

2019 Shepherd University Exhibition of Undergraduate Research and Creative Endeavors Abstracts Collection

INTRODUCTION:

On Wednesday, April 17, from 4:30-6:30 pm in the Storer Ballroom of the Student Center, Shepherd University will host an Exhibition of Undergraduate Research and Creative Endeavors. At this event, we will highlight student research posters and creative displays from across campus. Students selected by their departments will be in attendance to present their work to members of the Shepherd community.

This format has been chosen in order to facilitate the free-flowing exchange of ideas and energetic interactions that become possible with the interplay of multiple specializations and interests, as well as to allow visitors to simultaneously experience the interconnections among numerous disciplines.

In order to give visitors an understanding of these research and creative works, we present in this document a collection of abstracts provided by the student authors. They are organized alphabetically by the following topic area:

- Appalachian Studies
- Art and Theater
- Biology
- Business Administration
- Chemistry
- Communications and New Media
- Computer Sciences, Mathematics, and Engineering
- Environmental and Physical Sciences
- Health, Physical Education, Recreation, and Sport Sciences
- History
- Psychology
- Sociology

We hope to see you all at the Exhibition, where you can discuss more details of these works with the students themselves.

With appreciation,
Dr. Jason Best
Director of Strategic Research Initiatives
Shepherd University

APPALACHIAN STUDIES

Title: West Virginia's Forgotten Union Soldiers: The Andersonville Story

Presenter: Cameron Mallow

Abstract: This was a special research project with Cam Mallow in the APST 476 Practicum, fall 2018. Cam was researching and preparing for an Appalachian Studies presentation for spring 2019, which he submitted and was successful in the project's conference acceptance. Mr. Mallow met regularly with Dr. Shurbutt, who served as his mentor, a past President of the National Appalachian Studies Association. He conducted original research on the West Virginia Union soldiers that he focused the paper on, and he created a Power Point which he will also utilize to create his Forum Poster. Here is an abstract of his presentation, and thus a summary of the poster content: "West Virginia's Civil War soldiers who fought, were wounded, and killed in the Civil War have received much attention in recent years, but there is one group of soldiers overlooked who were loyal to the Union cause—soldiers that were captured and held as prisoners in places like Andersonville, Georgia. The Andersonville prison was designed for a maximum of 10,000 prisoners but held more than 32,000 men. Of those, 12,920 died and were buried in a cemetery created just outside the prison walls. Many of these Union soldiers were West Virginians who stayed close together in order to survive Andersonville. Some held hope of surviving until the end of the war, some held hope to be exchanged, and some wanted to escape. Their stories are unmatched in the Civil War period for fortitude, perseverance, and sheer grit. This paper will explore some of those stories of heroism and survival, from Andersonville to AppalachA'ville.

ART AND THEATER

Title: The Two Offerings

Presenter: Kayley Kemp

Abstract: In my artwork, I explore both Pagan and Christian religions, something I've been exposed to my entire life but have not had faith in. I look at exposing the dichotomies between the two and point out their similar symbology. My view point when approaching the artworks, is as a cold, analytical, outsider, almost to the point of naivety. Within my work, I like to explore the strong feminine through composition, how the viewer interacts with the piece in a gallery setting and by exploring different representations of the feminine. I've also worked on pulling from ancestral anecdotes and histories. The Polish Catholic family has had visions of the Virgin Mary appear before them and we've traced parts of my lineage back to women convicted of witchcraft in the Salem Trials. Stylistically, I like the direct reflection of the self in realism and enjoy taking motifs from early Christian work, like the gold leaf halo, but allow for conceptual exploration in maintaining surrealism.

