

# 2017 Symposium Abstracts

## Morning Individual Presentations

### APPLYING AGNEW'S GENERAL STRAIN THEORY TO GOTHAM

Presenter	Acquaviva, Brittany Graduate, Criminal Justice Sciences
Mentor	Prof. Shelly Clevenger

The television show Gotham (2014) shows the rise and fall of an aspiring young detective James (Jim) Gordon in the corrupt city of Gotham. Jim immediately wants to change the city around for the better and bring justice to the people of Gotham. Jim is assigned to be the partner to legendary detective Harvey Bullock who has seen his fair share of what Gotham City can do to a person and sees a lot of himself in Jim. Jim and Harvey get assigned to the infamous murder of billionaires Thomas and Martha Wayne, which caused their son Bruce to become an orphan. Jim quickly befriends Bruce realizing that Alfred (Bruce's butler) and Bruce are two of the very few that Gotham has not gotten to. With Harvey's guidance and street smarts of Gotham they set out to get rid of the villas roaming Gotham city. The purpose of this research is to theoretically apply Agnew's General Strain Theory to nine characters within the series of Gotham to explain why certain characters committed crime, with the use of a content analysis key.

### ALTERATIONS IN FOOT POSITION DURING ANKLE TAPING AND ITS EFFECTS ON RANGE OF MOTION AND JUMP PERFORMANCE IN DANCERS

Presenter	Anderson, Eilish Graduate, Kinesiology & Recreation
Mentor	Prof. Justin Stanek
Co-Mentor(s)	Prof. Todd McLoda
Authorship	Eilish Anderson; Justin Stanek; Todd McLoda; Luke Hileman

Context: A closed basket-weave ankle tape application is commonly used by healthcare professionals in order to give support to the athlete's ankle during activity. This closed basket-weave ankle tape is used to prevent the ankle joint from going into excessive plantarflexion and inversion. Previous research has demonstrated traditional ankle taping techniques, with the ankle in a dorsiflexed position, reduces range of motion at the ankle. Due to the extreme demands placed on the ankle during dancing, which often requires the dancer to place the ankle in a maximally plantar flexed position, it is unclear how taping in this position affects range of motion or dynamic performance. Objective: The purpose of this study is to identify whether taping an ankle in a neutral position, rather than a dorsiflexed position, will provide the similar range of motion restraints, while not hindering jump performance. Design: This was an assessor-blinded, crossover study to assess the difference in taping position and its effect on ankle range of motion, and ground reaction force at the ankle. Participants: Participants were recruited from the Dance Performance undergraduate program at the host institution. Inclusion criteria included dancers with no history of ankle injury within the past 6 months, no history of surgery on the ankle joint in the past 12 months. Participants also needed to have five or more years of experience in either ballet, modern, or jazz. Interventions: The independent variables assessed are the application of a closed basket-

weave ankle tape with the ankle in a dorsiflexed position and in a neutral "relaxed" position. Main Outcome Measures: The dependent variables assessed are range of motion measurements immediately after tape application and ground reaction force during a bipedal vertical jump while taped in each condition. Results: It is hypothesized that the dorsiflexed position will more negatively affect force production and available range of motion at the ankle when compared to the neutral or no tape condition. Conclusions: Data is still being collected at this time.

## **BIOMECHANICAL CORRELATES OF VERTICAL JUMP HEIGHT IN CHILDREN**

Presenter	Angles, Rebecca Undergraduate, Kinesiology & Recreation
Mentor	Prof. Adam Jagodinsky
Co-Mentor(s)	Prof. Michael Torry
Authorship	Rebecca Angles; Adam Jagodinsky; Michael Torry

Jumping is a fundamental skill for children to develop. While the vertical jump has been extensively researched in adults, such investigations have not been thoroughly extended to children. Understanding the biomechanical correlates of jump height in children could help guide future research of jump height prediction models leading to valuable information about the development of fundamental motor skills in children. PURPOSE: To conduct a preliminary analysis on the relationship between lower extremity joint kinetics and vertical jump height (JH) in children. METHODS: 37 children [age (yrs):  $7.2 \pm 1.5$ ; height (m):  $1.2 \pm 0.1$ ; mass (kg):  $26 \pm 7.7$ ] participated in the study. Anthropometric measurements were obtained prior to the start of the jump protocol. The task consisted of participants performing five maximal effort vertical jumps. Segment position data were collected using a ten camera optical motion capture system, and ground reaction forces were obtained from two force platforms. To assess joint kinetics, sagittal plane moments at the hip, knee, and ankle were calculated using an inverse dynamics technique and normalized to bodyweight. Maximum vertical displacement of the center of mass after takeoff was calculated to determine JH. RESULTS: Correlation analysis revealed a significant positive linear relationship between peak ankle moment ( $.21 \pm .08$  Nm/kg) and JH ( $18.05 \pm 2.40$  cm) ( $r=.51$ ;  $p<.01$ ), peak knee moment ( $.07 \pm .04$  Nm/kg) and JH ( $r= .50$ ;  $p<.01$ ) as well as peak hip moment ( $.15 \pm .06$  Nm/kg) and JH ( $r= .61$ ;  $p<.01$ ). CONCLUSION: Peak ankle, knee, and hip moments were found to be moderate to strong correlates of JH in children. Future research investigating JH predictors in children should consider lower extremity joint kinetics as plausible predictors.

