in track and field. Results show that postings related to academic achievements, personal/social life, and athletic achievements were the three most important message that needed to be included in social media for recruiting purposes.

## Examining the Impact of New Rule Changes on the Perception of Major League Baseball amongst Casual and Diehard Fans

Faculty Mentor:  
Jinwook (Jason)  
Chung, Ph.D.

COE - Department  
of Physical Education,  
Sport, and Human  
Performance

(SPMA 390 - Chung)

### Student: David Winston

Over the past few years, Major League Baseball has taken steps to fix the problems that are plaguing the game, including the slow pace of play and the inconsistency or inaccuracy of officials' calls. Major League Baseball has introduced rules that are common in other sports, like instant replay challenges, but they have also introduced the idea of new radical rule changes that may cause certain sets of fans to become upset. This study examined the impact of new rule changes in Major League Baseball and how these rules have impacted the way fans have viewed Major League Baseball. In this study, fans were asked several questions about the new rule changes that could be introduced in the game and what they thought about these rules. The rules that they were asked about included the pitch clock, instant replay challenges, the use of a robot umpire, letting players steal first and putting a runner on second in extra innings. The conclusion of this research indicated that there were no significant findings. This showed that different types of fans would not view Major League Baseball differently even if all of these rule changes were implemented.

## Examination of Brand Loyalty between NASCAR and NFL Fans

Faculty Mentor:  
Jinwook (Jason) Chung,  
Ph.D.

COE - Department  
of Physical Education,  
Sport, and Human  
Performance

(SPMA 390 - Chung)

### Student: Gabi Hull

The purpose of this study was to examine factors that contribute to brand loyalty within the National Association for Stock Car Auto Racing (NASCAR) and the National Football League (NFL). The survey included factors such as NASCAR and NFL fans' attitudes toward brand, brand loyalty, and brand awareness. Correlations were conducted to analyze the relationships between attitude, fan level, and awareness, and how they relate to brand loyalty. This study highlights the positive relationship between consumers' feeling and brand loyalty driven by affiliation with NASCAR or the NFL. This study showed that the sports entity with higher ratings in categories such as brand awareness, favorability and fan level were rated much higher on the brand loyalty scale. Thus, sponsors who align themselves with the NFL or NASCAR can use this information to effectively strategize sponsorship deals.

## Examination of Attendance Behavior at Cross Country and Track and Field Meets

Faculty Mentor:  
Jinwook (Jason)  
Chung, Ph.D.

COE - Department  
of Physical Education,  
Sport, and Human  
Performance

(SPMA 390 - Chung)

### Student: Tyler Thatcher

The purpose of this research was to examine the factors that affect fan attendance at cross country and track and field events. Motivation variables associated with fan attendance at sporting event were utilized to create a survey. It has been a struggle to increase fan attendance at many cross country and track and field events compared to other sporting events such as football, baseball, and basketball games, which have much higher attendance. Results of this study indicated that friends, team affiliation, and drama were the three most important motivation factors to attend track and field events. Thus, college athletics departments need to focus on the previously mentioned three factors when marketing track and field events.

## Examination of Decline in Viewership and Participation in Football

Faculty Mentor:  
Jinwook (Jason)  
Chung, Ph.D.

COE - Department  
of Physical Education,  
Sport, and Human  
Performance

(SPMA 390 - Chung)

### Student: Isaac Smith

The purpose of this research was to examine levels of viewership and participation in football. Based on literature review, the hypotheses that viewership and participation rates would drop in football due to some variables was established. These variables include growing concern of severe injury risk in football, the length of football games, other forms of entertainment, and player protest on social issues. Participants in this research included various sports fans, including college students and professionals from various regions. 85 responses were collected for analysis. From the analysis, the hypotheses were not supported. The risk of injury, the length of football games, other forms of entertainment, and player protest on social issues had little impact on viewership or participation in football. Therefore, although the health risks in football are an issue, they did not have any impact on the current status of football viewership and participation.

## Altering “Zone 2” Structure of a Sphingosine Kinase Inhibitor

Supported by an SC  
INBRE grant from the  
National Institute for  
General Medical  
Sciences (NIH-NIGMS)

Faculty Mentor: T.  
Christian Grattan, Ph.D.

CAS - Department of  
Chemistry, Physics, and  
Geology

### Student: Miquela Santoro

Cancer is a disease that affects all people, either directly or indirectly. Current popular treatments include surgery, chemotherapy, and radiation. The method of our research is targeted therapy; this allows the drug to target the cancer cells, and not harm normal functioning pathways in the body. This research focused on the sphingolipid metabolic pathway; in this pathway, sphingomyelin turns to ceramide, then to sphingosine, and finally sphingosine-1-phosphate (S1P) via sphingosine kinase. If the concentration of ceramide increases, it will promote apoptosis, but if the concentration of S1P increases, proliferation increases as well. This research focused on inhibiting sphingosine kinase, an enzyme over-expressed in cancer cells which increases the concentration of sphingosine-1-phosphate and leads to cell proliferation. Our goal was to inhibit this enzyme from binding, pushing the equilibrium back to promote apoptosis. The template inhibitor was known to be 99% successful *in vitro*, but unsuccessful *in vivo*. The overall goal is to modify one portion of the molecule to lower its log P value below 5 to improve how the drug interacts with the aqueous environments within the cell. I followed a three-step synthesis process for all my compounds. My first reaction was a Suzuki coupling; the second reaction introduced a hydrazide group; and the third reaction added a hydroxynaphthalene ring. NMR was used to confirm that the desired products were formed. I created 5 derivatives; future work will focus on combining the most effective derivatives from all four areas of the structure to essentially create one super-drug that is very effective.

## Problems with the NFL Collective Bargaining Agreement in Comparison with NBA and MLB Collective Bargaining Agreements

Faculty Mentor:  
Jinwook (Jason)  
Chung, Ph.D.

COE - Department  
of Physical Education,  
Sport, and Human  
Performance

(SPMA 390 - Chung)

### Student: Morris Buckery

The purpose of this research was to investigate the plague of three major league sports groups (e.g., NFL, NBA, MLB) and possibly find solutions to create better collective bargaining agreements. Research questions included “Are there problems with the lack of guaranteed contracts in the NFL?” and “How can the revenue split between NFL players and owners be changed, so that players can make more money?” These were major problems in the NFL that the NBA and MLB have been successful at combating. Therefore, investigating and benchmarking the NBA and MLB enabled examination of the NFL’s collective bargaining agreement. The analysis conducted was to compare what these leagues are doing now and what the NFL could do to fix these problems, which could help reduce the plagues that impact the growth of the league and its fan base.

## The Unknown

Faculty Mentor: Jennifer  
Disney, Ph.D.

CAS - Department of  
Political Science

(PLSC 507 - Disney)

### Student: Saleana Harris

One of the most central ideas in this paper that I focus on is white privilege. The first thing that comes to my mind whenever I hear the words “white privilege” is an old, white, rich male who probably has land and power. However, after realizing my great lack of knowledge, and much deliberation, I have found that white privilege is a whole lot more than that. I have always been blind when it came to racial bias. I have never truly focused on every aspect of what race means to our society today. I have always felt that all humans are humans, no matter what the color of their skin brings; however, I have also been guilty of judging others based upon their appearance. That is human nature, right? Wrong. That is the institutionalization being brought to light. Racism continues to play a huge role in society today. For some, it seems hidden, and for some, it is spotlighted. For all, it seems to continue to play a big role in society. Whether you grow up in a household that is racist or not, society continues to teach us that it is a concept that we must follow. Racism is here, now. There may not be slavery, but there is still segregation. White privilege is an idea that white individuals fail to recognize. Regardless of your age, sex, or race, you are most likely influenced by the person who raised you. If your skin is white, you have privilege, regardless of whether you want it or not. No matter where you go, who you are with, what friends you have, what job you obtain, you will continue to live with the white privilege everyday, forever because you are white.

## Milton's Moral, Political, and Iconographic Bird: Satan as Cormorant in *Paradise Lost*

Faculty Mentor:  
Matthew Fike, Ph.D.

CAS - Department of  
English

(ENGL 513 - Fike)

### Student: Owen Medgyesy

The purpose of this paper is to suggest that Milton's likening of Satan to a cormorant reveals the moral, political, and iconographic intricacies of Satan's evil nature. Though only mentioned twice, Milton's characterization of Satan as a cormorant is one of the densest and least examined among *Paradise Lost* criticism. Many sources from a variety of disciplines mention the cormorant's seedy characteristics, connotations, and associations. However, there are very few Milton scholars who directly address the complexity of the comparison. Karen Edwards, in her work "Milton's Reformed Animals: An Early Modern Bestiary," presents the most direct, though rather cursory, analysis of Milton's use of the cormorant in regard to Satan. Edwards primarily highlights the cormorant's moral implications while ignoring its political and iconographic implications. An examination and synthesis of the wide range of disciplines that contribute to the understanding of the full complexity of Milton's comparison of Satan to a cormorant shows that it is one of Milton's most sinister and intricate comparisons.

## American Workers in STEM Occupations

Faculty Mentor: Louis  
Pantuosco, Ph.D.

CBA - Department of  
Accounting, Finance,  
and Economics

(ECON 345 - Pantuosco)

### Student: Blake Bargar

In the modern labor force, the need for skills such as dexterity, physical endurance, and precision are declining, while skills such as critical thinking, analysis, and problem solving are continuing to grow. How has higher education responded to the changing labor force in order to properly prepare the next generation of workers? The labor force is changing, but is higher education keeping up with these changes? The problem inherently lies in the lack of American students pursuing graduate and Ph.D. programs in STEM fields. In this paper, I will review higher education policies, changes, and practices that are being put into place to help with the educated needs of the labor force. The vast majority of students in STEM programs are from other countries, and I will research possible government and policy solutions to incentivize Americans to pursue STEM jobs. I will look at trade schools, technical colleges, university education, as well as master's and doctorate levels of education. I plan to review the need for Americans to pursue STEM degrees and the potential consequences if Americans continue to obtain STEM degrees at the current rate.

## Ecofeminism: Reclaiming the Feminine Principle in Genesis

Faculty Mentors: M.  
Gregory Oakes, Ph.D.,  
and Peter Judge, Ph.D.

CAS - Department  
of Philosophy and  
Religious Studies

(RELG 495 - Oakes)

### Student: Aubrey Hamrick

In this paper, I contrast the Biblical interpretations of early Christian theologians to those of ecofeminist theologians. I focus specifically on interpretations surrounding the Hebrew creation myths in Genesis 1-3. I argue that prominent Christian theologians, such as Didymus the Blind, Thomas Aquinas, and St. Augustine, used sexist and androcentric interpretations of the creation myths in order to justify the patriarchy. In contrast, I argue that ecofeminist theologians, like Rosemary Ruether, Shiva Vandana, Elizabeth Clark, and Herbert Richardson, reinterpret the creation myths, in order to reclaim the feminine principle. In this paper, the "feminine principle" refers to an abstract notion of human nature and creation that is free from patriarchal influence. In ecofeminist theology, the feminine principle refers to the notion that God possesses feminine qualities, known as the "divine feminine." So, by extension, God's creation possesses a reflection of the divine feminine. This reflection presents itself through feminine qualities. Humankind and nature both possess feminine qualities, but the patriarchy has justified the suppression, oppression, and exploitation of femininity and, therefore, the divine feminine. Thus, the feminine principle, or the divine feminine, has been oppressed by anti-feminine patriarchal sentiments. By reclaiming the feminine principle, ecofeminists subvert value dualisms and, therefore, subvert the patriarchy. As a result, the feminine principle is liberated from oppression and God is restored as both divinely feminine and divinely masculine. Humankind then recognizes that femininity and masculinity are equally important qualities because they are symmetrical counterparts that, together, represent the Divine.