For this piece, I have taken inspiration from the art historical. Frida Kahlo painted *The Two Fridas* to show both her modern and traditional sides. In this same way, I have painted both religious viewpoints that I have experienced. There is a fluidity between both sides, a magnetism, a connection and rebut. To the right, exists the Christian. Holding bread and wine, or the sacrament, however, we see the figure pouring out of her cup. This is considered a libation, or an offering to a Greek god. To the left, exists a Pagan. She is connected to the earth through her nakedness. However, we see her hiding her body in

shame as her nudity is revealed. To emphasize this, she is placed in a “shame mask,” something loud, gossipy women were made to wear as punishment during the Salem witch trial era. The iron mask would have a bite and a rope that would be attached to it to drag the women through town. We are given an icon that shows the shadow cast upon the pagan-being through the demonization of her religion but we also experience the shared aspects that Christianity often has in common with pagan traditions.

Title: Sweeney Builders Rebrand

Presenter: Rachel Sweeney

Abstract: The value that good design brings to a company is more than just making something look pretty. In fact, design can become part of the business strategy. Understanding audience, creating cohesive and effective marketing materials, and having an overall strong design can make a business stand out. Good design, and knowing how to use good design effectively, can increase the success of a business.

Sweeney Builders is my dad’s self-owned construction company, and it is in desperate need of a rebrand. Through the process of redesigning the brand of Sweeney Builders, I intend to explain the value that design can bring to a company. I will compare the original design to the redesign and explain why certain things needed to change and how it will help the company overall.

BIOLOGY

Title: You are more than what you eat! The dietary basis to painted turtle spot and stripe color

Presenter: Rhett Quigley

Abstract: Carotenoid pigments are important condition-dependent indicator traits that generate sexually selected color in birds, fish, and reptiles. One reason carotenoids are indicator traits is because the identity and amount of carotenoid pigments ingested in an animal’s food are often different from amounts and identities of carotenoids deposited in the animal’s skin. Painted turtle spots and stripes are pigmented by yellow xanthophylls and orange-red keto-carotenoids. We fed male and female painted turtles nutritious diets with-, or without-, moderate amounts of orange beta-carotene (and trace amounts of yellow xanthophylls), and investigated the identities and concentrations of carotenoids in the blood of turtles given access to—or deprived of—beta-carotene. We also investigated how beta-carotene access changed turtle color. Beta-carotene access significantly increased circulating levels of beta-carotene only, and did not increase circulating levels of lutein, zeaxanthin, beta cryptoxanthin or neoxanthin. There was no sex effect to the circulating carotenoid levels. With respect to the effect of beta-carotene on stripe and spot color, we found that this orange beta-carotene access reduced overall brightness of yellow chin stripes and post orbital spots, and reduced ultra-violet chroma in the yellow post-orbital spots. Finally, beta-carotene access increased yellow chroma in the orange-red fore-limb stripes. There was no sex effect to these color changes. The yellow, orange and red colors of painted turtle stripes and spots are in part the result of physiological conversion of available carotenoids.

Title: The Effects of Roundup and its Chemical Constituents on Learning and Long-Term Memory Consolidation in *Lymnaea palustris*

Presenter: Aaron Robinson

Abstract: Environmental contamination from herbicide use is a prevalent problem. Roundup is a widely used herbicide that consists of two active ingredients: Glyphosate and Diquat Dibromide (DD). Previous work has shown that these compounds have negative impacts on development, fecundity, and other processes. We analyzed the effects of chronic exposure to Roundup, Glyphosate, and DD on learning and memory in the pond snail, *Lymnaea palustris*. *L. palustris* was treated with Roundup, Glyphosate, or DD for 1-2 weeks. Snails were operantly conditioned according to standard procedures. The results indicated that at concentrations of Roundup and DD legally allowed in human drinking water for a 1-week treatment, learning was not inhibited; however, memory formation was impaired. At the same concentration for 2 weeks, or at a 5-fold higher concentration for 1- and 2-week treatments, both learning and memory are significantly impaired. A 1-week treatment with Glyphosate impairs memory but not learning. Western Blot analysis was conducted to detect changes in Protein Kinase C (PKC) abundance, which has been shown to be linked to learning and memory. Previous work in our laboratory has shown a positive correlation between the abundance of PKC and memory consolidation in control snails; this increase is abolished upon exposure to Roundup or its constituents. Our findings suggest that Roundup and its constituents have damaging effects on learning and memory in invertebrates. Similar effects may occur in vertebrates because of the high level of conservation of learning and memory processes across species.