## **DENSITY FUNCTIONAL THEORY ANALYSIS OF SO<sub>2</sub> CAPTURE BY AMINE-FUNCTIONALIZED POLYETHYLENE GLYCOLS**

Presenter	Arledge, Taylor Graduate, Chemistry
Mentor	Prof. Jean Standard

Sulfur Dioxide (SO<sub>2</sub>) is a product of fossil fuel combustion and leads to the formation of sulfuric acid in the atmosphere. There has been an effort to find improved methods to capture SO<sub>2</sub> during fossil fuel combustion. There has been a multitude of proposed compounds to better capture SO<sub>2</sub>, including ionic liquids, eutectic solvents and metal organic frameworks. Experimentally it has been shown that Polyethylene glycols (PEGs) can also absorb SO<sub>2</sub>. The benefits of PEGs are that they are non-toxic, non-volatile, and widely available. In this project, the interactions between SO<sub>2</sub> and some model amine-functionalized PEGs have been investigated using computational methods. Additionally, a computational study of phosphorus-substituted PEGs and their interactions with SO<sub>2</sub> has been

performed. These studies are carried out using density functional theory with the B3LYP functional and Dunning's correlation consistent basis set, aug-cc-pVDZ, in the gas phase. Results show the interaction of both physical and chemical absorbed species of SO<sub>2</sub> forming a zwitterionic product.

## **THE EFFECT OF ANTI-FATIGUE MATS ON PERCEIVED RATINGS OF DISCOMFORT DURING PROLONGED STANDING**

Presenter	Artman, Justin Undergraduate, Health Sciences
Mentor	Prof. Chris Grieshaber
Authorship	Chris Grieshaber; Justin Artman

There is a growing number of occupations that require workers to stand for long periods as part of their daily work activities. Among them are the service industry, health care and assembly operations (Wiggermann & Keyserling, 2013; Meijssen & Knibbe, 2007). Additionally, the use of sit-stand workstations has seen an increase in the prevalence of standing work postures in office and clerical work settings (Buckley, et al., 2015; Commissaris, et al., 2014; Karakolis & Callaghan, 2014). Several studies have shown prolonged standing to be associated with pain and discomfort, especially in the lower extremities (Valachi & Valachi, 2003; Macfarlane, 1997). While the effectiveness continues to be debated in the literature, the use of anti-fatigue mats as a way to mitigate pain and discomfort for standing work also continues. Studies like the current one, have used subjective ratings of discomfort as a way to assess the effectiveness of anti-fatigue mats (Wiggermann & Keyserling, 2013; Cham & Redfern, 2001; Redfern, 1995). Generally, the authors concluded that anti-fatigue flooring surfaces are associated with lower ratings of discomfort than hard flooring as long as the surface was not too "soft" (Cham & Redfern, 2001; Redfern, 1995). Postural movement and weight-shifting have also been used to measure discomfort (Wiggermann & Keyserling, 2013; Zhang, Drury & Wolley, 1991). Male and female workers that use sit-stand workstations were selected to participate in the survey. The workers were asked to not change their day to day routine, only the surface they were working on. The participants were asked to perform their work on one of three conditions: no mat, foam mat or an air-filled bladder. The experimental conditions were randomized, and at the end of each work day, the participants were asked to complete a discomfort survey. The results will be presented using general descriptive analysis and comparison of discomfort levels across the different conditions.

## **"FORTUNE WILL FAVOUR THE BRAVE": IRISH WOMEN COME TO AMERICA 1845 - 1870**

Presenter	Barr, Erin Graduate, History
Mentor	Prof. Amy Wood

"I can assure you that there are dangers upon dangers attending coming here but... nothing ventured, nothing have. Fortune will favour the brave." -Margaret McCarthy, 1850 Margaret McCarthy wrote this letter to her parents in Ireland shortly after her arrival in New York City. She was one of 1.5 million Irish who fled an Gorta Mór, now known as the Irish Potato Famine, and came to the United States. Most immigrant groups in American history traveled in family units, but this was not the case with the Irish. Nearly half of all Irish immigrants from this period were single, unaccompanied young women. Previous historians have argued that these women were desperately poor, and at the mercy of their fathers, husbands, Church leaders, and employers. However, I argue that the truth was much more complex and more positive. I argue that these Irish immigrant women had autonomy and agency in their daily

lives, and were able to have fulfilling lives. They were not passive victims, but active negotiators. The evidence for this can be found in the many diaries, letters, and memoirs these women left behind. Most Irish immigrant women found themselves employed in some form of domestic service. They were maids, cooks, nannies, and seamstresses in the houses of more wealthy Americans. Such jobs included wages and provided housing. These factors allowed Irish immigrant women to support themselves independently. This meant that most Irish immigrant women delayed marriage until the time of their choosing. These women were also able to send money home to Ireland to help their family members survive the famine, or make the journey to the United States themselves. Moreover, Irish immigrant women were able to enjoy their new stability and in the form of leisure culture. These women went on social outings, went to dances, attended Church functions, and shopped for fun. Still, the Irish immigrant women of the mid-nineteenth century did not have an easy road once they arrived in America. They faced harsh anti-Catholic and anti-immigrant prejudice and discrimination from the native-born Protestant majority. They also dealt with deep feelings of homesickness for the families and communities they had left behind. However, these Irish immigrant women were able to survive and thrive in their new homes. More than that, their presence in American homes paved the way for the second and third generations of Irish-Americans to gain acceptance in society. Fortune did favor the brave.

## **THE INFLUENCE OF CORRECTIVE EXERCISES ON FUNCTIONAL MOVEMENT SCREEN AND PHYSICAL FITNESS PERFORMANCE IN ARMY ROTC CADETS**

Presenter	Basar, Marissa Graduate, Kinesiology & Recreation
Mentor	Prof. Justin Stanek
Authorship	Marissa Basar; Justin Stanek; Daniel Dodd

The Functional Movement Screen (FMS) is a screening tool designed to identify limitations in mobility and stability throughout the body. The existing literature has demonstrated the FMS is effective at identifying movement dysfunctions; however, there is limited evidence on the effectiveness or improving FMS scores through individual corrective exercises. Objective: To examine if an individualized corrective exercise program is effective at improving FMS scores in Reserve Officers' Training Corps (ROTC) cadets. In addition, the study attempts to correlate FMS scores with the ROTC cadets' physical fitness performance based on the Army Physical Fitness Test (APFT). Design: Randomized, cohort study. Setting: FMS measurements were conducted in a controlled laboratory setting by an AT that was certified in the FMS (inter-rater reliability ranged from 0.83 to 1.0, intra-rater reliability ranged from 0.87-1.0). APFT measurements were conducted and recorded by ROTC cadre in a field base setting.

