Oral Presentation Abstracts

Symbols:
** = Graduate Student
* = Honors Project
^ = Undergraduate Research Grant Recipient
+ = Georgia Power Scholar

Panels
Moot Court Argument Simulation

Roxanna Simons, Chase Sherrod, Michael Miller, Matthew Hudson, Diamonique Keaton
Mentors: Becky da Cruz, Chris Tecklenburg

The Armstrong Moot Court team is comprised of a small portion of students with a distinct passion for Appellate argumentation. This accredited course doubles as an academic team which competes nationally with numerous universities and colleges. In this demonstration, the participants will attempt to consolidate forty minutes of arguments into a twenty minute preview of what being an Armstrong “Mooter” really is.

Each team within the consolidated round will obtain two members, each arguing separate constitutional issues that support their client. After the first team member argues for a five minute period, his/her partner will complete the ten minute argument before offering the stand to the opposition, for a complete twenty minute presentation. During this mock presentation, a panel of fully run student judges will be able to ask any and all relevant case questions to the “counselors” on the stand.

The idea of this demonstration is to successfully imitate how an academic debate is handled in actual competition. The Armstrong Moot Court Program is continuously growing, and nationally recognized against a wide variety of high level educational institutions. Ultimately, this presentation will extend the opportunity to a multitude of current and upcoming students to have a visual perception of the program, and hopefully a new found interest in potential membership.

The “Other” in Medieval Europe

Tarl Lancaster, Ethan Marshall, Lori Minchey
Mentor: James Todesca

This panel will consist of research papers presented by students of Dr. James Todesca, Department of History. These papers will cover subjects chosen by panel students to discuss their research of societal affairs, travel and trade in medieval Europe during Dr. Todesca’s history courses in the Middle Ages. The “Other” in Medieval Europe will focus on Vikings, European Mercenary and Jewish travel, interaction, commerce, displacement, and influences of these peoples in Medieval Europe.
Art, Music and Theatre

^Joseph Shaw
Mentor: Bridget Conn

Light Painting in Photography

Photography dates back to the mid 1800s and has since become a widely popular medium of art. Since the creation of the photograph many people have developed various techniques and processes attempting to manipulate the medium indefinitely. In an ever growing digital world, more photographers are returning to their roots in the darkroom, exploring processes and ideas in a more tactile and engaging manner versus on a computer screen. There is something unique about shooting a roll of film, developing it, cutting negatives, and then creating a final product that creates a special bond with artist and creation. While you can’t see ideas, photography gives us a glimpse into the mind of artists and gives us a genuine visualization of creativity.

The funding I have received went towards pursuing thought provoking light paintings. Light paintings involve taking different wands of light and painting with brush like strokes over a long exposure on a camera. The end result is a magical visualization, a three-dimensional canvas on a two dimensional plane. This technique often evokes feelings of pleasure in viewers.

Eric Sanders
Mentor: Deborah Jamieson

Art as a Weapon: Abstract Expressionism During the Cold War

For much of the 20th century, the avant-garde in art were rarely, if ever, associated with the American government and much less the military. However, during the tense stand-off between the United States and NATO against the Soviet Union and the Warsaw Pact, contemporary works by Abstract Expressionist artists like Jackson Pollock and Mark Rothko were secretly being utilized as a weapon. The United States, in an effort to spread the ideals of democratic capitalism, took advantage of the invisible hand of the newly formed Central Intelligence Agency to promote the Abstract Expressionist movement across the United States and Europe. The emphasis on the individual and personal expression – the very principle of Abstract Expressionism - countered the rigid structure of idealized Social Realism that was not just encouraged but mandated in the USSR. For nearly two decades, the CIA funneled money to publications, funded exhibitions, and promoted this new movement behind the guise of shell organizations so the official face of the United States government could maintain plausible deniability of involvement. This presentation will chronicle the steps the Central Intelligence Agency and other arms of the Federal government took to maximize the effect of the American avant-garde as the most unconventional weapon in the struggle for supremacy during the Cold War.
Katherine Hillery  
Mentor: Karla Jennings

**Crisis Conduct**

There is one word that public relations professionals dread to hear – crisis. There are proactive measures that a firm and public relations professionals can take to avoid a crisis altogether. James Grunig (a professor of Public Relations) says that good crisis communication starts far before an incident occurs. “Communication with publics before decisions are made is most effective in resolving issues and crises because it helps managers to make decisions that are less likely to produce consequences that publics make into issues and crises. If public relations staff does not communicate with its publics until an issue or crisis occurs, the chance of resolving the conflict is slim” (Paine). However, most firms respond reactively to a crisis. In the wake of a crisis, whether it is a safety recall, a disconcerting tweet, or a data leak, there is a general code of conduct to which a firm and their public relations professionals should adhere to minimize the damage that will follow.

Bethany Panhorst  
Mentor: John Jensen

**American Clay Revolution: Clay as a Fine Art Medium**

The making of clay vessels is an ancient industry with the first works of pottery emerging in east Asia somewhere between 18,000 BCE and 10,000 BCE. Early pottery was used for purposes such as storing food and other resources. Although, not all ceramic work was purely functional. The earliest ceramic sculpture was found around 24,000 BCE. Ceramic sculptures created throughout history ranged from small figurines to Etruscan sarcophagi to the Qin Dynasty Terracotta army. At one time, ceramic sculpture was viewed as a preliminary medium used to plan work that would later be completed in stone such as marble.

In the last seventy years, there has been resurgence of the medium. This presentation will discuss recent developments in ceramic sculpture primarily within America during the last half of the 20th century. The presentation will focus on the rise of clay as a prominent fine art medium in sculpture and what is known as the American Clay Revolution or California Clay Movement. The presenters will discuss the impact of artists such as Peter Vos, Robert Arneson, Richard Shaw, and David Gilhooly on ceramic sculpture.

Following the discussion of ceramic sculpture, each presenter will exhibit works they have created which were inspired by artists of the last century.

Julia Wadman  
Mentor: Stephen Primatic

**Analysis of “Pathetique” Sonata op. 13 by Beethoven**

An analysis of the first movement of Beethoven’s op. 13, “Pathetique” Sonata shows it is in the Classical Sonata form. Beethoven varies from traditional outlines throughout the piece, and employs different keys, or unusual chords to give a unique sound to his
The strangest thing that Beethoven consistently does throughout this piece is his key changes to seemingly unrelated keys. He changes keys often throughout the piece and begins new sections in keys or modes other than what is expected. An analysis of this piece can shed light on why it is acceptable for him to vary from the traditional form and how these differences make his piece sound intriguing and unique.

**Biology**

*Laura D’Alessio*
Mentor: Jennifer Bailey and Jennifer Zettler

**Determination of DNA Extraction Protocol Impacts on Detection of Wolbachia in Insects**

Wolbachia, a common bacterial endosymbiont in insects, has attracted significant research attention. Beginning in Fall 2013, Principles of Biology I Laboratory students at Armstrong State University, as part of a semester-long experiment, began screening local insects for the presence of Wolbachia. In order to reduce cost, Armstrong transitioned from using a commercially-produced DNA extraction kit to using ‘homemade’ solutions. Subsequently, the observed prevalence of Wolbachia-infected insects declined from 23.75% to 16.51%. Since PCR detection of a gene target depends on DNA extracts having sufficient concentration and quality, we hypothesized that the decrease in observed infections was due to the protocol change. To test this, 31 cockroaches were collected and halved; from one half, DNA was extracted using the commercial kit. From the other half, DNA was harvested using ‘homemade’ solutions. DNA samples were then subject to PCR amplification of the Wolbachia 16S rRNA gene. Amplicons were detected using gel electrophoresis. In order to mimic the classroom exercise, a standard volume of genomic DNA was added to the PCRs regardless of concentration differences. Wolbachia detection among the cockroach sample set was 48.4% (commercial kit DNA samples) versus 19.4% (DNA samples generated using homemade solutions). DNA extracts produced from homemade reagents had, on average, lower DNA concentrations, possibly contributing to the reduced detection rates of Wolbachia. Additional experiments are necessary to test this hypothesis. Results from this work have implications for research and classroom-based exercises that use PCR to screen plant or animal samples for the presence of specific endosymbionts.