Title: An investigation of the Hamilton-Zuk hypothesis in painted turtles

Presenter: Ian Whibley

Abstract: Carotenoids are the pigment responsible for the bright colors of many fish, birds and reptiles, and are an example of a condition-dependent trait because their appearance in the integument is often dependent on some physiological function. Hamilton and Zuk suggest that females use males' bright colors to assess their ability to resist parasites. The painted turtle, *Chrysemys picta* is a common slider turtle that inhabits ponds and lakes of the Mid-Atlantic region, and its colorful reds, oranges, yellows and UV spot and stripe colors are pigmented by carotenoids. Painted turtles experience parasitism by leeches, which transmit a haemogregarine parasite, *Haemogregarina balli*, can be abundant in the blood of infected turtles. We performed common garden experiment where we manipulate access to carotenoids and flaugosyl, anti-blood parasite medication, to understand a) how carotenoid access affects turtle color, b) if anti-parasitic medication affects turtle color, and c) if there is a carotenoid access-anti-parasitic medication interaction on turtle color. We found that carotenoid access reduced 1) overall brightness of yellow chin stripes and post-orbital spots, 2) ultra-violet chroma of yellow post-orbital spots, and 3) increased yellow chroma in the orange-red fore-limb stripes. There was no sex effect to these color changes. Furthermore, there was no main effect of anti-blood parasite medication on stripe and spot color, and there was no anti-blood parasite medication by carotenoid access interaction on stripe and spot color. Carotenoid-based color spots and stripes does not communicate information about haemogregarine parasite load in painted turtles.

BUSINESS ADMINISTRATION

Title: Arcitell: Starting a Start-Up

Presenter: J. Brock Adams

Abstract: Arcitell is a newly formed exterior cladding company that is bringing a new product to the construction market. The company is looking to enter both the residential market and the commercial market in due time. Arcitell will be unveiling its first product line, Qora, this summer coming to market with two styles of stone panels in a multitude of colors. The company was formed as a joint venture in December of 2017 between the Belden Brick Company and an Italian innovation company called Acell. The Belden Brick Company has one hundred thirty-two years of experience in manufacturing, distributing, and competing in the exterior cladding market. Acell has forty years of experience with the technology, experience in architectural composite molding, and in the materials that coincide with two.

With the company's youth, there has been much room for me to work within many facets of the company. Last semester I spent a month and a half in Italy working with Acell. Whilst there, I spent time learning about the science behind the technology, the artistry required to create Arcitell's products, and many other applications. Currently, I work weekly in Arcitell's plant in Ohio. There, I have been working on the production line, developing processes, developing panel designs, training employees, assisting in production supervision, and working in many other facets within the company. In short, I have had the unique opportunity to engage in the start up of a corporation, allowing me to dive into all categories of the company to some degree and engage in international business opportunities. Shepherd University and the business department has assisted me greatly in completing my education while participating in this opportunity, ultimately allowing me to apply the knowledge that I have gained during my years at Shepherd to the real world.

Title: Developing Publication Skills

Presenter: Courtney Knill

Abstract: Developing publications is a valuable skill for students to develop while they are still at the undergraduate level. Many students feel that becoming published in an academic journal would not be possible until they have completed their MBA or PhD, but this is far from accurate. This is attainable for undergraduate students if they work hard, and ask for help when they need it.

CHEMISTRY

Title: UV-C Irradiation as a Nonchemical Control Method of *Trialeurodes vaporariorum* on Tomato Plants

Presenter: Makaila Emery

Abstract: UV-C irradiation was studied for its effectiveness as a non-chemical and non-biological control method. Eight Bonnie Bush tomato plants were irradiated using UV-C light for sixteen seconds per night.

This was shown to significantly reduce the *Trialeurodes vaporariorum* adult, nymph, and egg population when compared to eight control tomato plants.