Participants: 50 healthy, physically active ROTC cadets were recruited to participate. At the conclusion of the study 44 (age:  $19.84 \pm 1.48$  years, weight:  $71.75 \pm 13.52$  kg, height:  $172.29 \pm 45.20$  cm) met all inclusion and exclusion criteria. Interventions: Participants were randomly assigned into 1 of 2 groups: experimental ( $n=24$ ) and control ( $n=20$ ). Participants in the experimental group were required to complete an individualized corrective exercise program 3 times per week for 4 weeks, in conjunction with the current ROTC Physical Training (P.T) regime. The participants in the control group continued to participate in the standard preparation drills during P.T. Main Outcome Measures: The dependent variables included the composite FMS and total APFT score. FMS scores and APFT scores were recorded before and after the 4 week intervention program. A Pearson correlation was used to determine the relationship between the FMS and APFT. Two Mann-Whitney U tests were performed to compare FMS total composite scores and APFT total composite scores between groups. Alpha was set a priori at  $p \leq 0.05$ . Results: Results showed a non-significant, weak correlation between the two scores ( $r=0.20$ ,  $p=0.19$ ). A Mann-Whitney U test revealed a significant difference in FMS composite scores between the control and intervention groups ( $U=71$ ,  $z=-4.07$ ,  $p < 0.0001$ , Effect size = 1.42, 95% CI: 0.76-2.09). A second Mann-Whitney U test revealed no significant difference in APFT scores between the two groups ( $U=223.5$ ,  $z=-0.389$ ,  $p=0.697$ ). Conclusions: The results of this study indicate a weak correlation between FMS and physical fitness performance. The results demonstrated individualized corrective exercises improved FMS scores, but fail to improve physical fitness performance.

## BEHAVIORAL CONSEQUENCES OF RNA-MEDIATED SUPPRESSION OF INNEXIN EXPRESSION IN MARBLED CRAYFISH

Presenter	Benson, Abigail Graduate, Biological Sciences
Mentor	Prof. Wolfgang Stein
Co-Mentor(s)	Prof. Andrés Vidal-Gadea
Authorship	Carola Stadele; Casey Gahrs; Andrés Vidal-Gadea; Wolfgang Stein

We are using a new genetic model system, the marbled crayfish, *Procambarus virginalis*, for examining the causal relationship between genes, neurophysiology and behavior. Due to their parthenogenetic reproduction, short reproductive life cycle (mature after 2-3 months) and ex-utero breeding, marbled crayfish are ideal for studying the role of genes in producing behavioral output. We are employing RNA interference (RNAi) to suppress gene expression and cell-specific GFP (green fluorescent protein) expression to identify neurons involved in controlling behavior.

Innexins serve as the structural components of gap junctions in invertebrates and build transmembrane channels that mediate electrical coupling between neurons, and facilitate cell-cell communication through rapid movement of ions, electrical impulses, and small messenger molecules. Currently, eight distinct Innexin genes have been found. Despite a high degree of homology between different species, little is known about the role the different Innexins have in shaping behavior.

We use RNAi to suppress Innexin-4 expression in marbled crayfish. We hypothesize that a reduction in Innexin-4 expression leads to an impairment of walking behavior and a deficit in tail-flip escape responses, since both of these behaviors depend on rapid cell-cell communication through gap junctions. Our analysis revealed that the marbled crayfish Innexin-4 shows strong homology to other invertebrate species (e.g. *D. melanogaster* and *C. elegans*). We constructed double stranded RNA (dsRNA, ~800 base pairs) containing exonic regions of the Innexin gene. After direct injection of juvenile marbled crayfish with Innexin-4 dsRNA, we are monitoring the animals for several days to evaluate changes in walking behavior and tail-flip escape responses. Our preliminary data suggest that both behaviors are reduced after Innexin4-RNAi.

## USING QUICKSIN SPEECH MATERIAL TO MEASURE ACCEPTABLE NOISE LEVEL FOR ADULTS WITH HEARING LOSS

Presenter	Bentley, Lauren Graduate, Communication Sciences and Disorders
Mentor	Prof. Hua Ou

The Quick Speech-In-Noise (QuickSIN) test and the Acceptable Noise Level (ANL) test have been recognized as able to predict hearing aid use success. But the two measures use different stimuli and require administration of two tests. The present study found that the revised ANL test using the QuickSIN speech material resulted in equivalent ANLs compared to the original test. Test-retest reliability was high. It was concluded that the QuickSIN speech material could be used to measure ANL in clinic.

## **THE DISNEY PRINCESS SIDEKICK: MEN ARE STILL NECESSARY TO THE DISNEY PRINCESS NARRATIVE**

Presenter Bethmann, Jennifer  
Graduate, Communication

Mentor Prof. Phillip Chidester

As the Walt Disney Studios and researchers praise the transformation of the Disney Princess from a domestic servant to a strong and independent individual, attention should be paid more closely at the whole story and not just the part that ends in happily ever after. While reveling in the Princesses' tales of adventure and romance, limited research has been developed about the secondary characters that support the Princesses' success story. These predominantly male sidekicks are emasculated throughout the stories. They fulfill necessary masculine attributes that the female heroines lack, but need, in order to succeed in reaching their goals. The power structure has not changed in the last ninety years, the image of the Disney Princess remains pure and untarnished by rougher masculine traits portrayed through the males. Focusing on the sidekicks' actions and characteristics in the films Cinderella, The Little Mermaid, and Frozen, a cause for concern is revealed since the actions and characteristics of the sidekicks could actually become the heroines if not for the gender biases. In this paper, a critical approach was used to analyze Walt Disney Studio's depiction of the male sidekicks in the Disney Princess stories. The sidekicks are the unsung heroes of the tales, taking on endeavors that far exceed their size and strength. Through their gender, diminutive sizes, songs, acts of conscious-making, and even rescue of their princess, the male sidekicks ultimately diminish the power of their Disney Princess and reaffirm stereotypical feminine and masculine identities. The media messages generated by Walt Disney Studio's animated films continue to reinforce bias behaviors and stereotypes that maintain gender barriers.