^Julia de Amorim
Mentor: Jennifer Zettler

**DNA methylation variation among Cyphomyrmex rimosus ants in two distinct eco-tones**

*Cyphomyrmex rimosus* is a species of fungal farming ants native to the Neotropics that has become established throughout the southeastern United States. *C. rimosus* is active year-round and is adapted to varying eco-tones. We have collected several members of *C. rimosus* colonies from six nests found in both lawn and forested habitats on the Armstrong State University campus in Savannah, Georgia. We are currently observing possible epigenetic differences using DNA extraction and EpiRAD sequencing protocol. We are investigating whether *C. rimosus*
DNA undergo methylation. If so, we question if there are significant differences between populations found in a manicured lawn and in an untended forest. We hope our study will provide further evidence that environmental factors have an epigenetic effect on organisms.

^Amanda Dykes
Mentors: Robert Mans and Aaron Schrey

Testing the effects of acute stress on the epigenetic regulation of gonadotropin-releasing hormone (GnRH) in adult zebrafish brain

Gonadotropin-Releasing Hormone is an essential neurohormone in the reproductive process of all vertebrates. GnRH and stress related hormones are currently being used to address health concerns in many areas including reproductive health, mental health, cancer therapies, and neuroscience. Both Zebrafish and humans possess two types of GnRH, and in both species it is known to regulate reproductive hormones and physiological responses to stress. The present study aims to determine whether administration of acute stress in an inhibitory avoidance chamber induces GnRH production in adult zebrafish. A highly methylated promoter typically results in less expression of a gene. We aim to examine the methylation of the GnRH promoter region in response to a single session of electrical shock applied in an inhibitory avoidance chamber. We predict that acute stress will decrease the methylation of the GnRH promoter region, facilitating an increase GnRH production.

^Kyle Hinton
Mentor: Robert Mans

Investigating the functional properties of an Arc-immunoreactive protein in the adult zebrafish brain

Zebrafish (Danio rerio) have emerged as the third most popular biomedical research model behind rats and mice. We have been studying zebrafish to identify biological markers needed for synaptic plasticity, which is the foundation for memory formation. Our protein of interest, Arc, has been established as a marker for learning and memory in rodents - its expression is known to increase in response to brain activity, exposure to a novel environment and synaptic plasticity. A novel Arc-immunoreactive protein was found to be widely expressed in adult zebrafish brains. To investigate if functional similarities exist between human Arc and the Arc-immunoreactive protein in zebrafish, adult fish were exposed to a novel environment or treated with a non-selective neural stimulant, their brains were dissected and homogenized and western blots were performed. Consistent with a role in memory formation, the Arc-immunoreactive protein was shown to increase in the telencephalon after exposure to a novel environment. However, expression also increased in the brain stem (medulla), which was not expected for a plasticity-related protein. Also, very high levels of brain activity induced a decrease in protein expression. These data indicate that the Arc-immunoreactive protein performs functions outside of synaptic plasticity in the zebrafish brain.
Chemistry and Physics

^Edith Park
Mentors: Sarah Gray

Forensic Toxicology: Quantitative Analysis of Blood Alcohol Content with Basic Potassium Permanganate Solutions

Alcohol is one of the most frequently encountered drugs in forensic toxicology. In 2004, all states passed a Per Se law that defines driving under the influence (DUI) with a blood alcohol content (BAC) ≤ 0.08% illegal when operating a passenger vehicle. The goal of this work is to develop laboratory exercises to engage students with analytical experiments applicable to forensic toxicology. This procedure develops a new method to determine BAC using single and double beam UV-VIS spectroscopy. The published method for BAC analysis uses potassium dichromate, a confirmed carcinogen, and acid (sulfuric) as an indicator of alcohol concentration in simulated breath. As a safer alternative, this research uses potassium permanganate, a non-carcinogenic compound with similar oxidizing properties, and base (sodium hydroxide). Different ratios of base, permanganate, and ethanol solutions were tested to yield a linear regression ($R^2 = 0.9960-0.9989$) within the range for Beer’s Law ($\lambda_{\text{max}} = 525$ nm) that optimized different concentrations of real-world BAC levels (0.025 % - 0.500% BAC), dynamic range (Abs = 0.1889- 0.8193), reaction time (5 minutes), and reproducibility in the classroom setting. The results indicate that a 0.025% - 0.500% concentration range of BAC with permanganate produces a significant linear calibration curve that exceeded $R^2$ values ($R^2 = 0.6645-0.6663$) from published literature. Future work include data collection replicates to determine margin of error using the double beam UV-VIS spectrophotometer, and reproducing the experiment on a classroom-grade single beam UV-VIS spectrophotometer.

^Krystin Allaire
Mentors: Catherine MacGowan and Todd Hizer

Investigating the Phytoremediation of Heavy Metal Contamination from Water Samples by Dracaena Braunii (lucky bamboo)

Heavy metal (e.g. nickel, lead, zinc) contamination of soil not only creates an environmental hazard but also renders the area unfit for growing food for consumption. The remediation of contaminated soils and bodies of water is an expensive, environmentally invasive, and tedious process. This project applies the technique of phytoremediation – a promising environmentally friendly approach that utilizes specific flora known as hyper-accumulators to remove heavy metals from soil and water. Plants classified as hyper-accumulators (e.g. sunflowers, marigolds, and bamboo) are ideal for phytoremediation due to their large biomass production, significant plant tissue growth above ground for storage of heavy metal ions, and their global availability. These plants remove metals from soil by absorbing them through their...
Harvested bamboo (*Dracaena braunii*) tissue was prepared via wet ashing for analysis of the metal content to be determined by atomic absorption (AA) spectroscopy. Qualitative assessment of metal distribution within plant tissue was made by means of histochemical staining. For example, the confirmation of nickel absorption by the plant used 1% dimethylglyoxime (DMG) solution.

Alexis Fields  
Mentor: Brandon Quillian

**Brønsted acid promoted dehydration of benzylic alcohols and the synthesis of organo-ruthenium complexes supported by bis(pyrazolyl)acetic acid derivatives**

Two research projects were pursued over the last three years in the Quillian chemistry research group. This presentation will highlight some of the difficulties and successes of these projects. The first project investigated the dehydration of benzylic alcohols and the dimerization of styrene using silver triflate. It was discovered that the degradation of silver triflate generated a hidden Brønsted acid which promoted these reactions. The second project investigated the synthesis and characterization of organoruthenium compounds/complexes supported by derivatives of bis(pyrazolyl)acetic acid. A number of structurally interesting compounds were prepared and characterized by modern spectroscopic techniques from this study, including their single X-ray crystallography studies to unequivocally confirm their structural identities. These complexes serve as promising intermediates toward the preparation of potential olefin hydroarylation catalysts. Notably, new insights gained from this study could be used to development new methods to produce starting materials for the production of fine chemicals and commodity products.

**Criminal Justice, Social and Political Science**

Alex Avina  
Mentor: Nalanda Roy

**Human Rights Violations in North Korea**

This proposal analyzes the contrasting governmental styles between the late Kim II-sung and his grandson Kim Jong-un. Both of them were and are a part of the totalitarian system of government, however, it hasn’t been fully examined whether the regime change has resulted in an increase in human rights violations. This proposal also identifies whether the change in leadership has an impact on human rights in North Korea or if they have subsided since the change in leadership. Human rights have long been an issue amongst countries that has such forms of government, and North Korea is no exception. We predict that although human rights violations are still a major issue, they have subsided slightly since Kim Jong-un took over as leader, mainly due to slight economic advantages and the establishment of human rights watch organizations. At the end, this proposal will compare the lifestyles between North Korea and South Korea citizens.
Morgan Biercewicz, Roxanna Simons  
Mentor: Chris Tecklenburg, Criminal Justice, Social and Political Science

**Appropriately Testing Public Knowledge Involving National and State Supreme Courts**

Most research concludes that the average American lacks basic knowledge surrounding State and National Supreme Courts and the role of the members involved. However, more recent studies dispute this ideology. The basis of the distinction between previous and recent studies could be linked to the methodology of survey questions being asked to obtain data regarding the public. While older studies use an open-ended approach as a singular means of questioning, more recent studies indulge in the usage of both open-ended and close-ended questioning. This study uses both approaches, while also including National and State level Supreme Court information into the questionnaire in an attempt to distinguish whether knowledge varies across demographic boundaries.