Title: Triple Negative Breast Cancer Cells Using Synergistic Treatment

Presenter: Alexandria Fetty

Abstract: Triple-negative breast cancer (TNBC) is unlike other breast cancers in its aggressiveness and likelihood of metastasis. TNBC's are characterized by the lack of the three receptors generally found in other breast cancer cells—the estrogen receptor (ER), progesterone receptor (PR) and human epidermal growth factor receptor 2 (HER2). Due to the lack of these receptors, TNBC's do not tend to respond well to typical therapies that are options for most breast cancer patients. In recent studies, TNBC has shown some response to the chemotherapeutic drug Doxorubicin. However, when Doxorubicin is used to treat TNBC's synergistically with an anti-nodal treatment, the viability of TNBC cells decreases significantly. Investigating whether a combination therapy, such as anti-nodal with Doxorubicin, will work on cancer cells in the human body, the in vitro conditions should be similar to tumor morphology. Previous studies of TNBC's being grown in a 2D format have been extended to be grown into 3D spheroids as a foundation of studying this potential synergistic treatment. (Supported by NIH Grant P20GM103434 to the West Virginia IDeA Network for Biomedical Research Excellence, the Robert Louis Katz Medical Research Foundation of Chicago, and the West Virginia Higher Education Commission Division of Science and Research SURE Grant Program)

Title: Expression and Purification of AtRALF1 from *Escherichia coli*

Presenter: Benjamin Lanham

Abstract: Rapid Alkalization Factors (RALFs) are a family of plant specific peptide growth factors involved in myriad plant processes including growth, development, and response to stresses. These secreted peptides are genetically encoded and processed into an active form from a larger pre-pro-peptide. The active forms are ~5 kDa and have two disulfide bridges. Here we report our attempts to express the active form of AtRALF1 (At1g02900) from the soluble fractions of two different expression strains of *E. coli*, Origami 2 (DE3) and SHuffleT7 pLysY. Both of these strains are commercially available and genetically altered for expression of proteins with disulfide bonds. Expression of these peptides is challenging because misfolded disulfides or other structural issues result in insoluble peptides. We sought to optimize expression conditions to bulk purify HIS_(6x)-AtRALF1 by cobalt column chromatography. Under most conditions the peptide was insoluble. However, at 25°C around 50% of total HIS_(6x)-AtRALF1 was soluble in Origami cells. As controls, we expressed mutated versions with alterations in the conserved YISY motif which are physiologically inactive. Surprisingly, these mutant versions were 100% soluble in most conditions tested. All versions of HIS_(6x)-AtRALF1 were observed to migrate ~12 kDa in SDS-PAGE gels although their predicted molecular weights is ~8 kDa. Treatment under strong reducing conditions had no effect on this migration pattern. We conclude that AtRALF1's insolubility issues could be more related to a structure in the YISY motif than to the formation of disulfide bonds.

COMMUNICATIONS AND NEW MEDIA

Title: The Real World: In Binaural Sound

Presenter: Kenneth May

Abstract: The Real World is a thriller by Kenneth May. It follows a day in the life of Caleb, who believes himself to be a normal college student in a boring normal world. Throughout the day that the world is not as normal, or as real, as he believed.

The Real World is a narrative sound installation using binaural mixing. Binaural audio is sound recorded and mixed the way our ears hear it. To do this, microphones are carefully arranged to maintain the sense of spatial perspective of hearing (not stereo). Most uses of binaural audio currently are ASMR, radio plays, or Virtual Reality. The goal for making this piece is to have a story that people can enjoy, and to show that binaural audio is an underutilized aspect of sound design.

COMPUTER SCIENCE, MATHEMATICS, AND ENGINEERING

Presenter: Brian Crutchley

Title: How to use R to generate Violin Plots to assist in sensitivity analysis of a cancer model

Abstract: When you collect large amounts of data during research, it increasingly becomes more difficult to graph manually using simple graphing tools such as Microsoft Excel, especially when multiple variables and result sets are involved. For example, graphing 10,000 points on a graph is easily accomplished in excel. However, if you have 10 spreadsheets worth of data, with each one containing a different testing result, it becomes difficult to integrate them into each other and create visualizations for data. The remedy to this is to use one of the many graphing programs and/or statistical languages available. This project explores the usage of the R project for statistical computing to create graphs for complex data sets by using R to import a large collection of data and generate various graphs using the data. The violin plots can be used to investigate how the change of each parameter value can affect the tumor growth pattern using a cancer model. The project was supported by NIH Grant P20GM103434 to the West Virginia IDeA Network for Biomedical Research Excellence and the NSF S-STEM grant DUE – 1259713.