## **THE THERAPEUTIC EFFECTS OF DRY CUPPING ON THE ILIOTIBIAL BAND**

Presenter Biehl, Madeline  
Graduate, Kinesiology & Recreation

Mentor Prof. Noelle Selkow

Authorship Madeline Biehl; Rebecca Begalle; Padraec Hardy; Noelle Selkow

Lower extremity muscle tightness has been linked to a variety of acute and chronic injury. One of the most common structures that is restricted and lead to injury is the iliotibial band (ITB). The ITB is a muscle-like structure on the outside of the thigh and plays a vital role in movement and can become tight if overused. This tightness can lead to a wide array of injuries in an otherwise healthy individual. Previous research has proved the need to treat a tight ITB. Suction cup therapy, or cupping, is a therapy that has been used by healers for over 5000 years. There has been a renewed interest in cupping therapy due to the vast health benefits reported. Such therapy is growing in popularity to assist in other manual therapies already being performed to improve soft tissue restrictions. The process of dry cupping involves placing a vacuum-sealed, plastic cup on a patient's skin and using a pump to suction air from within the cup. This suction effect raises the skin and some under layers of tissue in an attempt to relieve tightness. The physiology of dry cupping is similar to that of other manual therapy techniques such as massage. The suction cup effect is said to promote blood flow to an area to alleviate pain and promote healing. Previous research on dry cupping has been performed on the back and neck to relieve tight musculature. These studies have had no negative

side effects from this treatment. Patients report the therapy to be comfortable and effective. Currently, there is no research on the effectiveness of dry cupping in relieving lower extremity tightness, particularly ITB tightness. Therefore, the purpose of this study is to determine if dry cupping is an effective treatment intervention in releasing ITB tightness and increasing range of motion in a physically active population. We hypothesize that dry cupping will be an effective way of reducing ITB tightness. If our results prove to be true, clinicians can incorporate the use of cupping as a treatment for ITB tightness for their patients.

## **ADULT DAY SERVICES' IMPACT ON CAREGIVER STRESS**

Presenter Blue, Emily  
Graduate, Social Work

Mentor Prof. Kate Sheridan

This program study describes the impact of adult day services on caregivers by using interviews and electronic surveys to measure caregiver stress levels. Participants were invited to respond to items examining depression, grief, fatigue, financial hardship, and changes in social relationships. Studies of programs such as the one in this research indicate that adult day services are effective in providing respite to caregivers and reducing stress levels. It is anticipated that program administrators, stakeholders, and policymakers will find the research results useful in identifying potential improvements to the program.

## **SYNTHESIS OF VANADIUM COMPLEXES TO TEST AS INHIBITORS OF SECRETED ACID PHOSPHATASES**

Presenter Braich, Kamaljit  
Undergraduate, Chemistry

Mentor Prof. Craig McLauchlan  
Co-Mentor(s) Prof. Marjorie Jones

Authorship Kamaljit Braich; Craig McLauchlan; Marjorie Jones

Leishmaniasis is a parasitic disease found commonly in hot, humid climates such as South America. The parasitic protozoan leishmania is carried by sandflies and transmitted to the host by bite. Currently, chemotherapy is regarded as a viable treatment option; however, the harmful side effect of the drugs raises a need to create safer treatment options. Secreted acid phosphatases appear to promote the growth and infectivity of leishmania. These phosphatases function by removing phosphates from a substrate to regulate its function. Because vanadate is a structural analog of phosphate, it can play a role in inhibiting the correct function of phosphatases. This inhibitory property will be exploited by testing previously synthesized tri(maltolato)vanadium (III) and sodium di(maltolato)dioxyvanadium (V) with both wheat germ acid phosphatases using *Leishmania tarentolae* as the enzyme source. The synthesis of tri(maltolato)vanadium (III) and sodium di(maltolato)dioxyvanadium (V) and their effect as inhibitors of phosphatases will be presented.

## **WHAT FACTORS CONTRIBUTE TO JOB RETENTION AND SATISFACTION RATES OF DIRECT SERVICE WORKERS AT PROJECT OZ?**

Presenter	Brenn, Abigail Graduate, Social Work
Mentor	Prof. Kathryn Conley Wehrmann

This research project focuses on the job retention and satisfaction rates of direct service workers at Project Oz who work with youth ages 10-17 and with homeless adults ages 18-22. With the need for many workers in the field every day, administration is investing in making changes to the agency that might reduce turnover. According to the current literature, one of the biggest reasons that employees leave an agency isn't because of the workload, but due to the lack of support they receive from their supervisors and peers. Besides supervision, there are many factors that also contribute to leaving that include caseload, salary, benefits, flexibility, and worker appreciation. This research will look at how workers rank these variables in range of importance to them so that the agency can develop and implement changes to help create a supportive work environment. A survey will be given to each employee to gain their perceptions. Data from exit-interviews of past employees will also be reviewed to obtain insight as to why they left their agency or social work in general.