## Does Religion Have a Place in Politics? Comparative Case Studies Examining the Republic of Turkey and the United States

Faculty Mentors: Hye-  
Sung Kim, Ph.D., and  
Michael Lipscomb,  
Ph.D.

CAS - Department of  
Political Science

(PLSC 490 - Kim,  
Lipscomb)

### Student: Kiana Todman

Religion and politics have a paradoxical relationship. On the one hand, modern politics is formally characterized by a separation of church and state. On the other hand, religion often has profound effects on policies that governments enact. This paper uncovers this paradox through a comparative case study of two countries: The United States and The Republic of Turkey. Specifically, for countries like the United States and Turkey, the approach to religion in the political sphere has changed gradually over time. Since the beginning, these states have claimed a separation between religion and politics. This paper will argue, however, that regardless of what these states claim in terms of remaining secularist, religion still plays a factor in their modern-day politics.



## The West's Diverse Future: Effects of Immigration on Europe's and America's Demographic Identities

Faculty Mentors: Hye-Sung Kim, Ph.D., and Michael Lipscomb, Ph.D.

CAS - Department of Political Science

(PLSC 490 - Kim, Lipscomb)

### Student: Aaron Hassler

The paper seeks to explain how immigration from other parts of the world is affecting Europe. It compares the United Kingdom, a country with a more open stance on taking in migrants, and Poland, a country that has been much more conservative about immigration. There is also research on the United States to compare the different situations present in North America and Europe and show how Europe will fare as it grows more diverse. Considering that this has been a relatively polarizing topic of discussion in Western nations lately, it is worth examining the differences of each country's individual migrant situation and how each country is faring and responding to it with respect to the polarization we have seen. By comparing immigration statistics and demographics of these different places and measuring them against the political environment and public opinion toward immigrants, we look to see how varying numbers of immigrants in a country are affecting native-born populations. We see that more homogenous countries are less likely to be open to outsiders, and that their people maintain attitudes that favor those of their ingroup. In comparison, more diverse countries like the U.S. and U.K. are more willing to implement policies that accept more immigrants and diversify their populations.

## The Effects of College Experiences on the Political Development of Students

Faculty Mentors: Hye-Sung Kim, Ph.D., and Michael Lipscomb, Ph.D.

CAS - Department of Political Science

(PLSC 490 - Kim, Lipscomb)

### Student: Tess Norman

Current research indicates that college freshmen are entering school more politically divided than ever before and leaving with unprecedented levels of disillusionment. In this paper, the exact role of the higher education environment is explored as it pertains to the individual political socialization of college students. Examining the variables of political participation and shifts in political ideology, this paper analyzes previous research and introduces new focus group data to ask students how college has changed their political identities. The findings of this research paper indicate that, through both measures of estimating political change, college is playing a significant role in the development of these students and their interactions with political culture. While the research indicates that college is playing a role in political development, the question of what role college should play in politics has plagued partisan politicians in recent years, as the key to mobilizing and utilizing the voting block that is college students may just be understanding how their experiences set them apart from other voters.

## The Effect of Black Masculinity on Black Women's Rights

Faculty Mentors: Hye-Sung Kim, Ph.D., and Michael Lipscomb, Ph.D.

CAS - Department of Political Science

(PLSC 490 - Kim, Lipscomb)

### Student: Zaria Bellamy

Historically, masculinity and patriarchy have had a negative effect on the rights of women. More specifically we see how black masculinity has negatively affected black women's rights. Black men's masculinity has been defined through the standards of masculinity created by white, middle class, heterosexual men. Proximity to white men has exacerbated negative qualities of masculinity in black men. In this paper I examine the origins of the black man's masculinity through the history of slavery and Reconstruction that later shaped their interactions with black women and the black family dynamic. This paper consists of qualitative research that has already been compiled through various scholars that has produced my formal argument. Based on that research I argue that black masculinity has negatively affected black women's rights by excluding them from major social movements and dominating spaces that were meant for the advancement of black people such as the black church and the civil rights moment.

## The Deterioration of Brazilian Prisons

Faculty Mentors: Hye-Sung Kim, Ph.D., and Michael Lipscomb, Ph.D.

CAS - Department of Political Science

(PLSC 490 - Kim, Lipscomb)

### Student: Gregory Gravesandy

Brazil has had a reputation of having one of the worst prison systems in Latin America. Their system has deteriorated over the past few years and has taken a turn for the worst as a result. These deteriorating conditions consist of deadly prison riots, overcrowding, and gang violence, which all continue to plague Brazil's prisons. The 2006 Drug Law locks up Brazilian civilians who have drugs on them, but fails to specify the minimum amount of drugs they must have. This means that a Brazilian who is found to have a small amount of drugs can be locked up and considered a drug trafficker instead of a drug user. Therefore, this paper hypothesizes that the tough government policies on drugs have led to a massive increase in prison populations in Brazil, which, in turn, helps us understand the deteriorating conditions in those prisons.

## Outsourcing: Impact in the Manufacturing Sector and Computer Industry

Faculty Mentors: Louis Pantuosco, Ph.D., and Danko Tarabar, Ph.D.

CBA - Department of Accounting, Finance, and Economics

(ECON 345 - Pantuosco)

### Student: Andres E. Carvajal

Since the General Agreement on Trade and Tariffs (GATT) in 1947, outsourcing has been a topic of concern for business and government officials. More specifically, outsourcing in the U.S. has impacted employment in the U.S. manufacturing industry. After an increase to 38.75% of the workforce employed in the manufacturing sector during World War II, manufacturing employment has been on a steady decline since 1955. With the manufacturing sector contributing \$2.33 trillion to U.S. GDP in 2018, 11.6% of total output, the emphasis of this paper is the U.S. computer industry. Apple and Microsoft are two of the largest U.S. founded companies in this industry and are perfect examples to look at. Both of them currently manufacture most of their products in China to reduce cost and increase mass production. Approximately 95% of Apple products are manufactured in China and Microsoft has over 17,000 partnerships that are mostly from China. Therefore, outsourcing seems to be one of the main causes of the U.S. employment decline, and it can directly affect wage rates and job vulnerability in the manufacturing sector, specifically the computer industry.

## Mapping Mutagen-Sensitivity Gene *mus109* in the *Drosophila melanogaster* Genome

Supported by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Kathryn Kohl, Ph.D.

CAS - Department of Biology

### Student: Jordan DeLoach

All organisms experience DNA damage, and a variety of DNA repair pathways exist to combat this damage. *Drosophila* mutagen-sensitivity (*mus*) genes can be used to further study these pathways. An unmapped *mus* gene, *mus109*, is of interest to the Kohl lab for this reason. Previous research mapped *mus109* to a region of the *Drosophila melanogaster* X chromosome that consists of 520,000 nucleotides and 41 genes. To identify the precise molecular location of *mus109*, complementation analysis was conducted using deficiencies to assess for mutagen-sensitivity, and the probable genomic location of *mus109* was narrowed to 12% of the original region. A candidate gene in this narrowed region was identified and sequenced in *mus109* mutants to screen for the presence of any mutations. Mutations were identified within the candidate gene in each of the *mus109* alleles. To confirm the identity of *mus109*, transgenic flies carrying a wild-type copy of the candidate gene were created and are currently being used in a rescue experiment.

## Similarities between Murder Victims and Their Social Groups

Faculty Mentor: Maria Aysa-Lastra, Ph.D.

CAS - Department of Sociology, Criminology, and Anthropology

(SOCL 516 - Aysa-Lastra)

### Student: Alyah Hancock

This research paper reveals possible social clustering between murder victims and their associates. The literature on the association of murder victims and members of their social groups is not vast. The literature only revealed characteristics of victims, the types of victims, and the crime scenes where victims were found. For this reason, I pursue the use of self-reported associates' characteristics, and characteristics of murder victims by sex, age groups, racial and ethnic groups to identify similarities between murder victims and one or more members of their social groups. Using data from the General Social Survey collected in 1989, I identify 32 groups for each region. Using logistic regression, I estimate the odds that a murder victim belongs to the same sociodemographic and racial group as the associate. I expect to observe high odds for each group in each location, reflecting social clustering among members of certain groups and their increased exposure to violent and lethal crime.

## Native American Tribes and Their Sovereignities

Faculty Mentors: Hye-Sung Kim, Ph.D., and Michael Lipscomb, Ph.D.

CAS - Department of Political Science

(PLSC 490 - Kim, Lipscomb)

### Student: Patrick Jenkins

How does sovereignty - the power of a nation to govern itself - differ between tribal governments? I am using the Cherokee Nation and the Catawba Nation as case studies to demonstrate a particular set of differences between two tribes. I look at the different paths these two tribal nations have followed in attaining their current understandings and practices of sovereignty. For the Cherokees, the path reflects ongoing federal recognition. The Catawbans, on the other hand, have lost, then regained, the federal recognition of their sovereignty. The Cherokees' sovereignty is more defined and ingrained more fully in the practices and self-understanding of their nation. That notion, this paper argues, is less ingrained for the Catwbans. Though taking many forms, sovereignty can therefore either empower or limit what Native Americans are allowed to do or accomplish as a nation.

## The Association between Premarital Cohabitation and Marital Quality

Faculty Mentor: Maria Aysa-Lastra, Ph.D.

CAS – Department of Sociology, Criminology, and Anthropology

(SOCL 516 – Aysa-Lastra)

### Student: Qwinsatta DeV Vaughn

This paper explores the relationships between marriage quality, mate selection, and premarital cohabitation. Although premarital cohabitation is thought to have a positive effect on marriage quality, previous works suggest otherwise. Research on this topic has evolved over time, highlighting the fact that premarital cohabitation is becoming normative behavior. Earlier research suggests that premarital cohabitation, by itself, does not necessarily affect marital quality, but rather cohabitation experience and mate selection. Using data from the General Social Survey of 1994, I use linear regression on a scale on marriage happiness and estimate an index on mate selection to examine the associations between premarital cohabitation experiences, mate selection, and subsequent marital quality. Persons with previous experiences of premarital cohabitation are more likely to have lower levels of marital quality than those without them. Mate selection is a substantial and significant predictor of marital quality. Today, premarital cohabitation is normative among young couples in the U.S. There is an increasing need to examine the quality of these relations and the mate-selection process of these intimate partners.

## Occupations versus Gun Ownership

Faculty Mentor: Maria Aysa-Lastra, Ph.D.

CAS – Department of Sociology, Criminology, and Anthropology

(SOCL 516 – Aysa-Lastra)

### Student: Bethany Atkinson

This research informs on occupational profiles of gun owners. I argue that people with occupations that require professional training in working with guns will be more likely to own personal guns and have them in their own homes. I use data from the General Social Survey collected in 2016 and 2018 to estimate the odds of gun ownership for groups of occupations. I distinguish those occupations that require the eventual use of firearms from those that do not require this skill. The literature shows that persons with current or previous professional training in using firearms are not comfortable around people who own guns without the proper professional and ethical training. The following groups have higher odds of gun ownership: males, those living in rural areas, individuals in their late thirties, and those in occupations requiring them to work with guns on a daily basis. Policies on gun control might consider gun owners in occupations that require professional training in the use of firearms a group with a lower risk of abusing guns; therefore, they might have less strict background checks and might help reduce incidents with people who do not have professional training and practices in controlled and regulated environments.