Title: Developing Virtual Reality Software to Graph 3-D Curves with Applications in College Level Mathematics Education

Presenters: Brian Crutchley, Melvin Bowers, Parker Anthony

Abstract: Virtual Reality (VR) is a potentially augmentative technology for classroom learning. We speculate that 3D visualization of solutions to mathematical equations would be assistive in a college level calculus course. To test our hypothesis, we built a VR system using commercially available hardware and software. We implemented visualizations of solutions to equations from textbooks used in calculus classes at Shepherd University, where we are in the process of demonstrating the system to

mathematics professors and recording their reactions using a survey. So far, three of three professors reported that they would support the system's use in the classroom. We hope to add features such as projections of curves onto any plane, and we hope to test the system in a classroom setting.

Title: Rubik's Cube Robot

Presenter: Brandon Owens

Abstract: The robot is programmed and built to solve a Rubik's cube in under 4 seconds. Utilizing an Arduino board and six stepper motors the operator is able to scan any shuffled cube into the computer, where the computer takes advantage of a solving algorithm called the gods algorithm. This way the computer can accurately deliver the shortest amount of moves needed to solve the cube. Using all six motors and recognizing the opportunity to perform two moves simultaneously and efficiently solves the cube in no more than 25 moves.

ENVIRONMENTAL AND PHYSICAL SCIENCES

Title: Depositional Environments and Microfacies of the Helderberg Group and Tonoloway Formation, Rocky Gap, Western Maryland

Presenter: Elizabeth Moormann

Abstract: A microfacies study was conducted to determine the character of depositional environments associated with carbonate platform deposits of the Tonoloway Formation near Rocky Gap, Western Maryland. Classification of rock samples was made employing *Folk's Textural Classification of Sediments*, with materials analyzed in whole fragments as well as cut polished sections. Lithologic samples underwent microscopic analysis with acetate peels made to determine lithofacies, associated fossils and fossil assemblage. Point-counts were also undertaken to quantify lithologies and fossil abundance within the different microfacies. An analysis of the materials indicated presence of a transgressive depositional sequence with a deepening of marine environments as one proceeds from the bottom to the top of the measured section. Analysis established four distinct microfacies shown below progressing from the top to the bottom of the sampled section (youngest to oldest materials);

Microfacies 1: Coralline and Bryozoa Biosparite/Biomicroite.

- *Depositional Environment:* Barrier Reef and Immediate Back Reef.
- *Description:* Wave deposited, clean fragments of bryozoan, coral and crinoids in biosparite. Complete tabulate coral and large Bryozoan colonies in micrite matrix grade laterally into biosparite.

Microfacies 2: Sparse Biomicroite.

- *Depositional Environment:* Deep Lagoon immediately, adjacent to Back Reef.
- *Description:* Carbonate mud (micrite) with numerous small crinoid fragments and common bioturbation. Rare complete *Cystodictya* adjacent to Back Reef.

Microfacies 3: Poorly Washed Fossiliferous Biomicroite

- *Depositional Environment:* Shallow lagoon near wave base to possible back reef mound

- *Description:* Numerous complete, well preserved *Dyscritella*, *Rhombopoa*, and *Cystodictya* Bryozoa show lack of transportation and abrasion. Abundant fossils suggest Back Reef Mound development.

Microfacies 4: Sparse Biomicrite with Hard Ground and Mud Cracks.

- *Depositional Environment:* Shallow Intertidal Marine
- *Description:* Hard Ground and Mud cracks indicative of intertidal deposits frequently exposed to dessication. Evidence of shoreline washed debris and fenestrate Bryozoan species that prefer to live near shore (Boardman et. al., 1983).