## **THE IMPACT OF A LIFEGUARD OLYMPICS STAFF DEVELOPMENT PROGRAM IN CAMPUS RECREATION**

Presenter	Bricker, Erik Graduate, Criminal Justice Sciences
Mentor	Prof. Brent Beggs
Co-Mentor(s)	Prof. Tracy Mainieri
Authorship	Erik Bricker; Brent Beggs; Tracy Mainieri

Improving employee work performance is a continuous and often difficult task for all managers. As Nohria, Groysberg, and Lee (2008) point out, "Getting people to do their best work, even in trying circumstances, is one of a manager's most enduring and slippery challenges" (p. 1). To overcome some of these challenges amongst lifeguard staff, the collegiate recreation aquatics program at Illinois State University developed the Lifeguard Olympics, a staff development and incentive program intended to increase employee motivation, camaraderie, and retention. The purpose of this study was to explore the impact of the Lifeguard Olympics, specifically whether and how the program impacted employee retention, motivation, and overall work satisfaction. Focus groups and questionnaires were utilized to gather data from collegiate lifeguards working at Illinois State University Campus Recreation who participated in the Lifeguard Olympics program. Participants were asked questions regarding the impacts of the program and their feedback was solicited regarding the implementation of the program. Results of this study revealed both benefits and drawbacks to the Lifeguard Olympics program. Implications for other collegiate recreation programs looking to implement similar programs are also addressed.

## **INFLUENCE OF COVER CROPPING ON NUTRIENT LOADING FROM TILE-DRAINED AGRICULTURE**

Presenter	Bruening, Benjamin Graduate, Geography/Geology
Mentor	Prof. Eric Peterson
Authorship	Catherine O'Reilly; Shalamar Armstrong; William Perry; Victoria Heath

Nutrient pollution originating from agricultural regions in the Midwest is a serious issue, leading to pollution of drinking water sources as well as large hypoxic zones in the Gulf of Mexico. One method that has been shown to reduce this pollution is the planting of winter cover crops. Winter cover crops such as rye and tillage radish have been shown to significantly reduce nitrate and phosphorous exported from agricultural fields, even in tile-drained watersheds that are resistant to nitrate management methods such as riparian zones. However, most studies take place in small agricultural study fields, sometimes with low resolution water sampling (weekly or bi-weekly). In this study, we study the effectiveness of winter cover crops in reducing nutrient loading from tile- drained agricultural watersheds in Central Illinois. We compare nitrate loading from two large agricultural watersheds, one of which is treated with cover crops, a combination of rye and tillage radish, while the other is not. To obtain high-resolution discharge and nitrate concentration, we use automated discharge measurements and automated water samplers at both of these watersheds. By comparing these measurements between the treated and untreated watersheds, we determine whether cover cropping reduces nutrient loading from tile-drained systems, with the secondary goal of comparing measurements obtained with auto sampling equipment to those obtained via bi-weekly sampling.

## **ESTABLISHING SUSTAINABLE COMMUNITY GARDEN INTERVENTIONS WITH AID FROM HEALTH PROMOTION ORGANIZATIONS**

Presenter	Buenemann, Rachel Graduate, Family and Consumer Sciences
Mentor	Prof. Julie Schumacher

Rising obesity and chronic health rates throughout the United States support innovative interventions in public health. Community garden interventions provide community level policy, system and environmental change in contest to obesity risk factors. Limited research examines factors affecting the sustainability of such community garden interventions from the perspective of garden managers and participants. This study addressed the gap in literature with a focus on investigating perceived benefits of community gardens, garden management techniques, and ways health promotion organizations may assist community garden programs. The study's sample included 10 Midwestern community gardens; three years after implementation. Data was collected through interviews and surveys of 10 garden managers and surveys of 12 garden participants. Results found benefits of community gardens including social justice, continued education, enhanced social cohesion, increased access to food, community outreach publicity, aesthetically improved environment, increased physical activity and psychological stress relief. Sustainability planning varied among surveyed gardens, but no garden had a sustainable model in place; only one garden had considered strategies to increase sustainability of community interventions. Crucial resources for program operation included land access, fiscal funding, leadership and volunteer labor forces. The study summarized unexpected barriers to community garden sustainability identified by garden managers. Barriers to sustainability in community garden interventions may be addressed through education and resource aid from health promotion organizations.

## WHAT DO FIRST RESPONDERS NEED FOR BEST PRACTICE WITH SEXUAL ASSAULT SURVIVORS?

Presenter

Case, Samantha

Graduate, Social Work

Mentor

Prof. Kathryn Conley Wehrmann

At sexual assault crisis centers across the United States workers and volunteers are dealing with the aftermath of those recovering from assault, who are also trying to navigate the systems involved in victim recovery. The sheer number of victims has been deemed a health crisis and the local outreach education program through Stepping Stones helps educate local businesses and systems who work with victims. One of the ways in which the funding for this program is meant to specifically benefit survivors in their dealings with the medical and legal systems, is for outreach workers to provide staff trainings on sexual assault awareness and crisis trainings. The research question proposed with this study is, "What outreach education trainings would be beneficial to McLean County emergency room staff through Stepping Stones services?". The Emergency Rooms (ER) of both hospitals in Mclean County regularly treat sexual assault survivors in crisis. In order to best know what education materials and programs would be most beneficial for those working in our local ERs. This study will conduct a survey of ER nursing staff in order to see what these first responders need to know in order to provide best practice care to survivors. An anonymous needs assessment survey will be conducted using "Select Survey". Responses will be aggregated and included in the final needs assessment report. To insure the best return rate, email reminders will be sent and in person follow-ups will be done. Nursing staff will be recruited through an in-person presentation given during staff trainings.