For this study, two sets of a surveys where established. An open-ended survey was formulated where the participant would be able to write in answers to questions limited to the National Supreme Court on one side, and the State Supreme Court on the opposite side. The same layout of this survey was duplicated and replaced with close-ended questions surrounding essentially the same material. Both surveys were completed using a pool of participants of all ages over 18 across the general landscape of Savannah GA.

The results of this study not only reflect the general knowledge of the public in terms of local and national Supreme Courts, but it also outlines the general age gaps of political understanding given the age and educational background of the individual in question.

Garrett Bradshaw  
Mentor: Nalanda Roy

**Terrorism in the Philippines**

In many regions around the globe today, nation-states are struggling to prevent the expansion of terrorist activities. Today, the majority of people feel less safe from terrorism than in the past. World leaders are desperately attempting to find a solution to curb the war on Islamic extremism. The Philippines have been no exception to this escalating problem. Militant Islam and the radicalization of individuals have deep roots in various regions of the Philippine Islands. Terrorist groups of both domestic and abroad origins have taken advantage of a weak, corrupt, and decentralized government that has had little success in defeating extremism. Various aspects of globalization continue to complicate achieving success in maintaining a peaceful ideology among susceptible individuals. The history of the Philippine nation is crucial to the understanding of why militant Islam persists amidst sectors of the Muslim populace. Most importantly, leading nations need to acknowledge the Philippines as a major component in creating a counter-terrorism strategy.

Donovan Bragg
The Economic Development of Qatar and the United Arab Emirates within Recent Years

Qatar and the United Arab Emirates are both fascinating countries in their beauty and seemingly luxurious lifestyle, but it hasn’t always been that way. Before the 1980’s, both of these countries ranked low in not only their economic role but also their power in world politics. Drastic changes throughout the end of the 20th and beginning of the 21st century allowed their GDP to rapidly grow and change their economy to become some of the leading and influential markets in the world. This growth was mainly brought about by increasing natural gas and oil prices throughout the world. While they still are heavily reliant on these natural resources they are also changing with the realization of decreasing global demand yet increasing demand for renewable energy sources.

The goal and purpose of my research will show how the economy’s of these two countries has not only increased their wealth but also their influence in Global Politics, while continuing to move forward and progress to ensure these positions.

Forrest Corbin
Mentor: Nalanda Roy

Democracy in India and Indonesia: Federalist or Unitary, Which System is Best for a Diverse State?

The States of India and Indonesia have many commonalities including racial and cultural diversity, long histories of sovereignty, and a past with colonial occupation. Considering how much these nations have in common it is interesting to note how differently they have developed. The purpose of my research is to determine to what extent the forms of government of India and Indonesia have effected their progress and as to which form is best suited for an extremely diverse population. My assumption when beginning research is that a Federalist system, like the one in India, is much better suited for maintaining order and providing a more cohesive national agenda than that of a unitary system, like that of Indonesia. I found that a comparative analysis of the two nations was the best way to support this thesis. The factors reviewed include; incidents of internal conflict since independence, efficiency of making and executing laws, and how quickly the state progressed economically since independence. While both nations have had conflicts, India’s have been primarily external in nature and Indonesia’s have been separatist movements. India is only slightly better than Indonesia in maintaining the rule of law; however, India has vastly more laws to enforce over a greater population than does Indonesia. Also, India has progressed much faster economically as its more unified government is able to direct resources more efficiently. Both Federal and Unitary Systems have their pros and cons, yet in regards to a diverse population, a Federalist system is better suited.

Austin Johnson
Mentor: Nalanda Roy

Japan’s Falling Population
This proposal compares the U.S. and Japan’s immigration policies and how it affects their population. By 2060, the Japanese population is projected to fall by one-third and this can be equated to their strict immigration policies combined with their dropping birth rates. This negative growth is expected to affect Japanese economy because of its large elderly population as opposed to the healthy working class. On the other hand, the U.S. receives many more immigrants than Japan, which allows the population in the United States to grow. I believe that such problems can be resolved by encouraging the number of immigrants from other countries to support its aging population. At the same time, this increase does pose a risk to Japanese identity and culture. This project not only looks at possible ways to resolve this problem but also suggests a plan to preserve the identity of the Japanese’s people.

^*Michael Freeman
Mentor: Laura Seifert

The Archaeological Process: Examining the Benedictine Monastery and Freedmen School

At the conclusion of the American Civil War many newly freed African Americans in the South found integration in society difficult for themselves and their children. In 1878, Benedictine monks established a school on Skidaway Island that was also a church and home to the monks. Little archaeological research exists on African-American schoolhouses, and almost no research could be found on sites like this one, which reflects its uniqueness. The purpose of this project, prompted by its impending development by a private owner, is to recover, analyze, and archive any data recovered at the site. After initial historical research in early 2016, Phase I surveying was carried out by students and volunteers as shovel test pits were dug, the locations of which were determined by grid and judgement based on aboveground features. Phase II began the following semester as we dug six test pits in locations based on analysis of earlier shovel test pits. Our Phase II excavations ended this semester while artifact cleaning, analysis, and curation planning continues. Our initial results indicate heavy occupation of the site while recovered artifacts lend support to the known history of the site.

Economics

^Richard McCabe
Mentor: Michael Toma

How Much Did They Really Steal? A Study of the Effect Between Burglary Hotspots and Homes Prices

This study looks to see the effect of a home’s selling price in a high burglary density hotspot in comparison to a home not in an area with a high burglary density. Using reality data of homes sold in Chatham County, GA from 2013-2015 and burglary reports from the same years and area, a regression is ran to estimate the equation. There is statistically significant evidence to support that high burglary density does negatively affect the selling price of a home. Other attributes that also have an effect on the selling price of a home are also represented in the hedonic pricing model computed.
**Dani Cole**  
Mentor: Regina Rahimi  

**Evaluating and Repurposing Assessment**

Educational assessment has been a frontrunner in deliberations concerning student learning, achievement, and economic success since the introduction of formal education. While most educational leaders, government officials, and community members believe there is definite need for standard assessment in regards to evaluating student, teacher, and school performance, there are reservations that the focus on evaluation lies outside of the true purpose of assessment. Emphasis on assessment as a tool for evaluating educators and facilities through the guise of student achievement has remained. There are faults in validity, reliability, and effectiveness of assessment as a measure of student learning when standardized across a state or nation and when what is assessed does not correlate with the values of the intended representative communities. Leaders must reevaluate expectations surrounding assessment data and restructure the dialogue toward the true use of assessment: to evaluate learning for the purpose of altering instruction for continued learning. This review and discussion examines the development, classroom use, validity and reliability, and school wide expectations for classroom assessment as well as focuses on the historical journey of assessment from the classroom to the international level, culminating in a discussion on assessment, system structure, and curriculum reform.