## Racist Housing Policy: Implications of Institutionalized, Discriminatory Housing Policy on Modern Day African Americans

Faculty Mentors: Hye-Sung Kim, Ph.D., and Michael Lipscomb, Ph.D.

CAS – Department of Political Science

(PLSC 490 – Kim, Lipscomb)

### Student: Thomas Simmons

Racially motivated discriminatory practices within the housing markets have had mild to severe ramifications on the black experience. These housing policies, which began in the early 20<sup>th</sup> century, are responsible for a variety of different struggles that are faced by black Americans today. These policies included methods that stripped aspiring African Americans of not only material resources for themselves, but also resources and advantages for their children and families. This essay seeks to identify and examine the effect that racial housing policies had on African Americans and how they have continued to affect blacks in modern-day society.

## Determinants of Exposure to Lethal Violence

Faculty Mentor: Maria Aysa-Lastra, Ph.D.

CAS – Department of Sociology, Criminology, and Anthropology

(SOCL 516 – Aysa-Lastra)

### Student: Mara Ford

The purpose of this research is to explain the correlation between a person's mental health and happiness conditional on violent victimization. The type of violence that has happened to a person can determine his or her life, affecting one's happiness or even one's health. I utilized General Social Survey data to estimate the association between an individual's happiness and overall self-rated health between the years of 1989-1991. I argue that the association between happiness and mental health is moderated by experiences of severe or lethal violence. However, it was hypothesized that a person who has been victimized is less likely to be happy than a person who has not been victimized at the same level of overall health. It was hypothesized that a person who has been victimized will have poorer health conditions than one who has not. I use logistic regression to explore the effects of victimization on the relation between health and happiness and its effects on self-rated health. It is relevant to understand these associations due to the increasing exposure to lethal violence among the American population.

## Locating *mus305* in *Drosophila melanogaster* using Deficiency Mapping

Supported by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Kathryn Kohl, Ph.D.

CAS - Department of Biology

### Student: Tyrice Ferguson

Mutagens are agents that cause DNA damage, including single- and double-strand breaks. However, there are multiple cellular response pathways that can be used to repair these breaks. The unmapped gene *mus305* is suspected to be involved in DNA repair in *Drosophila melanogaster*. Therefore, my objective was to narrow down the location of *mus305* on the third chromosome from a starting region of ~777kb containing 216 genes. To do that, I used deficiency (deletion) mapping, which determines if a chromosomal deletion overlaps a mutation of interest. If the deletion and the mutation overlap, the mutated phenotype - in this case, mutagen-sensitivity - will be uncovered. In this experiment, *mus305* / Sb females were crossed to Df / Sb males in a mutagen-sensitivity assay to locate *mus305*. Visible phenotypes allowed us to count how many flies survived to adulthood in four possible offspring groups in two separate broods - a control brood treated with water and one treated with a DNA-damaging agent. By scoring 5,951 flies within all deficiencies, I have concluded that one of the three deficiencies showed mutagen-sensitivity and therefore uncovers *mus305*. Therefore, we narrowed the location of *mus305* to ~96 kb and 16 genes (~12% of the starting region). Within this region, we selected one candidate gene based on its proposed molecular function. However, we sequenced *mus305* embryos and found no mutations within this gene. We selected a second candidate gene and are currently investigating whether this gene is *mus305*.

## The Environmental Movement

Faculty Mentor: Jennifer Disney, Ph.D.

CAS - Department of Political Science

(PLSC 507 - Disney)

### Student: Grant Houmiel

There are many issues and injustices that plague our society, and people will eventually become dissatisfied with the conditions they are under and will band together to form a social movement in hopes of forcing change to occur. One movement that has arisen in society is the environmental movement, which is unique from other movements in that, where some movements can rise and fall in the span of weeks, the environmental movement first began in the nineteenth century and is still a major movement today. One reason for the longevity of this movement is that many environmental issues are very complex and require coordination and time in order to be properly addressed. The environmental movement additionally faces the issue of the free rider problem, because although everyone is impacted by environmental degradation and stands to benefit, people do not need to be involved to benefit. The diversity has also assisted because it allows for a broader perspective; however, it also receives criticism for actions performed by different groups, such as Greenpeace International using nonviolent forms of protest, while other groups like Earth Liberation Front (ELF) employ more violent forms of protests. This paper will analyze the impacts that some of these different activists have had on the movement. Additionally, it will explore how the environmental movement has evolved from being seen as something just for radical environmentalists into a more bureaucratically structured movement, into the more mainstream movement where it is more popular for individuals to be seen as pro-environment, as well as the problems that have been faced in its long presence. Through this analysis of the environmental movement, there will be answers to what has been the most successful strategy of the movement.

## Examining Travel Motives of College Football Away Games

Faculty Mentor: Jinwook (Jason) Chung, Ph.D.

COE - Department of Physical Education, Sport, and Human Performance

(SPMA 390 - Chung)

### Student: Justin Rhode

College football requires attendees to dedicate their free time to be in attendance. For college football away games, attendees have to dedicate more free time than for home games due to traveling. External and internal motives both play a key part in whether spectators decide to travel to a college football away game. The lack of research provided on spectator motivation to travel to away games drove this research idea. With decreased attendance becoming an issue in college football, this study can provide useful information to various athletic departments. Data were analyzed using quantitative analysis. 176 participants participated in this research. Results showed that factors related to expense were the most important ones considered by college football fans. Therefore, college athletics needs to understand the fans' willingness to spend more monetarily on traveling to away games.

## Intersection of Mental Health and Student-Athletes

Faculty Mentor: Jinwook (Jason) Chung, Ph.D.

COE - Department of Physical Education, Sport, and Human Performance

(SPMA 390 - Chung)

### Student: Dylan Patterson

There is a definite need for a culture shift in college athletics. There is a stigma that surrounds mental health and counseling, especially with college athletes, and mental health is often overlooked. Being away from home, adjusting to academics, performing in athletics, and the social scene are just a few stressors that can affect a student-athlete's well-being. For this research, student-athletes from NCAA Division 1 schools were asked a series of questions. Data were collected via an online survey, which was sent over email, text messages, and social media platforms (Facebook, Instagram). The purpose of the survey was to evaluate stressors that could affect athletes' mental health. The top three stressors students experience were found to be academic performance, athletic performance (student-athletes), and time management.

## What are the Outcomes of Children Living in Single-Parent Households?

Faculty Mentor: Maria Aysa-Lastra

CAS - Department of Sociology, Criminology, and Anthropology

(SOCL 516 - Aysa-Lastra)

### Student: A'Mya Chavis

Children who are living in single-parent households have been examined to determine whether their experiences play a role in their educational and occupational outcomes. The income of the household, socioeconomic status, and the physical and mental health of the child and parent are all factors in determining the structure of the household. The objective is to explore and understand how the structure of the family is related to and can predict the educational and occupational outcomes that will define the social status of the child. In addition to access to resources, I argue that the distribution of time and character of relationships are key factors for child and adult development. This paper includes parenting styles for proxy adult supervision. I used multiple linear and logistic regressions to estimate the relationships between types of households, resources, and parenting styles on education outcomes and participation in the labor market. These results reveal how the parent and child are working together to defeat the challenges and stereotypes of living in a single-parent household.

## Opinions on Government Funding for Mental Healthcare

Faculty Mentor: Maria Aysa-Lastra, Ph.D.

CAS - Department of Sociology, Criminology, and Anthropology

(SOCL 516 - Aysa-Lastra)

### Student: Darrian Jeter

The objective of this research paper is to measure individuals' opinions on government spending for mental healthcare, and to inform on issues related to mental healthcare and the effects it has on individuals within society. This topic has been a concern for many years, because a plethora of individuals, both males and females, have trouble funding their own mental health conditions. Therefore, government programs have been the main aid for vulnerable individuals, enabling them to avoid large debts and to pay for medication and counseling sessions. My hypothesis is that most participants will decide that the government should be responsible for funding care for individuals with mental health issues, because they will not be able to fund it for themselves due to their socioeconomic status, unemployment, or low income due to disabilities. I use the General Social Survey for the years of 1996 and 2006. I use linear regression to determine opinions on government spending income, political affiliation, education, and knowledge of individuals with mental healthcare issues. My conclusions illustrate the differences in opinions on government spending for mental healthcare. If expanded upon, this research could inform public policy on the importance of mental healthcare spending to improve the living conditions and productivity of these vulnerable groups.

## Disability in Occupations

Faculty Mentor: Maria Aysa-Lastra, Ph.D.

CAS - Department of Sociology, Criminology, and Anthropology

(SOCL 516 - Aysa-Lastra)

### Student: Damon Price

My research is about different disabilities that veterans and those who serve actively in the military may suffer while on the job. I am curious about whether or not their disabilities develop from their specific jobs in the military, or whether citizens who are not in the military also suffer from disabilities related to their jobs in civilian occupations. To determine differential occupational disability between military and civilian occupations, I will control for factors that may affect disability prevalence, such as age, sex, race, and marital status. I use IPMUS-CPS data years. I find that occupations within the military may require more physical work, which puts more physical strain on individuals, explaining why active members and veterans are more likely to develop disabilities than those with most civilian jobs. However, I identify a cluster of civilian occupations with high disability prevalence. One caveat that needs to be considered is the potential for veterans or active military to report more disabilities than those in nonmilitary occupations due to their increased access to healthcare services.

## Abortion Three Ways: Differences in Opinions

Faculty Mentor: Maria Aysa-Lastra, Ph.D.

CAS - Department of Sociology, Criminology, and Anthropology

(SOCL 516 - Aysa-Lastra)

### Student: Abrilla Agurs

This paper explores differences in opinions about early termination of pregnancy. Previous research has found that age, religion, gender, and political affiliation inform opinions on abortion. In today's society, a woman has the right to choose what to do with her body; however, people who are older, more conservative, male, and have stronger religious views are less likely to be in favor of women having abortions. I analyzed three indicators of opinions about abortion from the General Social Survey and explored the correlations as informed by the literature. The indicators gathered respondents' opinions on abortion in the following events: (a) there is a strong chance of serious defect in the baby, (b) the mother's health is seriously endangered by the pregnancy, and (c) the parents cannot afford another child. Logistic regression results show that younger populations, women, liberals, and less religious individuals are more likely to support women's decisions than their counterparts.

## What Conditions Lead to War between a Rising Power and an Established Power?

Faculty Mentors: Hye-Sung Kim, Ph.D., and Michael Lipscomb, Ph.D.

CAS - Department of Political Science

(PLSC 490 - Kim, Lipscomb)

### Student: Daniel E. Johnson

This study attempts to determine the determinants of war between an established power and a rising power. The Thucydides Trap describes a topic often discussed among international political scientists relating to this dynamic. It references the famous quote by Thucydides that "it was the rise of Athens, and the fear this instilled in Sparta, that made war inevitable." This term has since been applied to situations in which a rising power challenges an established power. Political scientists such as Harvard political science professor Graham Allison have argued that this dynamic tends to lead to war. Allison provides a list of 16 examples of the Thucydides Trap and argues 12 of them resulted in war. In making this argument, Allison points specifically to the First World War as a primary example. This study considers the case of the First World War, but also the case of the Cold War between the U.S. and the Soviet Union as a basis for determining the likelihood of war between the U.S. and China. Based on this comparative analysis, this study determines that, due to the advent of nuclear weapons and mutually assured destruction doctrines, the Thucydides Trap is no longer a viable model by which to view international relations. The advent of nuclear weapons makes the risk associated with going to war so high that traditional considerations are now far less relevant.