## USING A 3-D MODEL TO UNDERSTAND THE RELATIONSHIP BETWEEN BANK STORAGE, FLOOD DURATION, AND STAGE.

Presenter

Chabela, Lucas

Graduate, Geography/Geology

Mentor

Prof. Eric Peterson

Authorship

Eric Peterson

Groundwater and surface water are often studied as different systems; however, one commonly affects the other through various scenarios. Bank storage is an important hydrogeological process, which involves the temporary storage of stream water in the adjacent aquifer and the later release of the stored water. Bank storage can contribute a considerable amount of discharge to a river and can be an important process for movement of contamination downstream. Several studies document the effects of increasing stage and increasing flood duration, but these controls are often separated. This project aims to examine the relationship between stage, flood duration and bank storage to address which factor is more influential during the bank storage process. The study site is along a small stretch of Little Kickapoo Creek, a small, third-order stream location in central Illinois. A 3-D model (MODFLOW) was created of the study site, and several simulations were ran in both steady-state and transient state at different stages and flood duration. Steady-state simulations represent maximum bank storage values and were compared to the transient-state values, which represent the actual bank storage at each stage and flood duration. Preliminary data suggest flood duration is more influential. When increasing the duration of the flood peak, more the bank storage volume is increased which also allows the bank storage to remain in the system longer.

# THE UTILITY AND LEGALITY OF USING PORTABLE, AMBIENT SAMPLING MASS SPECTROMETERS IN TRAFFIC STOPS

Presenter	Cleary, Scott Undergraduate, Chemistry
Mentor	Prof. Christopher Mulligan
Authorship	Alessandra Burno; Scott Cleary; Michael Gizzi ; Christopher Mulligan

With the large amount of backlogged evidence present in the United States' criminal justice system, there is a growing need for on-site detection of contraband. On-site chemical analysis techniques like mass spectrometry would allow law enforcement agents without a laboratory background to screen chemical evidence themselves, reducing the amount sent to laboratories and subsequently decrease the amount of backlogged evidence. The instrument utilized and proposed in this research is a FLIR Systems AI-MS 1.2 portable and ambient sampling mass spectrometer.

This research culminated in a variety of mock traffic stop scenarios in which law enforcement agents could swab various surfaces of a vehicle. Standard drugs of abuse, designer drugs from the 2C phenethylamine class, and various surfaces commonly found in vehicles such as a gear shift, radio buttons, seat belts, steering wheels, and driver's licenses were utilized to construct mock scenarios. The legality of these scenarios was investigated in order to determine whether or not a positive alert on the AI-MS to contraband could prompt a probable cause search. Legality was determined using precedent set forth in canine case law from Supreme Court decisions in *Florida v. Harris* and *Florida v. Jardines*.

# ACTION POTENTIAL PRECISION IS DEPENDENT ON THE TEMPERATURE RESPONSES OF ION CHANNELS IN AXONS

Presenter	Cruz, Marissa Graduate, Biological Sciences
Mentor	Prof. Wolfgang Stein
Authorship	Marissa Cruz; Margaret Demaegd

Central pattern generators (CPGs) are neural circuits that generate rhythmic behaviors. They must be robust to environmental challenges to support pivotal rhythmic behaviors such as breathing and walking. A common environmental challenge that all animals face is temperature fluctuation. In neurons, temperature changes affect ion channels involved in action potential generation and propagation [1]. It is thus important for the axons of CPG neurons to be robust against temperature fluctuations to maintain functional behavior. We study the effects of temperature on axons of the pyloric CPG in the stomatogastric nervous system of the crab, *Cancer Borealis*. This CPG controls rhythmic contractions of the pylorus to filter food. It creates a well-defined triphasic rhythm comprised of the lateral pyloric (LP), pyloric dilator (PD), and pyloric constrictor (PY) neurons. The CPG maintains its triphasic rhythm across a wide range of temperatures and is thus temperature compensated. However, it is unknown if the axons of the pyloric CPG are also temperature compensated. Pyloric axons extend into the periphery, and are therefore likely to be exposed to temperature fluctuations. Additionally, the pyloric axons are of different neuronal identities and morphologies, meaning that one axon's response to temperature might be different to that of others. We hypothesize that changes in conduction velocities during temperature changes are coordinated in pyloric axons such that the functionally adequate phasic activity of the pyloric neurons is preserved in the periphery. To test this, we first measured the axon diameters of the pyloric neurons and then determined how temperature affects

conduction velocity in different sized axons. Across all temperatures the pyloric axons had different conduction velocities (LP > PD > PY), and conduction velocities increased equally (N=8, One Way ANOVA,  $p=0.615$ ,  $F(2,20)=0.499$ ). Consequently, the effect of temperature on action potential travel times differed: At high temperatures, LP's (largest axon) action potentials arrived much earlier than those of PY (smallest axon), disrupting functional behavior in the periphery. This was not the case at lower temperatures. To understand how axons of different diameters can remain temperature robust, we used a computer model of an axon. While different sized axons have different temperature responses, we found that robustness against temperature fluctuations is achieved when ion channels within a given axon have similar temperature responses, but are distinct from those of other axons.

## **THE EFFECTS OF GLACIAL AND FLUVIAL TRANSPORT ON DETRITAL APATITE MINERALS**

Presenter	Csanda, Dakota Undergraduate, Geography/Geology
Mentor	Prof. Lisa Tranel
Authorship	Dakota Csanda; Lisa Tranel