*Kimberly Nguyen  
Mentor: Regina Rahimi  

**Incorporating Game-Based Learning into Secondary Social Studies Classrooms**

Teachers in the 21st century are tasked with striking a balance between providing an effective learning environment and keeping students engaged and interested in the content being taught. The increase in application of technology into the learning environment has impacted how students learn and teachers teach. Game-based learning encompasses leveraging available technologies and creating learning resources that make use of games, competition, and simulations to engage students. Game-based learning has been thoroughly researched around the world and has been provide to support effective learning, increasing problem-solving skills, and promoting engagement. It allows for differentiation and is focused on the students; it provides the students opportunities to work at their own pace and provides support. The interactive aspect of game-based learning allows students to become active and engaged learners in the class. The world is becoming more technologically advanced, game-based learning allows the classroom to become an active participant these technological advances, allows the students to learn and retain the concepts, and also teach the students skills that they can use later in life. Game-based learning can specifically be applied in social studies classrooms and allows the students to interact with history through gaming and simulation which will provide the students an
immersive experience in historical events and phenomenon. Game-based learning is highly adaptive which gives the students many ways to engage with historical content.

Jennifer Fortney
Mentor: Rebecca Wells

**Plickers: A Method to Streamline Instant Feedback**

The use of classroom response systems are an effective method to gauge student understanding of content and to provide instant feedback to students. However, there has been few research studies published about the use of classroom response systems in middle and high school science classrooms. The purpose of my Action Research project was to gather data on how using a classroom response system can enhance student achievement by providing instant feedback to students. The classroom response system I chose to use for my student was the Plickers (www.plickers.com), which is a cost effective method of having a classroom response system. Questions using the Plickers were given 2-3 times per week. The questions chosen for the study were based off previous student assignments. During the Plicker question sessions any questions that were missed by a majority of the class were further reviewed and retaught. Students received extra credit points based on the percentage of questions they answered correctly for the week. During the study, I observed increased motivation in warm-up questions, as well as, an increase in student participation throughout the class period. We did not begin to use Plickers until the second unit of the course. When I compare the first exam scores to the second exam scores there was an obvious increase in both the average and median score when just considering multiple choice questions. In conclusion, the weekly use of a classroom response system enhances student achievement in high school biology.

**Gender Studies**

^*Aquila Campbell
Mentor: Regina Bradley

**Beyond Say: Water, Spirituality, and the Womanist Autoethnography in Beyoncé’s “Lemonade”**

The imagery and story-telling in Beyoncé’s *Lemonade* builds upon a narrative of Black womanhood that is uniquely southern in character. Through scenes such as plantations, rural areas, swamps, anteellum porches, Beyoncé participates in a framework of story-telling that has been pioneered by southern Black women such as Alice Walker’s Womanism and Robin M. Boylorn’s autoethnographic work in *Sweetwater*. When both concepts are put into conversation with one another, a womanist autoethnography emerges, which is a focus that nurtures the space of Black female life through her own eyes as she navigates family, relationships, the self, the spiritual, struggle, and freedom. Using the womanist framework provided by Alice Walker and the ethnographic framework of Robin M. Boylorn’s *Sweetwater*, the significance of Beyoncé’s *Lemonade* as it exists in the tradition of southern Black women’s story-telling can be explored within a semiotic relationship between the two approaches, rendering a distinctive vision into Black womanhood.
For example, the presence of Water is woven throughout the journey that Beyoncé takes the viewer on. Water reflects the womanist autoethnography by acting as a medium through which Beyoncé expresses her spirituality, the tides of her emotions, the act of cleansing, her connection to the African Diaspora, the pain of loss, questioning, and the reconciliation and revelation she gains within herself and between her loved ones as a southern Black woman. How water maps out the emotional and spiritual journey in the film humanizes Beyoncé even as she enjoys the status of a cultural icon and allows her story to be accessible, because she, like her fans and her audience, expresses resilience and vulnerability. Walker’s womanist insight into Black families, healing, spirituality, and interconnectedness between Black women in conjunction with Boylorn’s autoethnographic process of speaking oneself into being can unravel themes of how water undergirds powerful scenes in the film and acts as a guide through Beyoncé’s experience of southern Black womanhood.

Gabrielle Nichols.
Mentor: Jane Rago

More than Flower Crowns and Twist-outs: The Possibility of Inclusivity within the Carefree Black Movement

Black women have been plagued with harmful stereotypes for years. It is through the spirit of innovation that they find their voices and proclaim said stereotypes are a small sum of their identities. Various platforms have been used. They include literature, film, television, and most recently social media. Through the usage of social media, Black women have found a way to create spaces to freely express themselves. It has become a platform for them to show the world that they can be more than one thing. Take the social media movement #carefreeblackgirl. Black women do not wish to eliminate such images as the Angry Black Woman but rather offer an alternative image. It is one that depicts Black women as individuals who are capable of feeling joy while also owning what makes them who they are – their Blackness and womanhood. Though viewed as a tool to combat negative images surrounding black women, the social media movement has critics. They argue the hashtag is a social media fad that caters to a certain crowd. Others say that #carefreeblackgirl tends to exclude Black women of lower socioeconomic status or Black women whose personalities embody some of the very stereotypes that the movement is going against. In this research paper, I examine the hashtag #carefreeblackgirl. I find that there are two ways the social media movement can be made to include all Black women. My argument with be reinforced with sources ranging from scholarly articles to social media videos.

Health Sciences

*Kaitlyn Stanfield
Mentor: Lesley Clack

Correlation Between Cognitive Function and Patient Reported Quality of Life

Objective:
The purpose of this study was to look at the correlation between cognitive function and perceived quality of life in individuals diagnosed with Parkinson’s Disease. Participants were recruited through a local weightlifting center at which they participated in a 6-week exercise course. They were invited to Armstrong State University to be tested for physical functioning, cognitive functioning, and quality of life. It is expected that there will not be a correlation between cognitive function and perceived quality of life.

**Method:**
The initial tests administered were the Hoehn-Yahr scale (H-Y) and the General Practitioner Assessment of Cognition (GPCOG); both were used to assess participant’s eligibility. In order to be eligible for participation, individuals must have scored a 1 to 3 on the H-Y, 5 to 9 on GPCOG reported by the patient, and 4 to 9 on GPCOG reported by the caregiver. Twenty-four volunteers with Parkinson’s were found eligible for the study. The next assessment administered was Parkinson’s Disease Questionnaire 39 (PDQ-39) to assess the participants’ reported quality of life. Scales for Outcomes in Parkinson’s Disease-Cognition (SCOPA-COG) was administered next in order to assess patients’ cognitive function.

**Results and Conclusion:**
This presentation will discuss the results of the study and implications for future research….

^Jill Conway, Jeremy Ford, Ryan Good
Mentor: Dennis Hooper

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**Bar Trajectory and Kinetic Analysis of Two Youth Elite Weightlifters**

**Purpose** To analyze bar trajectory and kinetics of two youth weightlifters while performing the snatch lift.

**Methods** A World Record holder and a Youth American record holder (69 kg and 77 kg) completed six snatch lifts using varying percentages of their respective one repetition maximum (50-92%). Simultaneously, three dimensional barbell kinematic and ground reaction force data were recorded. A battery of barbell kinematic and kinetic variables was computed during the first and second pull phases. Additionally, the bar trajectory ratio (distance to displacement ratio) was computed as an indicator of mechanical efficiency.

**Results** Generally, coefficients of determination for both lifters’ peak force during the first pull suggested the linear model fit the response to load for 69 kg lifter while the 77 kg lifter demonstrated a curvilinear model. Peak force during second pull increased in a positive slope. Peak power during second pull for the 69 kg lifter had a positive slope while the 77 kg lifter had a negative slope.

**Conclusion** Both lifters saw an increase in peak force during the first and second pull. However, during the first pull, the 69 kg lifter demonstrated a linear increase in peak power. In comparison, the 77 kg lifter demonstrated a more variable response between loads. Even with these variations, both elite lifters are able to be efficient in their own rights while completing the snatch lift.