## The Presence of Children and Their Effect on Marital Satisfaction

Faculty Mentor: Maria Aysa-Lastra, Ph.D.

CAS - Department of Sociology, Criminology, and Anthropology

(SOCL 516 - Aysa-Lastra)

### Student: Michael Williams

The purpose of this research was to examine the relationship between marital happiness amongst couples with and without children and the impact of children's presence on overall marital satisfaction for men and women. Previous research has found significant differences that suggest couples with children no longer living in the household. In addition, there is also a significant negative correlation between marital satisfaction and number of children within a household. In contrast, couples without children reported higher rates of marital satisfaction. Moreover, the previous studies indicate that adolescent children have the largest negative impact on marriage quality. While perceptions of child rearing may seem to be something that makes a marriage stronger and happier, previous data do not support this. I use General Social Survey data to explore differences in levels of marital satisfaction by age of the children and by the number of children in the household. If it is found that there is a correlation between adolescent children and decreased marital satisfaction, this will need to be alleviated through programs such as therapy and in-school counseling.

## Racial Profiling and Arrests within the United States

Faculty Mentor: Maria Aysa-Lastra, Ph.D.

CAS - Department of Sociology, Criminology, and Anthropology

(SOCL 516 - Aysa-Lastra)

### Student: Amiiya Williams

In recent times, we have seen an increase in the number of individuals being released from prison after wrongful convictions. The majority of these individuals are people of color. Many assume that race is a contributing factor to the way American police make their decisions on arrests while on the job. Police discretion and racial bias are contributing factors to racial profiling in policing in the United States. Many researchers have discovered that police discretion is used when policing certain neighborhoods, policing people of color, and in certain interactions. This paper analyzes the increased likelihood that members of minority groups have to be arrested, picked up, or charged by the police, whether or not they are guilty of committing infractions. Using data from the General Social Survey from 2000 to 2012, I examine the effects of race on arrests, tickets, going to prison or jail, and being accused of murder. Results indicate that minority members have a higher prevalence of contact with the police after controlling for sex, age, gender, and religion of an individual. These results highlight the need of increasing training among the police force to reduce racial and ethnic bias in policing across the nation.

## The Impacts of Racial Integration and Free and Reduced Lunch Programs on Education Quality in Rock Hill

Faculty Mentors: Hye-Sung Kim, Ph.D., and Stephen Smith, Ph.D.

CAS - Department of Political Science

(PLSC 350 - Kim)

### Students: Shannon Barber and Daniel Brown

There has historically been a strong correlation between race, socioeconomic status, and the quality of education students receive at any given school. Focusing on Rock Hill School District data, we examine whether deliberate balancing of racial and socioeconomic disparities leads to more equality in educational quality. In addition, we also examine the policy impact of Free/Reduced Lunch on educational quality. We use a panel of data that includes all of Rock Hill School District Three and three middle schools for the period between 2007 and 2019. This timeframe includes both a period when the schools were much more heavily segregated by class and race and a period following an integration. As a dependent variable we use measures of education quality, such as teacher/pupil ratio. Our independent variables are free/reduced lunch eligibility and racial composition of schools, such as the proportion of African American students. Our hypothesis is that the quality of education was much poorer in schools with higher proportions of socioeconomically disadvantaged racial minorities, while Free/Reduced Lunch policy contributed to an increase in educational quality. To account for the issue of endogeneity due to unobserved omitted variables, we use fixed effects (FE) estimation.

## Understanding How to Reduce Migraines with Exercise

Faculty Mentor: Joni Boyd, Ph.D.

COE - Department of Physical Education, Sport, and Human Performance

### Student: Abigail Frick

Most of the time, migraines are overlooked, because it seems that they will never get better. Many individuals try to ignore them, but most are unable to do so due to their severity. There are ways to reduce migraines with fewer medications. There is a demand for alternative ways to decrease chronic migraines. Migraines are very common in all populations, but how can exercise help in preventing them like it does for most chronic diseases? The purpose of this research is to understand the potential for exercise to prevent or reduce migraines. Some of the conditions that can trigger migraines in most people are stress, depression, tiredness, and poor posture. Exercise can have an impact on all of these. The reason that exercise can have such an impact on migraines is due to the endorphins that are released when exercising. These endorphins are known as "feel-good drugs." The endorphins can act as pain killers in the body, which reduces stress and depression and can improve sleep. These are all things that could be potentially the cause of most individuals' migraines. This review article not only looks at how migraines are reduced with the use of exercise but also the pathophysiology behind migraines. When doing exercise there are fewer negative side effects than are associated with taking medications to prevent migraines.

## Microscopy 530: Developing a New Laboratory Course

Supported by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Julian Smith III, Ph.D.

CAS - Department of Biology

### Student: Calvin Anfinson

The use of optical systems, such as light microscopy, is an integral part of numerous biological findings and a common tool in research activities. Understanding optical systems at a deep level is an important facet for knowing the limit of the resolution of information that can be obtained from optical systems. In addition, knowing how these systems operate is an important part in forming experimental procedures for researchers. A microscopy course allows those who are interested in going into research, or going into jobs that regularly utilize optical systems, to develop a stronger skill set within this domain. Accordingly, we are developing laboratory exercises intended to give students a foundation in basic optics pertaining to microscopes. The course we have been working on developing will address the topics above by providing students with hands-on, in-depth lab exercises on basic and complex concepts and techniques necessary to understand the rapid changes in the field of microscopy.

## Separation of Troponin C from *E. coli*

Faculty Mentor: Nicholas Grosseohme, Ph.D.

CAS - Department of Chemistry, Physics, and Geology

### Student: Calvin Anfinson

The troponin complex consists of three components, troponin T, troponin I, and troponin C. The troponin complex is the molecular structure that controls striated muscle contraction via movement of actin thin filaments against myosin thick filaments. Troponin C is composed of two distinct domains with three calcium binding sites - the interaction of calcium with each of these domains plays a crucial role in muscle contraction. Further elucidating of the structure of troponin C is important for developing drugs that can better bind to the troponin complex, specifically troponin C. Understanding troponin C can help treat heart failure, cardiomyopathies, and better develop troponin-modulating drugs. To do this, *E. coli* was genetically modified to make the troponin protein. Column chromatography was then used to separate our targeted protein out from the other proteins *E. coli* produced. We were able to isolate the desired protein in the end; however, the amount isolated was lower than expected.

## Ancestral State Reconstruction of Select Species within Monocelididae

Supported by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentor: Julian Smith III, Ph.D.

CAS - Department of Biology

### Student: Calvin Anfinson

The Monocelididae are the most diverse family in the species-rich Platyhelminth Order Proseriata. Although recent internal molecular phylogenies of Proseriata largely concur, those focusing on the family Monocelididae (approximately 200 spp) have revealed conflicts with the current taxonomy for nearly two decades. Molecular studies have allowed some clarification, such as erection of a monophyletic subfamily Monocelididae, characterized morphologically by a conjuncta-simplex male organ. However, recent molecular phylogenies of the family as a whole continue to reveal paraphyletic subfamilies and even genera. During the summer of 2019, we ran ancestral state reconstructions on each of the nodes formed by the phylogenetic tree produced on select species within Monocelididae. This had the goal of getting a better understanding of how character states evolved to where they are now, and allowed us to compare the ancestral state reconstructions to predictions made from the phylogenetic tree.

## Synthesis of Zinc Oxide Particles: Biological Systems and Optical Properties

Faculty Mentor: Maria Gelabert, Ph.D.

CAS - Department of Chemistry, Physics, and Geology

### Student: Kalvin Anfinson

Zinc oxide nanoparticles (ZnO NPs) have a wide range of applications such as sunscreens, semiconductors, cancer treatments, and antibiotics. They are being employed more frequently, yet their environmental impacts need to be further explored. Properties of nanoparticles are tied to surface structures and optical properties. We conducted experiments to investigate different concentrations of capping agents and varying ratios of reagents zinc chloride and sodium hydroxide, probing their effects on preparation of ZnO NPs in pure ethanol. Products were examined with particle size analysis and scanning electron microscopy (SEM). Optical properties were investigated with ultraviolet-visible and fluorescence spectroscopy. Different capping agents and differing ratios of reagents lead to both different defect levels and different morphologies of zinc oxide micro-particles and ZnO NPs. Guar gum and polyethylene glycol (PEG) seemed to lead to spherical morphologies and oleic acid seemed to lead to needle-like morphologies. The median particle size using oleic acid, PEG, and guar gum as capping agents was 1-7, 1-4, and 9-12  $\mu\text{m}$  respectively. Ultraviolet-visible spectroscopy revealed broad absorption around 400 nm, close to the band gap energy. For emission data, synthesis using oleic acid exhibited different fluorescence emission peaks dependent on the ratio of reagents used. Products exhibited fluorescence emission peaks typically at 390, 451, and 468 nm, with excitation at 350 nm. The higher concentration of NaOH, with all else remaining constant, showed emission peaks around 390 and 530 nm.



## The Impact of Immigration Experience on the Perception of Diversity

Faculty Mentor: Hye-Sung Kim, Ph.D.

CAS - Department of Political Science

(PLSC 350 - Kim)

### Student: Soli Byrd

Global migration has increased immensely with many people recognizing that their country has become more diverse in the past 20 years. According to Pew Research Data conducted in 2018 found that many people around the world seem to be more in favor of diversity in their nation. In this paper, based on the survey data collected by the Pew research center in 2018 from 27 countries including 30,133 individuals, I examine the factors that influence individual perspectives on diversity. I hypothesize that people in the United States is more likely to support an increase of diversity in comparison to people in European countries. I have formed this hypothesis due to the fact that since the founding of the United States the idea of a melting pot in regards to people has been not only acknowledged but encouraged. I further hypothesize that people's personal experiences and family connections with immigration play an important role in influencing their views. As there is a higher percentage of immigrants in the United States than in European countries, I expect to observe that Americans, in general, are more likely to view diversity favorably than European respondents. In order to examine these research questions, I will use multiple regression analyses. My dependent variable measures individual views on diversity, independent variables include the country of residence and past experience of immigration, and control variables include age, gender, education levels and other socio-economic factors.

## The Lasting Effects of the Bay of Pigs Invasion

Faculty Mentor: Gregory S. Crider, Ph.D.

CAS - Department of History

(HIST 590 - Crider)

### Student: Itzel Lara

The Bay of Pigs Invasion took place in 1961 and was an operation largely enforced by the CIA with the approval of President John F. Kennedy and other officials. The purpose of this invasion was to overthrow Fidel Castro's government, but the plan ultimately failed. By using primary sources, such as recorded interviews, letters, and memoranda that were recently declassified, alongside the National Security Archives, the John F. Kennedy Library, and other articles, journals and books, this paper argues that the failing results heavily impacted Kennedy's administration and Kennedy himself, leaving him with a troubled mindset.



## Benefits of Physical Rehabilitation for Post-Operative Tibial Plateau Leveling Osteotomy Patients

Faculty Mentor: Aaron Aslakson, M.A.

COE - Department of Physical Education, Sport, and Human Performance

(PESH 381 - Aslakson)

**Student: Heather Gilmer**

Physical therapy is a fast-growing field in human medicine today. With new science and research, physical therapists have really shown the benefits of physical therapy on a patient's ability to recover and function. What many do not realize is that veterinary medicine is also experiencing the same advances as the human field. Rehabilitation for animals produces just as many positive outcomes. Research has continually shown the positive correlation between rehab and improved recovery time and regain of function in animals. This information is particularly valuable in veterinary medicine today, because more and more people are willing to spend money to have advanced procedures performed on their pets. One of the most common orthopaedic surgeries performed on dogs today is known as a tibial plateau leveling osteotomy (TPLO). This surgery is often indicated when there is an injury to the cranial cruciate ligament in the canine stifle, resulting in a partial or complete tear. This injury is the equivalent to an ACL tear in humans. Much research has been done on physical therapy in the human knee injury and how successful it has proven to be, and I hope to shed some light on the veterinary medicine equivalent. The purpose of this presentation is to highlight the benefits and detriments of different modalities on the recovery of post-op TPLO patients.