Spatial patterns of erosion are increasingly studied with detrital minerals. Apatite minerals are dated with (U-Th)/He thermochronology to trace sediments back to their source rocks. These studies require apatite minerals that are large enough to analyze and ideally have good crystal form. An analysis of apatite grain shapes in sediment deposits can be useful to determine the accuracy of ages that can be obtained. This research investigates the quality of apatite grains in stream and moraine deposits in two canyons in the Teton Mountains. Stream samples from active channels near the mouth of each canyon and moraine samples close to the shores of Bradley and Jenny Lakes were collected and processed at Illinois State University. Samples were washed, sieved, and run through heavy liquids and the Frantz magnetic separator to isolate apatite grains. Next, apatite grains were examined with a petrographic microscope and classified based upon their relief and shape. Relief classifications include euhedral, subhedral, and anhedral. Shape classifications include P-P (prismatic-prismatic), N-P (nonprismatic-prismatic), N-N (nonprismatic-nonprismatic), S-P (sliced-prismatic) and AN (anhedral). Two preliminary samples from Cascade Canyon were analyzed, and include TMV-3 (moraine sample) and TTS-4 (stream sample). Sample TTS-4 was located within Cascade Canyon and sample TMV-3 was located on the Cascade Canyon moraine around Jenny Lake. Ten grains were analyzed from each sample. Sample TTS-4 contained a majority of subhedral, S-P grains while sample TMV-3 contained a majority of subhedral, N-P and AN grains. Sample TMV-3 contained fewer euhedral and P-P grains than sample TTS-4, which could be a result of abrasion and reworking within or under ice compared to the less intensive transportation by fluvial processes that sample TTS-4 underwent. Previous work with sample TMV-3 yielded only 3 useful apatite ages, which is in line with the frequency of broken and poorly shaped apatite grains. Further study of at least 50 grains from samples retrieved from both Cascade Canyon and Garnet Canyon sediment deposits will be analyzed to further assess how much glacial and fluvial processes break apart apatite grains, and how the frequency of broken grains may influence our ability to use ages to understand spatial patterns of erosion.

## **HELP-SEEKING DECISIONS: THE INFLUENCE OF NARCISSISTIC GRANDIOSITY AND VULNERABILITY**

Presenter	Dagner, Ashley Graduate, Psychology
Mentor	Prof. Daniel Lannin

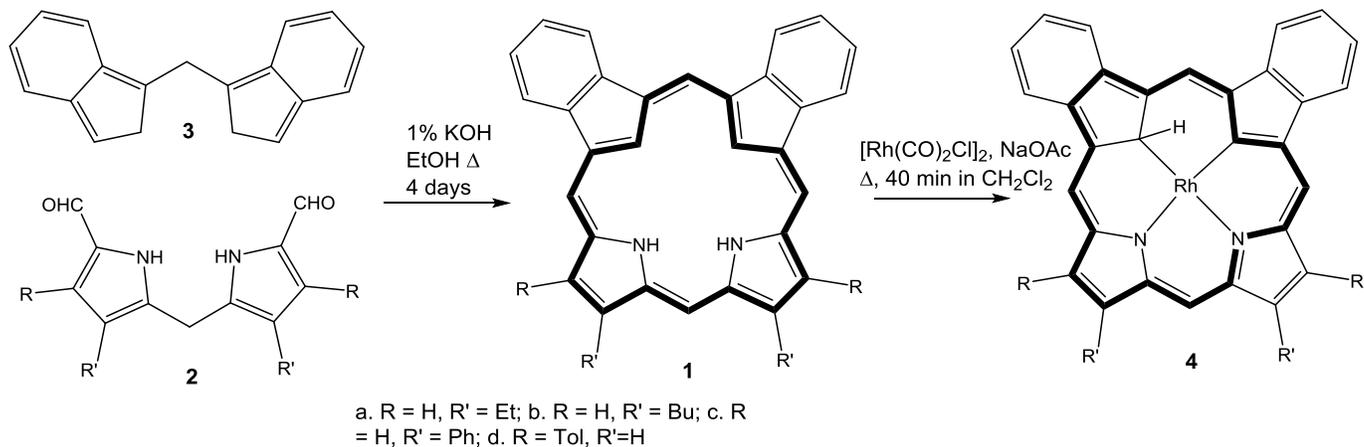
The present study examined the empirical links between the two dimensions of narcissism (grandiosity and vulnerability) and variables pertaining to mental distress therapy utilization. Conceptions of narcissism have

typically emphasized grandiosity, and yet vulnerability may be more relevant in predicting clinical outcomes (Cain et al., 2008). Specifically, vulnerable, but not grandiose narcissism, has been linked to a vindictive, socially avoidant interpersonal style, acute awareness of others' evaluations, hypersensitivity, and high avoidance motivation (Dickinson & Pincus, 2003). Whereas those exhibiting narcissistic grandiosity may be less likely to self-report distress and seek out therapy, the opposite may be the case for those exhibiting narcissistic vulnerability (Wink et al., 2005). Thus, it was hypothesized that vulnerable, but not grandiose narcissism, would predict significantly higher mental distress, self-stigma, and decisions to seek mental health information. A total of 398 undergraduates from a large Midwestern university were recruited to participate in the study through announcements in their psychology studies classes (female = 61%; age,  $M = 19.4$ ,  $SD = 1.8$ ). Participants completed an online survey that included demographics, assessments of stigma, distress, and grandiose and vulnerable narcissism. Participants were then asked if they would like to view a mental health website. Results supported the hypothesis. A logistic path analysis indicated that vulnerable ( $ps < .02$ ), but not grandiose narcissism ( $ps > .08$ ), had significant direct effects on distress, stigma, and decisions to seek online mental health information. Indirect effects indicated links between vulnerable narcissism and help-seeking decisions through distress ( $\beta = 0.35$ ,  $p = .003$ ) and self-stigma ( $\beta = -0.18$ ,  $p = .008$ ); with vulnerable narcissism having an overall positive total effect on help-seeking decisions ( $\beta = 0.79$ ,  $p = .001$ ). That is, for every 1 SD increase in vulnerable narcissism, likelihood of seeking online information is twice as likely ( $ODDS = 2.20$ ). There were no significant indirect effects for grandiose narcissism ( $ps > .13$ ). Results provide additional evidence delineating the differences between grandiose and vulnerable narcissism, suggesting that vulnerable narcissism alone is associated with greater distress and an overall greater likelihood of seeking online mental health information. Interestingly, vulnerable narcissism, but not grandiose narcissism, is also associated with greater self-stigma, suggesting that help-seeking decisions may be marked by inner-conflict.