^Fatimah Alhatemi, Shantol Mitchell, **Tyler Carlson, **Robert Burke, **Joseph Stone
Mentors: Dennis Hooper, Amy Chall, and Charlotte Bates

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**Markers of Anabolism and Catabolism in Male Cross Country Runners**
**Purpose:** Although regular cardiovascular exercise is widely promoted as good for health, very high amounts of exercise does appear to have negative effects. Particularly when combined with low food intake, excessive exercise has been shown to reduce blood testosterone concentrations in men, which is called the Exercise Hypogondal Male Condition. One such population that is particularly vulnerable to combining low food intake and high volumes of exercise are collegiate athletes. Another hormone indicator used to detect overtraining in athletes is cortisol. Cortisol is a well-known stress hormone that is elevated during taxing events like an illness, injury, or in an athlete’s case, extreme exercise. Thus, we are aiming to study blood testosterone and cortisol concentrations in collegiate athletes here at Armstrong.

**Methods:** Physical assessments were conducted during the mid-season, post-season and off season. As part of the assessments, we took blood, allowed it to clot for thirty minutes, followed by separating the serum by centrifuge which was then frozen at -80°C for future analysis. This serum will later be analyzed by Enzyme-Linked Immunosorbent Assay (ELISA).

**Hypotheses:** As has been shown in prior literature, these men will likely have low testosterone. Testosterone concentrations may also continue to decline throughout the season. Cortisol may increase over the course of the season.

**Potential Conclusions:** If there does appear to be a high prevalence of the Exercise Hypogonadal Male Condition, this could be a concern as this condition has been associated with low bone density, low muscle mass, fatigue and even infertility.

^Rebekah Johnson, **Tyler Carlson, **Robert Burke, **Joseph Stone
Mentors: Dennis Hooper, Amy Chall, and Bryan Riemann

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**Hypogonadism in Collegiate Cross Country Runners**

**Purpose:** The purpose of this study is to assess the prevalence of the Exercise Hypogonadal Male Condition (EHMC) in collegiate cross country runners over the course of a competitive season, in addition to evaluating the contribution of nutrition and the overall effect of the condition on performance.

**Methods:** 9 male collegiate cross country runners (height: 182 ± 6 cm; weight: 70.9 ± 6.4 kg) were assessed at the mid-point of the competitive season (MID), immediately following post-season events (POST) and once more during the off-season (OFF). Measurements included the Aging Male Symptoms (AMS) questionnaire, bone density, VO_{2max} and a nutrition evaluation.

**Results:** AMS scores did not change over the course of the season (MID: 23.1 ± 6.4; POST: 22.4 ± 4.4; OFF: 23.7 ± 4.9). 5 of the 9 subjects did meet ACSM criteria for low bone density in the PA spine. There was no change in VO_{2max} from MID to POST (MID: 64.5 ± 4.5 vs. POST: 68.2 ± 3.4 ml·kg^{-1}·min^{-1}), however there was a significant (P ≤ 0.05) reduction in VO_{2max} from POST to OFF (POST: 68.2 ± 3.4 vs. OFF: 62.5 ± 4.1 ml·kg^{-1}·min^{-1}). Energy availability (EA) was below 30g·kg^{-1} fat-free mass at POST (26.3 ± 15.9) and OFF (28.6 ± 16.2)
**Conclusion:** These cross country runners do appear to demonstrate symptoms of EHMC in the form of reduced bone density, particularly 5 of the 9 subjects that met criteria for low bone density in the spine. This may have been partly due to low energy availability.

Shanton Mitchell, **Fatimah Alhatemi, **Tyler Carlson, **Robert Burke, **Joseph Stone
Mentors: Dennis Hooper, Amy Chall, and Charlotte Bates

**Biomarkers of Bone Density in Collegiate Cross Country Runners.**

**Purpose:** Although competitive athletes are perceived as a healthy population, many participate in high levels of exercise and neglect proper nutrition, often resulting in low bone density. This phenomenon has been studied in women and is known as the female athlete triad. However, this condition also exists in men, but has received much less attention. With regards to the symptom of low bone density, this condition can vary in severity from osteopenia (mild) to osteoporosis (severe), which may predispose individuals to fractures that require months of rehabilitation. Low levels of estradiol and vitamin D in the blood are highly correlated with bone density, and thus are potential indicators of bone health. The purpose of this experiment is to assess these markers of bone health in cross country runners throughout the competitive season.

**Methods:** Mid-season, post-season and off season physical assessments were conducted. As part of the assessments, fasted blood samples were drawn, separated by centrifuge, frozen at -80ºC for future analysis. Blood will later be analyzed by Enzyme-Linked Immunosorbent Assay (ELISA).

**Hypotheses:** It is hypothesized that estradiol and vitamin D will be decreased and linked to low bone density in this population.

**Potential Conclusions:** Although the high amount of aerobic exercise can very beneficial, it is still important for these individuals to provide adequate energy in their diet. If these athletes fail to provide adequate nutritional support, they may suffer consequences including low bone density, which could be a risk for future fractures.

**Tevin Duncan
Mentor: Sarah Plaspohl**

**Obesity Means Having Too Much Body Fat...Or Money?**

More than one-third (36.5%) of United States (U.S) adult population is considered obese (CDC, 2015). The percentage of overweight adults age 20 years and over is (70.7%), which is slightly less than three-fourths of the U.S population (CDC). Healthy people 2020 created the goal to help reduce the proportion of adults who are obese (Healthy People 2020 -9, 2012). 33.9 percent of persons aged 20 years and over were obese in 2005–08 (age adjusted to the year 2000 standard population) implying that over the last decade the number of overweight adults has doubled. The objective of this literary review was to investigate the correlation between obesity in adulthood and wealth. Nearly a third of the U.S. food dollar is spent on eating out and U.S. food-away-from-home sales were beating food-at-home sales in 2014. Slightly more than half of Americans (about 50.1 percent) either live in a lower-class household (roughly 29 percent) or an upper-class household (about 21 percent). With the turn of money flow and socioeconomic classes it could be concluded that lower class households are the main contributors to the fast...
food industry. Research findings suggest the correlation between convenience and poor nutritional decision making as being the reason fast food has become a prospering business, thus reinforcing the statement that adulthood obesity and wealth has a positive correlation.

**History**

Sarah DeMott  
Mentor: Olavi Arens

*What Can We Do?: The History of Savannah, Georgia and the First World War*

Savannah, Georgia's response to the Declaration of War on April 6, 1917 was an in stark contrast to the response of the rural population of Georgia. Rather than worry about the legality of the Selective Service Act or the effect of the war on the economy, Savannah's citizens simply asked: what can we do?

**Ashley Renee Johnston**  
Mentor: Allison Belzer

*Societal Orphans: Creating the First Orphanage in Renaissance Florence*

Each society either had or has an ideology that created their unique identity. Religious societies are easily determined by their beliefs, and national policy such as the Aryan nation under Hitler is also identifiable. However, smaller entities such as cities and towns may not be as easily recognized. This is true of the orphans in fifteenth-century Florence. The Florentine community had a system in place to care for the orphans left when parents died from disease such as the Black Death, but it was the community’s own ideologies, their own beliefs, and their own minds that created the need to build the world’s first orphanage. While their private lives could lead to the abandoning of their own children, their public lives portrayed them as upstanding citizens and good Christians. The Innocenti acted as “the vehicle for that appealing vision,” or, in essence, the embodiment of their ideologies. Even though the Innocenti served as a body to their selfish ambitions, the world benefitted from its start. As a people, we care, directly or indirectly, for the orphans in our communities, but as a people, we also produce the environment that creates many of them. The new ideological model of social status in Florence paved the way for the first orphanage, and in the process this society created a new type of orphan, a societal orphan.