## Race and Ethnicity versus Socioeconomic Status: Explaining U.S. Voting Patterns

Faculty Mentor: Hye-Sung Kim, Ph.D.

CAS - Department of Political Science

(PLSC 350 - Kim)

**Students: Nathaniel Willey, Destiny Nickole Whichard, and Tyree Jordan Perdue**

In U.S. politics, it is often thought that race and ethnicity are critical determinants of voting patterns. However, there exists a significant variation in voting patterns for the same race and ethnic group. In this study, we examine the minority voting patterns in the United States by focusing on how socioeconomic classes affect voting decisions among the voters of various minority groups. Using survey research data collected by Pew Research Center in 2012, which consists of 1,511 respondents nationwide, we conduct multiple regression analyses to examine this question. We use voting intention as the dependent variable, with individual racial and ethnic identity, socioeconomic status, and their interaction terms as our independent variables. We hypothesize that the racial and ethnic minorities from the lower socioeconomic status will align their beliefs with the Democratic Party more so than the minorities from higher socioeconomic status.

## The ABCs of Restricted Rights: Abortion, Birth Control, and Change

Faculty Mentor: Jennifer Disney, Ph.D.

CAS - Department of Political Science

(PLSC 507 - Disney)

**Student: Ann Carroll**

Abortion once reigned legal in the United States. Fights for a woman's right to obtain an abortion in the United States escalated in the mid-19th century after passing official bans on abortion. These fights existed as underground movements, rallies, and organizations, and did not cease after the monumental 1973 Supreme Court ruling *Roe v. Wade*. Today, the abortion movement has transformed some of its demands and is also known as the reproductive justice movement or reproductive freedom movement. Originally only called pro-choice or pro-life, the expansion of names to pro-choice and anti-choice outlines the movements' changes to American culture. Fueled by the two opposing sides, the fight to expand or diminish access to abortion ignited across ideologies. Women of different religions, races, orientations, and political parties share their support for safe and accessible abortions or share their disapproval of abortions. Prior to the illegalization of abortion in the United States in the late 1800s, abortions were frowned upon and highly unpopular. Yet activists started speaking out about abortions because of the women's movement. Focusing solely on the transformation of abortion movements in the United States, this paper discusses how the pro-choice and anti-choice sides of abortion movements sustained themselves by adjusting their stances over the fight of women's right to control their bodies and the continuous presence of the opposing side. This paper will also show the progression of the abortion movements in the United States from before and after *Roe v. Wade*. The pro- and anti-choice advocates take opposing sides on each of these issues, without compromising their stances. These enduring opposing strains continue to sustain the abortion movements from before *Roe v. Wade* to now through the intersectionality of women and the clashing pro- and anti-choice activists.



## Sphingosine Kinase Inhibition Using Modified Variants of a Sphingosine Kinase Inhibitor

Supported by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentor: T. Christian Grattan, Ph.D.

CAS - Department of Chemistry, Physics, and Geology

### Student: Kendarius Butler

In cells, the breakdown of the cell membrane occurs through the sphingomyelin metabolic pathway. Within this pathway, there are four metabolic products: sphingomyelin, ceramide, sphingosine, and sphingosine-1-phosphate (S1P). The conversion of sphingosine to S1P using sphingosine kinase 1 determines the cell's fate. If the intracellular concentration of S1P increases, cells signal for anti-apoptotic outcomes, spreading the cancer. If S1P is inhibited, the intracellular concentrations of sphingosine and ceramide would increase and lead to apoptosis. Sphingosine kinase inhibitor 1 (SKI-1), was identified recently as a potential drug. Despite the drug's success *in vitro*, it failed *in vivo*. The log P value for SKI-1 is calculated to be 5.6, meaning that the drug may not be as soluble in the body or effective in reaching the target sites. Because of this, it was decided that synthetically modifying the structure might improve the *in vivo* effectiveness. Two zones were examined for modification in this project. Both of these zones contain naphthalene rings, but one contains an additional hydroxyl group. Each inhibitor was produced by a three-step process involving microwave synthesis. The purity of each substance was confirmed by NMR. Each of the new inhibitor compounds were sent off for bioassay testing to determine the effectiveness of these modifications relative to the template compound, SKI-1 and realize the potential of this compound *in vivo*.

## Targeting Cancer Cells Through Modifications of a Known Sphingosine Kinase Inhibitor

Supported by an SC INBRE grant from the National Institute for General Medical Sciences (NIH-NIGMS)

Faculty Mentor: T. Christian Grattan, Ph.D.

CAS - Department of Chemistry, Physics, and Geology

### Student: Melody Iacino

As the prevalence of cancer continues to rise worldwide, the need for more research in this area has become increasingly important. Of the current treatments, targeted therapy has shown promising results, as it is able to selectively prevent cancer cell proliferation by promoting apoptotic activity in mutated cells. Responsible for the pro-apoptotic and anti-apoptotic effects on these cancer cells are the metabolites of the sphingolipid metabolic pathway, ceramide and sphingosine-1-phosphate (S1P), respectively. Sphingosine kinase 1 (SK1) is currently responsible for sustaining the biological responses of these metabolites. With targeted inhibition of this enzyme, however, the conversion of SK1 to its anti-apoptotic metabolite, S1P, can be prevented by promoting an increase in the ceramide metabolite levels responsible for apoptosis. A current identified SK1 inhibitor has shown successful inhibition results *in vitro*, though it has failed *in vivo*. In order to increase the rate of success of the known SK1 inhibitor *in vivo*, select modifications to the structure must be made. Synthetic modifications were made to the known SK1 inhibitor using a 3-step process. Calculations of the log P values were performed to assess the *in vivo* optimization in comparison to the template molecule. In the future, the synthesized variants will be sent for bioassay testing to further analyze the success rate of each of the inhibitors interacting with SK1. From there, further modifications will be made to the zones of the template molecule in order to optimize the inhibitor's ability to be used as a potential therapeutic aid in the diagnosis of cancer.

## Healthcare for Those With versus Without Reported Disabilities

Faculty Mentor: María Aysa-Lastra, Ph.D.

COE - Department of Sociology, Criminology, and Anthropology

(SOCL 516 - Aysa-Lastra)

### Student: Daniel Williams

The purpose of this research paper is to determine whether access to healthcare varies by type of disability reported and how it compares to access for those without a disability. It is important for the patients of the study to find out if they are physically, socially, and emotionally able to access healthcare. The overall goal of this study is to measure whether patients seeking medical help for health conditions would be qualified. Factors determining patients receiving healthcare would include education, age, income, sex, and race. Previous research has shown differences to prove that healthcare for those disabled can be due to employment and can lead to psychological and economic benefits for people with identification. We can also access the number of distinct cognitive factors related to the level of pain; then, we need to find whether pain intensity and disability may come from cognitive factors, explaining the higher levels of functional self-efficacy and levels of depression. All these factors will be discussed together to show why healthcare is needed for those with a disability reported against those without a disability.

## Trends of Gun Ownership

Faculty Mentor: María Aysa-Lastra, Ph.D.

CAS - Department of Sociology, Criminology, and Anthropology

(SOCL 516 - Aysa-Lastra)

### Student: Jonathan Sowell

This article discusses trends in gun ownership over the course of 27 years. The main purpose of this research is to determine what social factors contribute to gun ownership. Gun ownership remains a debate topic across the United States, due to the frequency of mass shootings and other gun-related crimes. The objective of this research is to examine gun ownership trends and observe what factors influence gun ownership rates. Using the GSS data from 1972 to 2018 (excluding 1978, 1983, and 1986, when no data were collected), I look specifically at sex, race, education level, income level, and political affiliation. I estimate a logistic regression model to analyze the data. My results show that I expect Caucasians, men, persons with low or middle levels of education, and Republicans to have higher likelihood of owning guns. I expect minorities, women, persons with high levels of education, Democrats, and both persons of high and low income levels to own fewer guns. This research highlights what factors contribute to a person either owning or not owning a gun over time.

## Race, Sex, Gender, Sexuality, and a Challenge to New Social Movement Theory

Faculty Mentor: Jennifer Disney, Ph.D.

CAS - Department of Political Science

(PLSC 507 - Disney)

**Student: Richard Lyda**

The emergence of social movements in response to social injustice is part of the normal function of society. The emergence of social movements involves a diverse cast of actors working toward a varied set of goals, against opposition that is sometimes clearly defined and, at other times, more abstract. Social movement theory is the field of study dedicated to understanding why and when social movements mobilize, how they are maintained (or fail to be maintained), and the potential outcomes of social movements. Some theories stress the importance of human behavior, while others focus on resource availability and political opportunity. New social movement theory is one approach that focuses on social movements in postindustrial societies. New social movement theory emphasizes collective identity creation and suggests that these movements are more concerned with identity politics and social life issues than class. In this paper, by exploring Black, Woman, and Queer liberation movements, I challenge new social movement theory by suggesting that all social movements are likely class-based social movements, and that the creation of collective identities has less to do with mobilization than it does with targeted forms of class oppression.

## The Effect of Black Masculinity on Black Women's Rights

Faculty Mentor: Jennifer Disney, Ph.D.

CAS - Department of Political Science

(PLSC 507 - Disney)

**Student: Zaria Bellamy**

Historically, masculinity and patriarchy have had a negative effect on the rights of women. More specifically, we see how black masculinity has negatively affected black women's rights. Black men's masculinity has been defined through the standards of masculinity created by white, middle-class, heterosexual men. Proximity to white men has exacerbated negative qualities of masculinity in black men. This paper examines the origins of the black man's masculinity through the history of slavery and Reconstruction that later shaped their interactions with black women and the black family dynamic. We see black men acting out their masculinity through family dynamics, the idea of freedom, the role of black men and women in the black church, the civil rights movement, and the creation of women's rights and feminist movements. This paper consists of qualitative research that has already been compiled through various scholars that has produced formal argument. Based on that research, this paper argues that black masculinity has negatively affected black women's rights by excluding them from major social movements and dominating spaces that were meant for the advancement of black people; specifically, the black church and the civil rights moment.

## The Impact of College Experience on Political Ideology

Faculty Mentor: Hye-Sung Kim, Ph.D.

CAS - Department of Political Science

(PLSC 350 - Kim)

**Students: Joseph Dupuy, Christopher Cantrell and Jeremiah Williams**

During the 2016 U.S. election, a growing number of conservatives and members of the Republican Party began to claim that colleges are turning or "indoctrinating" students into a liberal political bias. While not completely unfounded, their argument was that, because college professors have an influence over the opinions of their students, college campuses are a breeding ground of right-leaning political intolerance. This question is particularly interesting to us due to our current status as college students and our collective personal experiences. In this study, we aim to test whether this conservatives' claim is supported by empirical evidence. We hypothesize that, instead of solely liberal political leanings growing due to higher education, we will see other factors influence students' political leanings, or that they will not be influenced at all. We will test this hypothesis by analyzing survey research data from multiple periods. We examine whether college level or higher education has a positive effect on political leanings even after controlling for a series of potential confounders, such as socioeconomic background, gender, age, geographic region of residence, and geographic region of birth. We use multiple regression analyses to examine this question.