Microfacies present are indicative of carbonate platform development in Tonoloway Formation at this locality. Further, analyses suggest these carbonate platform deposits were impacted by a rapidly occurring marine transgressive sequence.

HEALTH, PHYSICAL EDUCATION, RECREATION AND SPORT STUDIES

Title: The Human Performance Lab Experience

Presenters: Lawrence Johnson, Patrick Prosser, Lee Schneider

Abstract: The Human Performance Lab is a comprehensive fitness testing and consultation facility that is staffed by student technicians under the supervision of a professional Exercise Specialist. The lab offers a series of fitness tests used to establish a baseline data set necessary to determine one's current fitness level. Every GSPE 210 (Fitness for Life) student uses the HPL at no additional cost. The HPL technicians are available daily for the student's fitness needs. The HPL is a clinical learning environment for students within the Health Promotion /Exercise Science Program (HPEX). The HPEX program resides in the current Health, Physical Education, Recreation and Sport Studies Department with 99 enrolled students. The HPEX program was implemented in 2015. The clinical lab experience is great for students following any career in a health, wellness, or allied health field. Additionally, the HPL serves multidisciplinary programs; which in return, educates our university, our community, and our future leaders.

HISTORY

Title: Cemetery Preservation in Shepherdstown

Presenter: Abigail Ayers

Abstract: Cemetery preservation is increasingly important as we are losing the final resting places of many people whose gravestones are deteriorating and undocumented. The Thomas Shepherd Burial Ground on New Street in Shepherdstown, WV was one of those at-risk cemeteries that, through a partnership between the Historic Shepherdstown Commission and Shepherd University, is now documented, mapped, and restored. This work is meaningful to community history, essential to genealogists, and important to understanding the social lives of people during that time by deciphering

their tombstones. This cemetery in particular is important to early Shepherdstown history as several descendants of Thomas Shepherd are interred there. According to local tradition, Thomas Shepherd's unmarked grave is also located there.

PSYCHOLOGY

Title: The Comparative Effects of Meditation and Music Listening on Perceived Levels of Stress and Negative Affectivity

Presenter: Jennifer Forbes

Abstract: Meditation and music listening are two common methods of stress reduction and mood improvement. Engaging in activities such as meditation or music listening promotes relaxation inducing effects that reduce stress and improve mood. However, whether one method is more effective than the other has yet to be determined. The current study examined the effects of meditation and music listening on perceived levels of stress and negative affectivity. It was hypothesized that, after a mild stress inducing activity, the meditation condition would reduce stress and negative affectivity more effectively than listening to music or sitting in silence. Participants were recruited through an undergraduate introduction to psychology course. Participants completed a simple mental arithmetic task to induce mild stress. Afterward, each participant's level of perceived stress was measured to determine the effectiveness of the stressor. Participants were then randomly assigned to engage in one of three stress reducing conditions: meditation, music listening, or silence, in order to examine each condition's effectiveness in reducing stress and negative affectivity. Levels of negative affectivity and perceived stress were measured using the Profile of Mood States and the Index of Clinical Stress. Preliminary results indicate that meditation is no more effective at reducing stress and negative affectivity than listening to music or resting in silence. There was a large but non-significant effect of relaxation technique on negative affectivity. There was a medium and non-significant effect of relaxation technique on perceived stress.

Title: The Effect of School Involvement on Bullying and Anxiety

Presenter: Rebecca Anne Miller

Abstract: Bullying has been linked to several negative consequences. One of these negative consequences is the development of mental disorders such as anxiety and depression. However, little research has examined what can be done to stop the development of these mental disorders. The present research examines the long-term effects of bullying and if school involvement during elementary, middle or high school would avert the development of anxiety. It was hypothesized that participants who were bullied between the ages of 4 and 18 were more likely to develop anxiety. It was also hypothesized that participants who were bullied and were involved in school would have been less likely to develop anxiety. In order to collect the data, participants answered a 47-item questionnaire. A total of 63 undergraduate college student participants were recruited through the Introduction to Psychology classes at Shepherd University. The questionnaire covered the aspects of: Bullying and peer victimization (31 items), the development of anxiety (7 items), school involvement (6 items), and ended