*Michael Swanson*  
Mentor: Allison Belzer

*Reacting to the Past: Battling for Bismarck’s Germany*

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The reacting to the past approach is an immersive way of teaching that allows students to personify historical figures in pivotal moments in time. Students are required to do extensive research, use primary sources, and practice networking. I am using the Reacting to the Past approach by centering a ‘game’ around the 1870-1871 war between Prussia and France. This conflict was crucial in both forming the German Empire and establishing the Third Republic in France. The game will focus on the German side of the conflict and those who hold high military office in Prussia and the neighboring German confederations who fought together against French aggressors over many grievances, such as the Hohenzollern candidacy to the Spanish throne, ownership of the Alsace-Loraine territory, and general desire to dominate the continent. By turning the events of the war into a game playable by students, an often-overlooked historical period can be analyzed for its effect on human history. By going in-depth into the unification of Germany, important figures such as Otto von Bismarck, Wilhelm I, and Louis Napoleon can be studied. By turning my research into an RTTP game, I hope to enable students to embody the ‘Blood and Iron’ strategy used by Prussian officials, experience the rising sense of nationalism felt by those of German heritage, understand the underlying tension between the royal families, and know the struggles that formed the Europe we know today.

^Jesus Miguel de Alba
Mentor: MeiMei Lin

You are What You Eat: Determinants of Childhood Obesity, Chatham County

Childhood obesity has increased overall worldwide, and as a result schools around Chatham County have adopted federal, state, and local policies in order to manage this issue. Factors that have a potential to influence childhood obesity include; ethnicity, income, education level, proximity to grocery stores, fast food restaurants, and parks. In addition to policy decisions, all other aspects should be considered in relation to childhood obesity. In other words, all other variables that might affect student health need to be accounted for which can be done through spatial mapping. In order to perform this analysis the body mass index of the students in the Chatham County School District were collected for possible connection between childhood obesity, and the factors that might affect student health. With the use of census maps and other form of obtaining data, Geographic Information Systems (GIS) is a useful method of analyzing the various point values and their proximities to others. Regression Analysis is another practice that benefits in the examination of the most contributing factor of childhood obesity in Chatham County. The main purpose of this project is to map, monitor, and analyze the determinants of childhood obesity in the Chatham County School District through the use of GIS and Regression Analysis. This project will provide an effective framework for other researchers to perform similar practices at other locations, as well as provide information influencing policy makers and stakeholders in the Chatham County School District.

Languages, Literature and Philosophy

Mathew Dean
Mentor: Regina Bradley
“You’re Exactly the Right Kind of Person”: Proposing the Black Final Girl in Horror Film

Generally speaking, Carol Clover’s “Final Girl” has been reserved only for white women in horror movies. For this essay, in an attempt to make the horror genre more inclusive, I analyze three black Final Girls to place black women into the “Final Girl” trope, but also to possibly posit the ultimate “Final Girl.” I inspect the characters: Symphony (Karan Ashley) from Devon’s Ghost (2005), Kendra (Saoirse Scott) from Danger Word (2013), and Jeryline (Jada Pinkett Smith) from Tales from the Crypt: Demon Knight (1995). These characters each contribute to the horror genre and fit into Clover’s “Final Girl,” while also complicating her restrictive categorization. Each of these women alter the “Final Girl” trope in some way allowing her special mark within the horror genre. Jeryline does more than complicate however, she epitomizes the perfect “Final Girl.”

*Michelle Ramos
Mentor: Regina Bradley

Black Girl Magic: The Impact of Black Hermione on the Harry Potter Narrative and Fan Community.

The casting of a Black woman in The Cursed Child brought attention to an underground fan theory about Hermione’s race. What does Hermione’s potential blackness mean to the narrative and fans? The research explores the Harry Potter novels to uncover themes a Black Hermione alters, strengthens, or creates, finding that her most significant act was strengthening the connection between racism and blood prejudice. Fan response varied widely, but the most common responses were either to reject the possibility of Hermione being Black in the text or to “protect” Black Hermione from fans who rejected her. Black Hermione ultimately operates as a device to make Black female fans feel more represented in a world they love.

Richard Jackson
Mentor: Karen Hollinger

The Kaiju Films of 1954-1964 and Japan’s Atomic Unease

The Japanese kaiju genre, famous for giant monsters such as Godzilla, is often seen as nothing more than corny monster costumes and model cities. However, a further look at the historical context behind some of these films from 1954 through 1964 will reveal that they reflect Japan’s sociopolitical climate surrounding the country’s atomic crisis during this period. This presentation is a discussion of three Japanese kaiju films directed by Ishiro Honda during this era: Godzilla (Gojira) (1954), Mothra (Mosura) (1961), and Mothra vs. Godzilla (1964). Their plots, characters, and themes are placed in the context of the nuclear threat, and research essays by Peter Brothers and Chon Noriega are incorporated to provide helpful insight into the films’ historical context and thematic significance. Kendall Phillips’ book on the larger horror genre is also used for further insight. This analysis finds that each film represents a different perspective on the atomic threat, including the haunting effect that the atomic bombings during World War II had on Japan’s social consciousness, the disdain that Japan had towards foreign powers during the post-occupation period, and Japan’s self-criticism for waning in the fight
against nuclear proliferation. As a result, this discussion provides a (by no means exhaustive) look into how Japanese attitudes towards nuclear proliferation evolved during this period, revealing that *kaiju* films have more to them than rubber monsters destroying fake cities.

^Benjamin Cela  
Mentor: Amanda Konkle

**“What’s Your Pleasure?”: Theorizing the Cenobites Queer**

In my essay, I explore the ways in which queerness and otherness are represented in Clive Barker’s *The Hellbound Heart* and his adaptation of his novella, *Hellraiser*. I examine the relationship between the text and the film using quotes that correspond (or don’t correspond) with scenes from the movie. I use queer theorists such as Lauren Berlant and Michael Warner to begin thinking about how queerness is represented in society and then examining how these implications can be seen in film and literature through film queer theorists like Harry Benshoff. I also use primary sources to analyze the implicit and explicit meaning of both the text and the film like interviews with Barker and others who worked on set.

^Leena Ali  
Mentors: Jane Rago and Cartright

**Colonial Capitalist Heterosexism and the Invisibility of Violence**

The purpose of this study is to exhibit how colonialism, capitalism and heterosexism simultaneously create spaces where exploitation and violence are readily permissible. Human trafficking, sexual violence and imprisonment are my chief concerns when discussing the exploitation and violence. This research will show how the violence predominantly targets and harms women and children who are of lower class status, marginalized or displaced. I am focusing on violence in impoverished areas, the effects of military attacks and border imperialism. Neoliberal tactics of the global North and corrupt governments of the global South hide this violence by promoting a false sense of democracy. Race, class, gender, nationality, ethnicity, ability and sexuality are key factors to understanding why those who are targeted or disappear have minute protection and security. Western hegemony and neoliberalism maintain systemic and societal oppression through the hypersexualization, hypermasculinity and violence that becomes appealing and a source of income for the exploiters, consumers and abusers. I will be focusing on regions within Palestine, Israel, Syria, Mexico, Iraq, Afghanistan, China, South Africa, the U.S., Brazil and Eastern Europe. My research will conclude that the violence that comes out of systemic oppression can be seen interrelatedly and globally in regions where there are high rates of displacement, immigration, military attacks and poverty.

^Rosina Campbell  
Mentor: Duc Huynh

**Mathematics**

**Finding Fibonacci Primes Using Quadratic Forms**
Fibonacci numbers are recursively defined as $F_1 = F_2 = 1, F_n = F_{n-1} + F_{n-2}$ for $n \geq 3$. It is not known whether there are an infinite number of Fibonacci numbers that are also primes. We will implement a method of using ideal class groups to find Fibonacci primes.

Darien Converse  
Mentor: Duc Huynh

**Elliptic Curves Induced by Nice Cubic Polynomials**

We define a nice cubic polynomial as a degree 3 polynomial with integer coefficients such that $f(x)$ and $f'(x)$ have rational roots. We are studying elliptic curves induced by these cubic polynomials. We will show that these elliptic curves do not have complex multiplication, and we will discuss some computational results that we have obtained through the software Sage.

Tyler Melton  
Mentor: Duc Huynh

**Constructing Irreducible Polynomials Over Prime Fields, Using Isogeny Volcanoes and the Chinese Remainder Theorem**

For a certain discriminant $D$ and a prime field $F$, the Hilbert class polynomial $H(D)$ has a high probability of being irreducible over $F$. We will use this fact, along with isogeny volcanoes and the Chinese Remainder Theorem to naively construct irreducible polynomials over $F$.