## An Intimate Relationship: The Link Between U.S. Media and Cuban Relations

Faculty Mentor: Gregory S. Crider, Ph.D.

CAS - Department of History

(HIST 590 - Crider)

**Student: Anna-Leigh Taylor**

By looking at the influence of the media on the U.S. government and the opinions of the American public during this time, this paper analyzes the connections between United States media outlets and Castro's Cuba during the 1960s. It also explores the relationship between Fidel Castro and ABC journalist Lisa Howard, who first met in 1963 and communicated for more than a year and a half. Howard is credited with setting up back-channel communications between the U.S. Government and Castro. A wide variety of documents—many found in the National Security Archives—both allude to and directly discuss this relationship. These documents convey the attitudes and opinions of the government pertaining to the situation. This paper argues that the relationship between Cuba and U.S. media had a profound impact on both government officials and the United States public after the 1961 Bay of Pigs Invasion. A careful analysis of memoranda from upper-level government officials also reveals that these men were aware of the relationship between Howard and Castro and used it to discredit her work. Ultimately, Lisa Howard played a vital role in the relationships between the United States and Cuba, through both media presentation and interactions with specific government officials.

## The Relationship between Corporate Ethics Policy and Employee Turnover Rates

Faculty Mentor: Hye-Sung Kim, Ph.D.

CAS - Department of Political Science

(PLSC 350 - Kim)

**Students: Alexander Bowers, Saadiyah Mills and Tyrrell Keim**

In 2019, the average turnover rate of companies in the United States sat at a staggering 44.3%, up from 40.3% in 2014. While not all turnover rates are tangible, this high rate has cost companies throughout the United States tens of billions of dollars. This paper will attempt to uncover exactly what causes these increasing rates, and what companies can do internally in order to decrease them and lessen their turnover costs. It is hypothesized that, as a company's ethical policies and the amount they pay their employees increase, we will see a decrease in their turnover rates. It will analyze this hypothesis by using the turnover rates as our dependent variable and Corporate Social Responsibility (CSR) scores of companies as our main independent variable. CSR ratings measure the quality of the companies' CSR management systems based on their policies, actions, and results on ethics. Median pay and median bonuses are included as control variables. To test the hypothesis, multiple regression models using an original dataset consisting of 32 companies will be used. 16 of these companies were chosen from a list of best places to work, provided by Great Place to Work Institute, Inc. Great Place to Work Institute, Inc. compiles this list based on an annual survey of over 4.3 million workers to determine optimal places to practice an occupation. Only 16 companies on the list had all the necessary information available for our key variables to be extracted for our data set. The other 16 companies were chosen at random and were not on the "Great Place to Work" list, in order to balance out the companies and evenly create a dummy variable for inclusion on the list.

## Missing People under Mysterious Circumstances: How the Forces in Power Caused Massive Disappearances and Human Rights Violations in Argentina's Dirty War

Faculty Mentor: Gregory S. Crider, Ph.D.

CAS - Department of History

(HIST 590 - Crider)

**Student: Cameron Ellis**

During the Cold War, a military coup took power in Argentina, altering the government's structure and committing human rights violations through disappearances. For years, people were abducted, detained, interrogated, and tortured - with most not surviving. As reports are declassified and more monographic sources incorporate first-hand interviews, the world learns how the Argentine government under President Videla violated basic human rights. This paper argues that Argentina was aware of the human rights violations and denied these claims to avoid international involvement. Through the analysis of government communications and personal accounts, evidence confirms horrific internal conditions and government instability surrounding mass disappearances in the 1970s and 1980s. Primary sources gathered from the National Security Archives and FOIA show direct involvement of military forces and unlivable conditions and mistreatment of those abducted. Reports of discovered bodies document those missing, including the kidnapping of Elena Holmberg, niece of former President Lanusse. Interviews of those held captive - such as those published in *Revolutionizing Motherhood: The Mothers of the Plaza De Mayo*, by Marguerite Bouvard - give detail of basic needs being denied. This project offers an understanding of who went missing and what they endured, while also providing insight on the political power changes in Argentina caused by the global climate of the Cold War.

## To Break His Crown: Strategies of Operation Mongoose

Faculty Mentor: Gregory S. Crider, Ph.D.

CAS - Department of History

(HIST 590 - Crider)

**Student: Michael Elder**

Operation Mongoose has mostly been a footnote in history, seen as ineffective in its goal of overthrowing the Castro Regime in Cuba after the failed Bay of Pigs invasion in 1961. As such, detailed analyses of the operation are few and far between. This paper provides a detailed catalogue of strategies employed by Operation Mongoose, as well as the argument that it stayed well within its operational guidelines, with one major exception. Primary sources found in the National Security Archive include July 1961 memoranda from Richard Goodwin, top advisor to John F. Kennedy, analyzing major faults in CIA strategies and a July 1962 review of Phase 1 of Mongoose by Brigadier General Edward Lansdale. These sources, amongst others, provide a detailed list of planned and sanctioned strategies until the shutdown of the operation in October of 1962, which by effect shows that Operation Mongoose acted within its means, with one notable exception.

## Whitehead on Material Continuation

Faculty Mentor: M. Gregory Oakes, Ph.D.

CAS - Department of Philosophy and Religious Studies

**Student: Calvin Anfinson**

Since Aristotle, philosophers have formulated different philosophical frameworks that account for material continuation. Material continuation is the observed phenomenon that, given that some object exists at one point in time, some object will also exist at some later point in time. The object does not have to be the same entity and any amount of time could elapse between the two temporal points. Accounts of material continuation by philosophers such as Aristotle, Bergson, Descartes, Russel, Seibt, and Zeno either fall short or conclude that there is no logic behind material continuation. Nevertheless, these accounts may hold clues to a logically sound account of material continuation. We turn to Whitehead to analyze his process philosophy to see whether his account offers a logic to material continuation.

## Why the Bay of Pigs Failed: Leadership, America's Blown Cover, and Coral Reefs

Faculty Mentor: Gregory S. Crider, Ph.D.

CAS - Department of History

(HIST 590 - Crider)

**Student: Jamie Hayes**

This paper focuses on the Bay of Pigs invasion of Cuba in April 1961, led by the CIA with the help of Cuban rebels and the United States. By focusing on the leaders of this invasion, the argument is made that the CIA was not the only one to blame for why the operation failed, leaving America's cover blown, and pushing the U.S. deeper into the Cold War. By looking through primary sources, the paper identifies main leaders, contributors, and foreign relations that brought the U.S. into a catastrophic situation, leading the country into humiliation and failure. Documents that were uncovered in *Foreign Relations of the United States*, including plans for this operation and how unorganized and rushed it was, will also be used. JFK presidential archives offer presidential papers, recorded conversations, memoranda, and notes to the President on why this operation should be thought over thoroughly to avoid disastrous consequences; many other primary documents reveal the mission's agenda up until the invasion, what went wrong, and how it left America's image during the Cold War. Responding to Wyden's book, *Bay of Pigs: The Untold Story*, this paper counter-argues his position of placing the blame solely on the CIA and Richard Bissell. Primary sources in this paper provide strong evidence for distributing blame equally to the CIA, President Kennedy, and the Joint Chiefs of Staff.

## Demise of a Country: United States Involvement in the Nicaraguan Contra War

Faculty Mentor: Gregory S. Crider, Ph.D.

CAS - Department of History

(HIST 590 - Crider)

**Student: Nia Brown**

The Sandinista National Liberation Front ended the Somoza dynasty and established a new regime in Nicaragua in 1979. Starting in 1981, a counter-revolutionary force with support from the Reagan administration - the Contras - sought to destroy the Sandinista government and its perceived Communist ideology. Former Chief of the U.S. Army Chaplains Kermit D. Johnson stated that the U.S. intervened in Nicaragua to combat the threat of a good example of Communist ideology for the world to witness. By examining the public health of the Nicaraguan people, this paper illustrates that the United States sent aid and support to the Contra rebels to not only stop the spread of Communism but to take away a good case of effective public health policy. Analysis of U.S. government documents reveals many issues driving the Reagan administration to support the Contras, and examination of Nicaraguan government documents shows birth and death rates, food prices, and other information highlighting the growth since the Sandinista regime began. Nicaraguan interviews, memoirs, and diaries showcase how Nicaraguan people experienced public health. The evidence shows that the Sandinista regime was helpful in providing public health to the country of Nicaragua.

## Ignorance or Compliance: The U.S. Role in Operation Condor in Argentina

Faculty Mentor: Gregory S. Crider, Ph.D.

CAS - Department of History

(HIST 590 - Crider)

**Student: Joey Brown**

Operation Condor was a joint project among several Central and South American countries and the United States that involved far right-wing and totalitarian leaders seeking to get rid of their political enemies either through kidnapping or outright murder. To those monitoring the situation in Argentina, it seemed that the United States was being willfully ignorant. Beyond that, it seemed that the United States was allowing Argentina to use Operation Condor to not only deal with radicals, but also to get rid of anyone who was in any way left-wing throughout the 1970s and 1980s. This paper argues that the U.S. not only supported the human rights violations in Argentina but did so knowingly and intentionally in order to maintain an ally in control of Argentina. To prove this argument, this paper shows that there were human rights violations in Argentina that the U.S. supported, and that the U.S. had full knowledge of what was going on. To prove each of these points, primary documents are used, mainly reports from the U.S. State Department, starting at the coup of 1976 and showing their knowledge and involvement into the 1980s. Each of these sources helps to establish the information that the State Department had about the situation in Argentina, and provides evidence of their support or participation in Operation Condor.

## Preparation of Site-Directed EF-Hand Mutants of Human Troponin C

Faculty Mentor: Nicholas E. Grosoehme, Ph.D.

CAS - Department of Chemistry, Physics, and Geology

**Student: Sophie Nguyen**

Muscle contraction is a well understood phenomenon that involves a variety of proteins that work together to ensure the process functions properly. The troponin complex consists of three independent, but collaborative, proteins - troponin T, troponin I, and troponin C (TnC) - and is an essential component of muscle contraction in mammals. TnC is composed of two distinct domains with a total of three prototypical EF-hand  $\text{Ca}^{2+}$  binding sites, which play a central role in coupling  $\text{Ca}^{2+}$  flux with muscle contraction. Previous research has used isothermal titration calorimetry to investigate the  $\text{Ca}^{2+}$  binding thermodynamics of the whole protein and identified one metal binding event that has an apparent higher affinity than the rest; however, that work was not able to assign this higher affinity interaction to any of the EF-hands. The work carried out in this project made progress toward identifying the  $\text{Ca}^{2+}$  binding properties of each of the independent sites. A traditional cloning strategy was employed to make site-directed mutations that silence two of the three EF-hands resulting in a mutant protein that only binds one  $\text{Ca}^{2+}$  ion.

## Effect of Certain Gun Violence on Gun Control Opinion

Faculty Mentor: Hye-Sung Kim, Ph.D.

CAS - Department of Political Science

(PLSC 350 - Kim)

**Students: Christopher Logan Brokaw, Saleana Cheyenne Harris, and Paris Renee Williams**

In this research, we examined whether, and to what extent, different types of gun violence influence gun control opinion. We focused on two types of gun violence, namely, gun suicides and gun homicides. We hypothesized that, as the number of gun suicides or gun homicides increase, that overall support for gun control support increase. To examine this question, we used U.S. public opinion data from the PEW Research for 2008 - 2017 and conducted our regression analyses. When using the pooled data, the relationship between gun homicides, gun suicides, and overall gun control support was statistically insignificant. However, we found the heteroscedastic effects of gun homicides on gun control opinion by state. That is, each of three states, Washington, D.C., Maine, and South Dakota, had a significant relationship between gun homicides and gun control opinion. The heterogeneous effects by state were also found for gun suicides. In Maine, Vermont, and Wyoming, we found a statistically significant association between gun suicides and gun control opinion. Identifying the causal mechanisms for these heterogeneous effects by state remains a next step for our future study.