with a few basic demographic questions (3 items). A correlational analysis will be used to analyze whether bullying is positively correlated with anxiety and if school involvement will be negatively correlated with anxiety. A factorial ANOVA will also be used to test whether school involvement does reduce the relation of bullying to anxiety. The findings of this data will allow researchers to examine how bullying can have possible long-term effects. School systems can use these results to implement more programs within the school to encourage school involvement. The results and the application of the data is discussed.

Keywords: Bullying, Anxiety, School, Involvement, Students, Mental Health

Title: Decision-Making: a Psychological and Sociological Process

Presenter: Christian Weir

Abstract: The purpose of this study is to gain a better understanding of how psychological and sociological influences, such as gender ideologies and group interactions, affect decision-making outcomes. Previous research by Sczensy in 2003 suggests that, on an individual level, males are more task-oriented where females are more socially oriented. For this reason, it is hypothesized that male-dominated groups will complete a deserted island task significantly faster than female-dominated and neutral groups. Similarly, it is also hypothesized that female-dominated groups will perform the slowest of the three groups due to sociological influence causing delays in negotiation. The participants in this study include Shepherd University students from the PSYC 101 class during the fall of 2018. Using Shepherd University's Psychology Lab, participants will be presented a scenario and be asked to meet goals in relation to a themed task. The time for each goal to be completed will be recorded for each group and compared between the other conditions. This analysis will be done using a one-way ANOVA. A qualitative analysis will be used to find prominent themes in group interactions and interview questions. Completion of data collection is scheduled for November 16, 2018. Results of this research can be applied to gender relations, early education and large social problems such as the gender pay gap. In addition, this research will provide a better understanding of gender ideologies and how they influence behavior.

SOCIOLOGY

Title: *Phantom Space(s): Navigating Civilian Life After Service*

Presenter: Morgan See

Abstract: How do military and civilian society interact and relate to another? Drawing on my own experiences of basic training for the armed services and my life as a Shepherd student, I investigate different kinds of spaces and how they are produced. For instance, whereas military space is influenced by the basic function of life saving, combat readiness and survival, educational space is influenced by the basic function of preparing students for careers and adult life. How are these spaces similar? How are they different? How is the camaraderie of military space different than the social experience of making friends at a university? Rosalyn Deutsche writes that "space ... appears to exercise control over the very people who produce and use it". My own biographic experience gives me the unique capacity to see aspects of civilian and military space which may be invisible to others. This will help to create a

conversation relevant to other veterans and those who support them as they experience trying to live in both.

Title: *Wisdom of a Broken Compass: The Geographic Body of Cerebral Palsy*

Presenter: Tobey Lyn Spates

Abstract: I draw on my experience of Cerebral Palsy to argue that a body with exceptionalities produces a distinct geographic outlook. Using concepts such as social construction, first nature and second nature, I will differentiate the differently-abled body from its social expectations. I will challenge the dominant view of geographic space as physical and/or universal by demonstrating how the body with exceptionalities experiences and maps space uniquely. I will argue that the difference of the exceptional body is actually common to all people and that otherness is actually standard. Difference is key here because understanding that no one person is exactly alike can be used to prove that no one space is the same for these individuals and so our ideas of space must incorporate an awareness of this uniqueness. I will then explore how, in its adaptation to spaces, the body with exceptionalities can also be understood in relationship to social constructionist theories of nature. This body challenges any idea of Nature as an unchanging aspect of life. Noel Castree argues that “production of nature allows us to see nature as something unfixed and unchanging. It also allows us to see capitalist production’s quest for profitability, turning landscapes, and bodies...”. The body with physical, intellectual or emotional exceptionalities, seems to develop new capacities by adapting to the world, becoming a nature/culture hybrid. In what ways is this process driven (or not) by capitalism which often seems to view the body with exceptionalities as “less than adequate” or “inferior for production?”