Stephen Bray  
Mentor: Jared Schliper

**Estimating Stock Option Prices Using Historical Data**

The mathematical theory of stochastic calculus is the basis for pricing financial derivatives, such as options and futures contracts. We will give an overview of the mathematics behind the Black-Scholes options pricing formula. We will use the Black-Scholes formula to obtain a 95 percent confidence interval for the future price of a stock option, and the historical data will be used to estimate the drift and volatility of the underlying stock.

**Nursing**

^Alyssa Frederick  
Mentor: Ann Hallock

**The Relationship Between Visual Art and Nursing**

The combination of visual art and nursing yields significant potential for the improved outcomes among patients and nurses. The benefits of the liberal arts as part of the baccalaureate degree in nursing education can exceed core curriculum requirements. Use of observational and
analytical techniques learned in the arts can be applied to nursing. Adopting visual art within health care facilities, ranging from architectural designs of buildings to displaying works of art, can promote positive involuntary responses from patients. The actual hands on production of art provides an opportunity for mental, emotional, and nonverbal healing in patients and promotes imagination and creativity in nurses that can result in a more effective approach to preparing treatment plans. This podium presentation is designed to discuss the benefits of integrating visual art into nursing education and practice and to encourage a greater use of the arts for quality improvement of both patient welfare and nursing practice.

Psychology

^Clint Johnson, Skylar Bosak
Mentor: Ho Hunyh

Intra- and Interpersonal Assessments of Masculinity, Femininity, and Humility

Although humility is a desired virtue, it has received little attention in the literature and carries some negative associations. In our current study, we examined intrapersonal and interpersonal assessment to explore the relationship between humility, masculinity, and femininity. We expect to find a negative relationship between masculinity and humility and a positive relationship between femininity and humility. In Study 1, participants completed a questionnaire which included the HEXACO-HH Personality and the Bem Sex Role Inventory. We found a negative relationship between the modesty subtype of humility and masculinity in men’s ratings. In Study 2, participants completed a questionnaire including the Relational Humility Scale. We found that, when making judgments about a man, global humility was positively correlated with the femininity. However, when making judgments about a woman, humility was positively related to both femininity and masculinity. These findings provide partial support for our hypothesis. Using two types of reporting, we are able to get a broader understanding of these relationships. This could be evidence of a cultural shift of humility and gender. Considering humility involves holding egalitarian beliefs, it is possible that humble people are not necessarily passive or yielding. Taken together, these findings may help to inform people in careers where high levels of masculinity are warranted about the perils of such a demand. That is, high levels of masculinity can be counterproductive especially in interpersonal situations where humility may be required. Future research can expand the understanding of humility by studying these specific populations.

^Jessica Johnson, ^Timothy Walter
Mentor: Ho Huynh

Integrating Student Veterans in the Teaching of PSTD

Psychology courses have a profound impact on students and with Veterans, in particular, due to the prevalence of post-traumatic stress disorder (PTSD) amongst them. The current study examines the effectiveness of integrating student veterans into the instruction of PTSD during Introduction to Psychology courses. We hypothesized this process will improve the retention of content knowledge about PTSD and reduce the stigma associated with PTSD and veterans.
Three Introduction to Psychology classes were randomly assigned to one of three conditions: 1) A professor giving a 15 minute lecture using a presentation that the researchers and professor agreed would be appropriate; 2) a student Veteran giving a 15 minute presentation using the same presentation; or 3) a student Veteran giving a 15 minute presentation on PTSD with limited guidance. We measured students’ stigma toward PTSD, their affect, and their knowledge about PTSD before and after the lecture. We found that when a veteran presented a lesson with limited guidance, there was no change in stigma towards PTSD nor positive affect. We did find a decrease in negative affect and PTSD knowledge. When the lesson was taught by the instructor, we found moderate decreases in stigma, no changes in affect nor knowledge about PTSD. When the lesson was taught by the veteran with the collaborative lesson plan, stigma significantly decreased and negative affect decreased. There was no change in positive affect or knowledge. The findings suggest that integrating veterans is important but not enough to create an impact.

Erin McGillen
Mentor: Ho Huynh

“You will Fail!”: Assessing Responses to Interpersonal Bracing

People sometimes will lower other people’s expectations about impending news to help them prepare for the eventual outcome. Although this type of manipulation of expectations affects people’s satisfaction and liking (i.e., intrapersonal responses), not much is understood about the consequences for the person doing the manipulation (i.e., interpersonal outcomes). The current study examines people’s interpersonal and intrapersonal responses when their expectations are manipulated for passing or failing a task. We manipulated participants’ expectations by informing them that they had to complete and pass a task that was either difficult and they have a 90% chance of failing or that the task was moderately difficult and they have a 50% chance of failing. We found that participants who were told it would be difficult reported lower levels of negative affect and rated their researcher as friendlier than those who were told it was moderately difficult. There was no difference between the two conditions for aggressive behavior and positive affect. Taken together, these findings suggest that it is a good idea to help others brace for the worst.

Timothy Walter, Kityara James, Whitney Davis
Mentor: Ho Huynh

The Effects of Consolidation on Various Universities

During the process of organizational mergers, people from every level of both organizations are affected in many different ways. In this study, we will examine the emotional reaction of those affected, the differing expectations of the institution, as well as the expectation of funding by students, faculty and staff of both Armstrong State University and Georgia Southern University. The participants will complete an online survey that will ask questions in relation to their emotional well-being, their reaction to the merger and what their expectations are in regards to funding sources as well as possible change of locations. The goal of this study is to have participants focus on the environment when the merger is complete. We will use
minimalized Likert scales specific to the positions held in the university community. We hypothesize that there will be a negative shift in emotions and university expectations based on demographics, current source of tuition and progress in degree or status of employment. It is our intent that the results of this study aid in the merger process by allowing the voices of those most affected to be heard.

^Victoria DiNatale
Mentor: John Kraft


McGaha and Korn (1995) quantified the number of published articles addressing human research ethics published between the years of 1927 and 1991 to determine psychologists’ interest in discussing the ethics of human psychological research as manifested in the publication record. Reviewing abstracts listed in *Psychological Abstracts* and PsycLIT, the authors documented that psychologists showed little interest in publishing articles about human research ethics until the 1970s (McGaha & Korn, 1995). We replicated the original study using PsycINFO and extended the findings to the year 2015.

Using the keyword “ethics,” we searched PsycINFO by limiting the results to “human subjects” in five-year increments from 1930 to 2005. We then identified articles that addressed human research ethics by reading the abstracts of each citation.

We observed a trend in articles on human research ethics similar to that observed by McGaha and Korn (1995). There were few citations from the years 1930 to 1970, with a significant increase in citations beginning in the 1970s. We also noted an overall upward trend in interest in ethics of human psychological research in the publication record continuing in the years 1995, 2000, and 2005. We assert that with a rising number of overall publications from 1930 to 2015, an interest in human research ethics also increased.

Savannah Berkel, ^Theresa Reilly, Emma Abercrombie, ^Justin Phillips
Mentors: Joshua Williams and Nancy McCarley

**Defining Relevance: Improving Relevant Word Identification on PowerPoint Slides Among Students of Varied Abilities**

The ability to identify relevant information and take efficient notes during oral-visual lectures correlates with better information retention. Previous research revealed that students have difficulty identifying relevant words amidst irrelevant words even after receiving specific feedback. Here, we examined whether providing a student with definitions of relevant and irrelevant words would help them ignore irrelevant words on PowerPoint slides. We randomly assigned students to 1 of 3 conditions: Definition with No Feedback (DNF), Definition with General Feedback (DGF), or Definition with Specific Feedback (DSF). In the DNF condition, students highlighted what important information on four PowerPoint slides without feedback. The DGF and DSF conditions had two practice slides on which they highlighted what they believed to be important information. Then, we told both groups the percentage of relevant words identified correctly. Students in the DSF had time to review their graded PowerPoint slides. After the practice slides, the DGF and DSF completed the same four test slides as the
DNF. In addition, we classified students as either low, medium, or high ability based on their performance on the first practice slide. Results show that the DSF condition did significantly better at identifying the relevant information during feedback session two. Results of the ability analysis show a significant improvement within the low ability group while the high ability group significantly decrease in performance. The addition of the definition increased relevant word definition when combined with specific feedback but only for those who were not already proficient at identifying relevant information.