## Correlation between Religious Affiliation on Political Ideology

Faculty Mentor: Hye-Sung Kim, Ph.D.

CAS - Department of Political Science

(PLSC 350 - Kim)

**Students: Richard Wallace, Nathan Crunkilton, and David Truesdale**

Religious beliefs have an impact on our social interactions and personal beliefs. Therefore, the idea that they impact political ideology seems to be a natural conclusion. With that said, our project aimed to address how religious affiliation affects political ideology in the United States. Our hypothesis was the following: "If individuals identify under an 'Eastern' Religion, then they will tend to be more Liberal, compared to those who identify under a 'Western' Religion." Using the Pew Research Center's 2014 Religious Landscape Study, with a sample size of 35,071 adults - located across the entire country - we were able to confirm our hypothesis. After controlling for potential confounders such as sex and age, people with an Eastern religion had a more liberal political ideology than those with Western religion. In addition, we also found that nonreligious belief is associated with a more liberal ideology when compared to Western religious beliefs than Eastern religion.

## Examination of Sartre and Camus on Meaninglessness

Faculty Mentor: M. Gregory Oakes, Ph.D.

CAS - Department of Philosophy and Religious Studies

(PHIL 495 - Oakes)

**Student: Christopher Cauthen**

The topic of meaninglessness is a feature in much of human society. Does life have a meaning to it, and does it need meaning for it to be worth living? This is the question of meaning. Sartre and Camus, in particular, are two philosophers that extensively cover this question. In this essay, I seek to understand just what they have to say on the question of meaning. Their views can be categorized into three themes for each: existence precedes essence, freedom, and nausea for Sartre; the absurd, the present, and happiness for Camus. I argue that the two diverge quite significantly from one another, specifically on how they view the question of meaning and the ultimate impact that it has on life. Sartre views meaninglessness to be a more distressing affair, while Camus views it in a contrary fashion, finding it to bring a sort of newfound value to life.

## Wicca: A Radical Feminist Spirituality

Faculty Mentors: M. Gregory Oakes, Ph.D., and Peter Judge, Ph.D.

CAS - Department of Philosophy and Religious Studies

(RELG 495 - Oakes)

**Student: Erin Anderson**

In this paper, I argue that the modern practice of Wicca encourages female-affirmative and egalitarian concepts of the sacred, which allows women to participate in sacred spaces and gives them value in society. I contrast this to the rise of Christianity and detail the way it aggressively sought to oppress female involvement in the sacred through its oppression of Goddess traditions. I argue that Wicca's focus on Goddess tradition is a "radical" form of spirituality, just as feminist theologian Elisabeth Schüssler Fiorenza would suggest. This is a necessary method of reclaiming the deep historical roots of Goddess imagery and including women in the sacred in contemporary times. The history of Goddess tradition demonstrates that, while Wicca may be perceived as "radical" in contrast to patriarchy, its concepts and practices were once normalized across human culture. Merlin Stone argues that female-centered and Goddess traditions trace back to the Upper Paleolithic and Neolithic ages. A major contributor to the shift away from the Goddess tradition was the rise of patriarchal concepts of Christianity. In contemporary times, the rise of the feminist movement has caused a resurgence of attention to female involvement in the sacred. I utilize Mary Daly, Elisabeth Schüssler Fiorenza, and Yolanda Dreyer to emphasize the importance of human reflection in the sacred and the way self-identification is largely tied to spirituality. I argue that the reclamation of Goddess tradition within Wicca has attempted to deconstruct harmful patriarchal concepts perpetuated by Christian thought in order to create a new female-affirming and egalitarian tradition.

# EAGLE STEM SCHOLARS

Winthrop University's Eagle STEM Scholars Program merges the campus's commitment to undergraduate research and promoting the success of students from groups that have been historically underrepresented in the sciences. Biochemistry, biology, chemistry, mathematics, computer science, and environmental science majors receive the academic support and research training needed to pursue doctoral studies in either health professions or life sciences. Student support services are modeled after the nationally acclaimed Meyerhoff Scholars Program at the University of Maryland, Baltimore County, and employ the nation's best practices in STEM training and student retention (e.g., an intensive summer bridge experience, rigorous curricula in science and mathematics, academic monitoring, intramural and extramural research experiences, and career guidance). Since its inception, the program has served 161 Winthrop students. Eagle STEM Scholars have successfully competed for top positions in graduate and medical programs, with Eagle STEM alumni at universities such as Alabama, Auburn, Clemson, Duke, Emory, Florida, Georgetown, Georgia, Marshall, Maryland, Nebraska, North Carolina, Notre Dame, Pennsylvania, Pittsburgh, South Carolina, Temple, Virginia Commonwealth, Virginia Tech, UCLA, UCSF, and the Medical University of South Carolina.

Eagle STEM Scholars are recruited to Winthrop based on their outstanding academic performance and potential to pursue doctoral degrees. Each year, the Eagle STEM Advisory Board selects the members of each cohort. These incoming freshmen take full advantage of the program and later distinguish themselves as winners of national awards.

We are grateful for the support of the Advisory Board, the research mentorship by Winthrop faculty, and the ongoing support of the broader Winthrop community for this excellent program.

## 2019 – 2020 Eagle STEM Advisory Board:

### **Amanda Cavin, M.Ed.**

*Director, Eagle STEM Scholars Program*

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### **Michael Whitney, Ph.D.**

*Director, Digital Information Design Program, and  
Assistant Professor of Computer Science*

The following Eagle STEM Scholars submitted abstracts on their work for inclusion in this compilation:

**Kiera Alexander**

**Laela Walker**

**Josiah Bauer**

**Carlos Escoto-Diaz**

**Jessika Bonner**

**Sarah Fleetwood**

**David Brandyburg**

**Lauren Patterson**

**Kendarius Butler**

**Juliana Quay**

**Tiffany Dwyer**

**Jordan Rucker**

**Evan Thibodeaux**

# McNAIR SCHOLARS

The Winthrop University McNair Scholars Program prepares outstanding first-generation, low-income, and underrepresented undergraduates to be successful in Ph.D. programs through research experience, workshops, graduate admissions test preparation, graduate school application and interview guidance, and travel to present research and explore graduate programs.

Winthrop's program is funded through 2023 by its third multi-year, renewable TRiO grant from the U.S. Department of Education. \$253,032 in federal funding is provided each year for programming and materials that will help 30 eligible students to complete high-quality research and prepare for graduate study. This represents 73% of program costs. Winthrop contributes the remaining 27% of the budget in cash and in-kind matches. For more information about the program, please visit <http://www.winthrop.edu/mcnair>.

Being a McNair Scholar is a prestigious, nationally recognized honor. Scholars are actively recruited by graduate schools across the country because of their intensive research experiences and preparation for graduate study. 89% of Winthrop McNair graduates have enrolled in graduate programs and 65% of our graduates have earned at least one graduate or professional degree. Universities where our alumni are currently completing Ph.D.s include, but are not limited to Duke, Emory, Georgia Tech, Florida Tech, Indiana, West Virginia and the Universities of Alabama, California San Francisco, Colorado, Florida, Notre Dame, and Rochester. As of this, our ninth year, at least eight Winthrop McNair alumni will have earned doctorates (4 Ph.D.s).

Each year, the twelve-member Winthrop McNair Advisory Board selects new Scholars through a highly competitive application and interview process. All McNair Scholars complete intensive summer research internships and several have earned awards for their work. See <http://digitalcommons.winthrop.edu/mcnair/> for some of our Scholars' work.

**In addition to the director and faculty mentors, the following staff support the Scholars' research and graduate admissions efforts before, during, and after the summer research experience.**

Barb Yeager, *Executive Support Specialist*  
Jasmine Goode, *Graduate Associate (Winthrop McNair Alumna)*  
Stephanie Bartlett, *Head Writing Coach*  
Dr. Matt Hayes, *Statistics and Methods Coach*  
Amanda Cavin, *Programming Assistant*  
Katrina Gainey, *Office Assistant (and incoming Scholar)*

## 2019 – 2020 Winthrop McNair Advisory Board Members:

### **Adolphus Belk Jr., Ph.D.**

Professor of Political Science

### **Monejah Black**

Current Scholar, Mass Communication

### **Cheryl Fortner-Wood, Ph.D. (ex officio),**

McNair Director and Professor of Psychology

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Assistant Professor of Biology

### **Rose Gray, M.A.**

Director, TRiO Student Support Services (SSS) Program

### **Wenonah Haire, D.M.D.**

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### **Karen Stock, Ph.D.**

Professor of Fine Arts

### **Nicki Washington, Ph.D.**

Associate Professor of Computer Science

### **Brad Witzel, Ed.D.**

Professor of Education



The following McNair Scholars participated in the 2019 Winthrop McNair Summer Research Experience from May 13 - July 5, 2019. They presented their research at the McNair Research Symposium on Winthrop's campus and at our national McNair/SSS Scholars conference hosted by the Southeastern Association for Educational Opportunity Program Personnel (SAEOPP). At SAEOPP, Winthrop's Scholars competed in posters and four oral categories with students from universities all over the country, including but not limited to: Georgia Tech, Austin Peay, Rider, and the Universities of Florida, Illinois (Urbana-Champaign), UCLA, and New Orleans. Ordinals listed in parentheses [e.g., (1st)] mark students whose presentations earned first-, second-, or third-place honors in their SAEOPP categories.

**Kiera S. Alexander;** Mentor: Dr. Nicholas Grosseohme  
The Interplay Between Oxidation, Phosphorylation, and Regulation of RitR in *Streptococcus pneumoniae* (Oral, Physical Science)

**Mattin Avalon;** Mentor: Dr. Michael Sickels  
Personalizing Religion: A Qualitative Analysis of New Age Spirituality Identity Online (Oral, Social Science, **3<sup>rd</sup>**)

**Monejah Black;** Mentors: Dr. Nathaniel Frederick and Mr. Emmanuel Nwachukwu  
The Representation of Female African American College Students on Television: A Content Analysis of A Different World and Grownish (Oral, Social Science, **3<sup>rd</sup>**)

**Sierra Davis;** Mentor: Dr. Wendy Sellers  
Sustainable Development and Environmental Justice: Connecting Students to Global Issues (Oral, Social Science)

**Chelsea Harris;** Mentors: Dr. Melissa Reeves and Dr. Matthew Hayes  
The Relationship between Future Orientation, Social Support, and GPA (Poster)

**Nicholle Lewis;** Mentor: Dr. Matthew Stern  
Optimization of Smooth Muscle Cell Culture for Blood Vessel Tissue Engineering (Oral, Life Science, **3<sup>rd</sup>**)

**Makeyla McCray;** Mentor: Dr. Crystal Glover  
Perceptions of African American Students' Professional Relationships with Faculty at a Predominantly White Institution (Oral, Education, **2<sup>nd</sup>**)

**Gabrielle McGee;** Mentor: Dr. Donna Nelson  
Process Goals Raise Academic Confidence and Performance of First-Generation College Students (Poster)

**Sauliha Mitchell;** Mentor: Dr. Scott Huffmon  
The Impact of Political Donations on N.C. State Legislators (Oral, Social Science)

**Cayla M. Odom;** Mentor: Dr. Maria Gelabert  
Silver Nanoparticle Biosynthesis and Calcite Biomineralization as a Precursor to Hydroxyapatite (Oral, Physical Science, **1<sup>st</sup>**)

**Maya Whaley;** Mentor: Dr. Merry Sleight  
Working Professionals' and College Students' Attitudes toward Juvenile Offenders (Oral, Social Science)

**Veronica Worthington;** Mentors: Dr. Matthew Hayes and Dr. Melissa Reeves  
Active Shooter Protocols: Perceptions, Preparedness, and Unintended Consequences (Oral, Social Science)

# OFFICE OF NATIONALLY COMPETITIVE AWARDS (ONCA)

Winthrop University's Office of Nationally Competitive Awards (ONCA) identifies and assists highly motivated and talented students in applying for nationally and internationally competitive awards, scholarships, fellowships, and unique opportunities, both at home and abroad. ONCA gathers and disseminates award information and deadlines across the campus community, and serves as a resource for students, faculty, and staff throughout the nationally competitive award nomination and application process.