^Clint Johnson, Harley Roush
Mentors: Joshua Williams, Nancy McCarley

**What Did I Just Hear? The Impact of Profanity Use During Lecture**

Language once viewed as obscene and offensive is now acceptable in many contexts. Previous research suggests that vulgar language decreases a speaker’s effectiveness; a phenomenon that appears amplified for female speakers. What effect does profane and vulgar language have on learning and perceived professionalism in an educational setting? In the current study, Participants listened to an audio lecture from either a male or female who used varying levels of profanity. This was followed by a multiple choice test and questionnaire on which they rated lecturer professionalism and competence. We hypothesized that test scores would be statistically lower in the female lecturer condition compared to the male condition as the frequency of profanity used increased. Additionally, we hypothesized that the perceived qualifications and professionalism of the lecturer would be lower in the female condition compared to the male condition as the frequency of profanity increased. Analyses suggested no main effect of profanity on test scores. However, data did partially support our secondary hypothesis; we found lower perceived professionalism and competence in moderate and high profanity frequency groups, as well as a lower interest in taking a class from the lecturer. Moreover, participants in the high profanity frequency condition also rated the research assistant as less professional, suggesting transference of perception. The lack of difference in test scores as a function of profanity use is in itself novel based on prior literature. Although learning does not seem to be affected by profane language in this study, the perception of the lecturer is.

^Theresa Reilly
Mentors: Joshua Williams and Nancy McCarley

**Providing Feedback to Identify Relevant Information on PowerPoint Slides**

Students employ various study techniques in the classroom to aid in the retention of information. One of the most commonly used methods is notetaking. Studies show that notetaking is a difficult task that requires many complex cognitive processes. These processes are not intuitive, and interventions can be implemented to help students improve their notetaking abilities. Good notetaking involves an ability to include relevant information while leaving out redundant or unnecessary details that may overload limited cognitive processing. The current study aims to find methods to aid in the improvement of notetaking through simple interventions that could be effectively generalized to a classroom setting. In this study, we provided students with various levels of feedback and assessed their ability to identify relevant information on a set
of instructor-generated PowerPoint slides. Students received either no feedback (NF), general feedback (GF), or specific feedback (SF). The NF condition served as a control and received no feedback. In the GF condition, researchers told participants the percentage of correctly identified relevant words on a slide. In the SF condition, participants were told the percentage of correctly identified words and allowed one minute to review the graded slide. Results show that participants in the SF condition identified more relevant words following training, while those in the GF condition showed a decrease in relevant word identification. When more irrelevant information was present on a slide relative to relevant information, all groups struggled to identify relevant information.

Rehabilitation Sciences and Physical Therapy

**Tyler Broering, **Andrew Johnson, **Reece Fair, **Nicholas Lamb
Mentors: George Davies, Bryan Riemann, James Karnes

Evaluating Ground Reacting Forces in the Knee Using Closed Kinetic Chain Shuttle Training

Background: Knee disorders, such as anterior knee pain, are common types of musculoskeletal injuries seen in physical therapy. Shuttle training, which involves weight bearing strengthening exercises, is a new approach to treat individuals with anterior knee pain by introducing submaximal loading of the knee in a gravity minimized position. However, there is minimal data quantifying the ground reaction forces (GRF) using gravity minimized closed kinetic chain or open kinetic chain shuttle exercises. By applying AMTI force plate technology, the gold-standard method for quantifying GRF in standing hip and knee exercises, this study aimed to provide empirical evidence demonstrating the GRF of the testing conditions which may demonstrate the effectiveness and clinical relevance of shuttle training.

Hypothesis: We hypothesized the selected exercises and resistances performed in a gravity minimized position would demonstrate a reduction in peak concentric (GRF\text{pc}) and eccentric ground reaction forces (GRF\text{pe}) relative to similar exercises performed in full weight bearing positions.

Methods: This quasi-experimental study examined 51 subjects performing a series of 4 exercises at 3 separate resistances on the Shuttle, instrumented with an AMTI force plate to quantify GRF. Kinematic analysis was measured during the exercises using an electromagnetic motion capture system from 3 sensors placed on the right lower extremity.

Results: After quantifying GRF forces and kinematic data generated from 12 experimental conditions, the analyses of the data is still being processed using Motion Monitor software, including allometric scaling.

Conclusions: The results of the study will be compared to our hypothesis and presented at the symposium.

**Amber Buchanan, **Niki Cail, **Brooke Crum, **Tara Ellington
Mentors: George Davies, David Bringman, and James Karnes
Efficacy of a Computerized Shoulder and Knee Simulation Model on Developing Manual Therapy Skills in Physical Therapy Students

Background: Mobilization techniques are commonly used for treating musculoskeletal disorders. The purpose was to assess the effectiveness of training with a computerized joint simulation model on acquisition, retention, and transference of manual therapy skills.

Hypothesis: We hypothesized the following: 1) training on the computerized knee model would improve selected outcomes as an adjunct to classroom methods of manual therapy training, 2) the experimental group would be more accurate in performing the forces of manual therapy techniques compared to a gold standard, 3) the experimental group would have greater retention of the manual therapy skills, and 4) skills acquired on the computerized knee model would be accurately transferred to the computerized shoulder model.

Methods: Thirty-four first year Doctor of Physical Therapy students were randomized into experimental and control groups. Both groups were pre-tested on a computerized knee model without feedback and with limited knowledge of mobilization techniques. Experimental group subjects attempted grade IV physiological flexion mobilizations on the knee model for 5 weeks. During training, experimental group subjects were given visual and auditory feedback. After 5 weeks of training, both groups were post-tested on the knee model without feedback to assess efficacy of training. To assess transference, experimental group subjects attempted grade II anterior-posterior mobilizations on a computerized shoulder model. To assess retention and retention of transference, experimental group subjects performed mobilizations on both computerized knee and shoulder models 7 weeks later.

Results: Results are currently being analyzed.

Conclusions: Results will be related to the hypotheses and presented at the symposium.

**Spencer Salter, **Casey Price, **Matt Foley, **Kristyn Thacker, **Sydnee Weaver
Mentors: Nancy Henderson, George Davies, Haley Worst

Effects of Metronome and POSE Drills on Footstrike

Background: Running has gained popularity in the past several decades, and so has the desire to alter foot-strike. A variety of methods have been researched but there is currently limited evidence on the effect of running with a metronome and performing POSE drills on foot-strike alteration.

Methods: After signing informed consent and completing a demographic questionnaire, subjects ran at a self-selected pace and foot-strike was evaluated at the one mile mark using a smart phone app. If the person displayed a rear-foot strike, quadriceps to hamstring ratio was also evaluated. Subjects were instructed in the use of a metronome for running and POSE drill techniques. Subjects were instructed to use the metronome and these techniques while running on their own and were re-evaluated every 2 weeks until the completion of the study at 6 weeks.

Results: A total of 11 subjects started the study and had a mean age of 24 years and ran an average of 22.27 miles per week. 9 subjects completed the study (8 females and 1 male). Of those who completed the study, 22.22% were compliant with both the POSE drills and metronome. 22% of the subjects successfully altered their foot-strike from a rear-foot to a mid-foot strike at the 6 week mark.
Discussion: Base on preliminary results, running with a metronome and POSE drills does not alter foot-strike when running. Data collection for this study is currently ongoing. This is the first study analyzing the effect of running with POSE and metronome on foot-strike.