The ONCA Celebration of Applicants is an annual event recognizing the difficult and rewarding challenge taken on by Winthrop University students to apply for some of the most prestigious scholarships in the nation and the world. Win or lose, the process of personal reflection required to complete the application for a nationally competitive award is often transformative in a student's life and can be as important as the outcome.

Scholars who applied for these prestigious awards spent countless hours writing and revising personal statements, policy and research proposals, essays, resumes, and answers to "short answer" questions on application forms (which are never short, and always challenging). In the process, I hope each student learned a little more about him- or herself and his or her goals. Scholars, I'd like to acknowledge and applaud your hard work and say how much I enjoyed getting to know each of you this year.

In addition to recognizing the work of each of our ONCA Scholars, I would like to thank each and every member of the Winthrop University community who has given a student an encouraging word, recommended a student for ONCA in person or through the online interim reporting system established by Dean Gloria Jones, brought an ONCA presentation into the classroom, participated in an award selection or mock interview committee, or served on the ONCA Advisory Board. I would especially like to thank members of Winthrop faculty and administration who have written letters of recommendation for our students this year: this is an arduous undertaking, often resulting in two- to three-page letters full of descriptive detail about our students, their capabilities, and their potential. For all of your time and effort, your students and I thank you.

## **Leslie Bickford, Ph.D.**

*Associate Professor of English  
Director, Office of Nationally Competitive Awards (ONCA)  
Winthrop University*

## **AWARD NOMINEES AND WINNERS, 2019 – 2020:**

### **Alpha Kappa Alpha Graduate Merit Scholarship:**

To be eligible for this one-year, one-time-only scholarship, the applicant must be a full-time student; be currently enrolled in an accredited, degree-granting institution; have a minimum GPA of 3.0 ("B" average); and demonstrate community service and involvement.

Winthrop University Nominee: **Kayla Tucker**

### **Alpha Kappa Alpha Graduate Need Scholarship:**

To be eligible for this one-year, one-time-only award, the applicant must be a full-time student; be currently enrolled in an accredited, degree-granting institution; have a minimum GPA of 2.5 ("C+" average); and demonstrate community service and involvement.

Winthrop University WINNER: **Kayla Tucker**

### **Barry Goldwater Scholarship:**

By providing scholarships to college sophomores and juniors who intend to pursue research careers in the natural sciences, mathematics, and engineering, the Goldwater Foundation is helping ensure that the U.S. is producing the number of highly qualified professionals the nation needs in these critical fields.

Winthrop University Nominee: **Rachel Moan (Pending)**

Winthrop University Nominee: **Nicholas Paul (Pending)**

### **Benjamin A. Gilman International Scholarship Program:**

The Gilman Program awards 2,300 scholarships of up to \$5,000 per academic year for U.S. citizen undergraduate students of limited financial means to pursue academic studies abroad. Such international study is intended to prepare U.S. students to assume significant roles in an increasingly global economy and interdependent world.

Winthrop University Nominee: **Jada Jessup**

Winthrop University WINNER: **Rachel Whittaker**

Winthrop University Nominee: **Trenedy Hayden (Pending)**

Winthrop University Nominee: **Logan Pender (Pending)**

Winthrop University Nominee: **Alyssa Washington (Pending)**

### **Benjamin A. Gilman Critical Need Language Award:**

Gilman applicants who are studying a critical need language while abroad in a country in which the language is predominantly spoken have the option to be considered for the Critical Need Language Award of up to \$8,000. In addition to receiving the highly competitive award, recipients of the Critical Need Language Award will be offered the opportunity to evaluate and certify their language skills acquired during their programs through a recognized oral-proficiency language test.

Winthrop University Nominee: **Logan Pender (Pending)**

## Fulbright Award for Study and Research:

Applicants for study/research awards design their own projects and typically work with advisers at foreign universities or other institutes of higher education. The study/research awards are available in approximately 140 countries.

Winthrop University Nominee: **Charlotte Brown**  
Winthrop University FINALIST: **Emma Harris (Pending)**  
Winthrop University FINALIST: **Paul Mishoe (Pending)**

## Fulbright Award for Teaching English Abroad:

Among the most widely recognized academic honors, Fulbright awards provide support for graduate students and young professionals to teach English abroad. Awards include full grants for an academic-year teaching assistantship in English.

Winthrop University Nominee: **Elizabeth Cote**

## Fulbright–National Geographic Storytelling Fellowship:

The Fulbright–National Geographic Storytelling Fellowship, a component of the Fulbright U.S. Student Program, provides opportunities for selected Fulbright U.S. Student grantees to participate in an academic year of storytelling on a globally significant theme. This fellowship is made possible through a partnership between the U.S. Department of State and the National Geographic Society.

Winthrop University Nominee: **Le'ianna Gladden**

## Hertz Fellowship:

The Fannie and John Hertz Foundation, a tax exempt, not-for-profit organization, provides Ph.D. fellowships to exceptionally talented individuals studying in the applied physical and biological sciences, mathematics, and engineering, at over 40 of the nation's finest participating universities. The Hertz Graduate Fellowship Award is based on merit (not need) and consists of a cost-of-education allowance and a personal-support stipend. The cost-of-education allowance is accepted by all of the participating schools in lieu of all fees and tuition. Hertz Fellows therefore have no liability for any ordinary educational costs, regardless of their choice among participating schools.

Winthrop University Nominee: **Olivia Greathouse (Pending)**

## Killam Fellowships Program:

The Killam Fellowships Program provides an opportunity for exceptional undergraduate students from universities in Canada and the United States to spend either one semester or a full academic year as exchange students in the other country. Students may participate in the program either as direct exchange students (registering at their home universities, paying their home fees, and attending the host university as exchange visitors) or as self-placed visiting students (applying for and registering at the host university, and paying host tuition fees). The Killam Fellowships Program offers a cash award of \$10,000 US (\$5,000 US per semester), along with an allowance to offset the cost of health insurance in the currency of the host country.

Winthrop University WINNER: **Sophie Walker**

## Marshall Scholarship:

Marshall Scholarships finance young Americans of high ability to study for degrees in the United Kingdom. Up to fifty Scholars are selected each year to study at the graduate level at a UK institution in any field of study.

Winthrop University Nominee: **Emma Harris**

## National Association of School Psychologists ERT Minority Scholarship:

The NASP–ERT Minority Scholarship Program was established in 1995 to support the graduate training of minority students pursuing careers in school psychology. The program seeks to lower financial barriers to training and to highlight the accomplishments of promising future professionals.

Winthrop University Nominee: **Kayla Tucker**

## National Science Foundation Fellowships:

The purpose of the National Science Foundation's Graduate Research Fellowship Program is to ensure the vitality of the human resource base of science and engineering in the United States and to reinforce its diversity. The program recognizes and supports outstanding graduate students in the relevant science, technology, engineering, and mathematics disciplines who are pursuing research-based master's and doctoral degrees, including engineering and computer and information science. NSF Fellows are expected to become knowledge experts who can contribute significantly to research, teaching, and innovations in science and engineering.

Winthrop University Nominee: **Chris Chamberlin**  
Winthrop University WINNER: **Olivia Greathouse**

## National Society for Collegiate Scholars:

NSCS offers more than \$1 million annually—more than any other honor society of its kind. We offer 26 different national scholarship opportunities available exclusively to NSCS members

Winthrop University Nominee, First in Family Scholarship: **Alexandra Pennington (Pending)**  
Winthrop University Nominee, Study Abroad Scholarship: **Mary Christenbury (Pending)**

## Public Policy and International Affairs Junior Summer Institute:

A rigorous academic, fully-funded fellowship program that provides student training and financial support for graduate school and facilitates ongoing professional development.

Winthrop University Nominee: **Soli Byrd**

### Phi Kappa Phi Study Abroad Scholarship:

Phi Kappa Phi Study Abroad Grants are designed to help support undergraduates as they seek knowledge and experience in their academic fields by studying abroad. Seventy-five \$1,000 grants are awarded each year. Applicants do not have to be Society members but must attend an institution with an active Phi Kappa Phi chapter.

Winthrop University Nominee: **Mary Christenbury (Pending)**

Winthrop University Nominee: **Sarah Kelley Rowe (Pending)**

### Sigma Tau Delta:

This national honor society in English offers many scholarships, fellowships, and awards to its members annually. Some are valued at up to \$6,000 each, and collectively, they help English majors pay for undergraduate tuition, graduate school, study abroad programs, and materials for secondary school English classrooms.

Winthrop University Nominee, Senior Scholarship: **Megan Jensen (Pending)**

Winthrop University Nominee, William C. Johnson Scholarship: **Megan Jensen (Pending)**

Winthrop University Nominee, Regent Scholarship: **Megan Jensen (Pending)**

Winthrop University Nominee, Scholarly Paper Award: **Megan Jensen (Pending)**

### Tortuga Backpacks Study Abroad Scholarship:

Tortuga Backpacks sponsors a \$1,000 scholarship for students wishing to study abroad.

Winthrop University Nominee: **Mary Christenbury (Pending)**

### Tylenol Future Care Scholarship:

Each year, the makers of TYLENOL® award annual scholarships to well deserving students pursuing careers in healthcare. Twenty-three years and over eight million dollars later, we're proud to continue a tradition that supports those dedicated to a lifetime of caring for others.

Winthrop University Nominee: **Douglas Johnson**



# WINTHROP INITIATIVE FOR STEM EDUCATORS (WISE) SCHOLARS AND INTERNS

The Winthrop Initiative for STEM Educators (WISE) program is supported by a \$1 million grant through the National Science Foundation's Robert Noyce Scholarship Program. The focus of WISE is to recruit, support, and mentor science and mathematics majors choosing to pursue teaching as a career. WISE currently has two primary outreach activities. The WISE Scholars are graduate and undergraduate students committed to teaching in high-need schools. They receive scholarship funds, connections to state and national organizations for STEM teachers, opportunities for conference participation, additional mentoring, and access to STEM education resources on campus. The WISE Interns are first- and second-year Winthrop and York Technical College students pursuing STEM degrees. These students participate in a summer program that explores STEM research, engages in local schools for service learning, and promotes the formulation of individual STEM research questions for more extensive investigation through a variety of other avenues.

The following WISE Scholars and/or Interns submitted abstracts on their scholarly work for inclusion in this compilation:

**Kiera Alexander**  
**Jessika Bonner**  
**Olivia Greathouse**  
**Caroline Hammond**  
**Juliana Quay**  
**Hannah Mitchum**  
**Allison Reed**  
**Breanna Walden**



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