## SYNTHESIS AND METALATION OF ADJ-DICARBAPORPHYRINS

Presenter	Darrow, William Undergraduate, Chemistry
Mentor	Prof. Timothy Lash
Authorship	William Darrow; Timothy Lash

Carbaporphyrins, porphyrin analogues in which one or more of the internal nitrogen atoms have been replaced by methine units, have been widely investigated due to their intriguing chemical reactivity. Recently, the first example of an adj-dicarbaporphyrin **1a** was reported and this reacted with  $Pd(OAc)_2$  to give a unique palladium(IV) sandwich complex. In this work, a series of adj-dicarbaporphyrins have been synthesized and the reactivity of this system has been further probed. 5-Unsubstituted pyrrole esters were prepared using the Barton-Zard reaction and converted into a series of dipyrromethane dialdehydes **2b-d**. Base-catalyzed MacDonald condensation with bis(indenyl)methane **3** gave dicarbaporphyrins **1b-d** in 20-35% yield. These porphyrinoids exhibit strongly aromatic characteristics and the proton NMR spectra showed resonances for the internal CH and NH protons between -4 and -6 ppm. Reaction of **1a-d** with di-chloro-tetracarboxydirhodium(I) afforded the stable rhodium(III) complexes **4**. The  $^1H$  NMR spectra of **4** clearly showed rhodium-hydrogen coupling and the retention of a strongly aromatic ring current.



## THE THIRD COAST

Presenter

Davis, Catherine

Graduate, Art

Mentor

Prof. Melissa Johnson

My Master of Fine Arts thesis project, The Third Coast, looks to investigate the vernacular landscape of the US Gulf Coast as a separate yet interrelated place. A naturally porous borderland, America's southernmost shore stretches some 1,600 miles from the mouth of the Rio Grande to the Florida Everglades. The area is complex combination of history and geography, culture and ecology that reflects an intimate and ever-evolving relationship between man, land and sea. As a place, the Gulf coast can be readily identified as a patchwork of both the natural and built environments, caught in the seemingly endless process of development and dissolution; it does not conform to tidy hierarchies or easy classification. Rather, the rhythms of the region comprise its own syntax, a way in which seemingly dissimilar locations begin to speak to one another with awareness and familiarity. The Third Coast looks to explore this visual vocabulary. The reiteration of both natural and built features inform a sense of place. The recurrent themes tie the region together and fashion a distinct material and cultural identity. More than just describing the landscape, the goal of the project is to visualize the ways in which the elements of Gulf coast form intricate connections between dissimilar locations.

## THE INTERGRIN $\alpha 5$ RECEPTOR MEDIATES IMMUNE RECOGNITION TO PREVENT AUTOIMMUNITY

Presenter

DeMichel, Victoria

Undergraduate, Biological Sciences

Mentor

Prof. Nathan Mortimer

Authorship

Victoria DeMichel; Nathan Mortimer

People can be affected by a range of autoimmune disorders, which will negatively impact the patient's health and quality of life. In these disorders, immune cells misidentify the body's own healthy tissue for an invading pathogen and mount an immune response against the tissue, resulting in tissue and organ damage. Because these

autoimmune diseases are not well understood, we want to develop a new system to study the underlying genetics. We have characterized a *Drosophila melanogaster* autoimmune mutant, tuSz, in which the fly's cellular immune response is directed against its own healthy tissue. To better understand this process, we used the tuSz mutant to investigate the role of immune cell receptors in autoimmunity. We found that the Integrin  $\alpha 5$  receptor functions in activated immune cells to prevent self-directed immunity. Interestingly, Integrin receptors are also implicated in human autoimmune disorders including Systemic lupus erythematosus, suggesting that our system will allow us to gain insight into human autoimmunity.

## **SUBSTANCE USE PREVENTION KNOWLEDGE AMONG UNDERGRADUATE SOCIAL WORK STUDENTS**

Presenter Dhillon, Rubina  
Graduate, Social Work

Mentor Prof. Kate Sheridan

The purpose of this proposed study is to evaluate the level of knowledge undergraduate social work students have regarding substance use prevention. Participants will be invited to complete surveys before and after a presentation on substance use prevention theory and approaches. Participants will be adults age 18 years or older who are currently enrolled in SWK 225 in the spring 2017 semester. Results will indicate the amount of information these students have on the topic of substance use prevention and will inform the curriculum of the instructors in the School of Social Work teaching on the topic of substance use disorders.

## **THE INFLUENCE OF INDIVIDUAL CHARACTERISTICS ON WORK-FAMILY BALANCE AND FACILITATION**

Presenter Dill, Kathleen  
Graduate, Psychology

Mentor Prof. Dan Ispas

Authorship Kathleen Dill; Alexandra Ilie; Dan Ispas; Dragos G. Iliescu

To achieve a balance between work and family has become increasingly important but also more difficult due to the larger number of dual-earner families and the overwhelming demands of work. The purpose of this study was to focus on the positive side of work-family conflict (WFC), i.e. work-family facilitation and work-family balance. Although it is important to understand the stressors of WFC, it is equally important to understand how individual characteristics can motivate employees to cope with work stressors. Understanding the role of individual characteristics will ultimately benefit employers by enhancing the quality of life for employees through facilitation and balance. The current study examined a conceptual framework which specified what work conditions would facilitate the development of internal motivation for work-family balance and facilitation. It was found that individuals who possess a trait-level goal-directedness will be more likely to influence and enhance their quality of life through facilitation and balance.

## ALKYNE COMBUSTION: EXPERIMENTAL AND THEORETICAL STUDIES OF HCO PRODUCT PATHWAYS

Presenter	Drummer, Matt Graduate, Chemistry
Mentor	Prof. Jean Standard
Authorship	Matt Drummer

The formyl radical, HCO, is an important intermediate species in hydrocarbon combustion as it is a precursor to the hydroxyl radical, OH, which reacts with other abundant atmospheric species to form aerosol particles and acid rain. Under high temperature conditions, such as those in combustion reaction systems, alkanes will dehydrogenate to their corresponding alkene and alkyne forms. Computational studies have shown that oxygen atoms, O(<sup>3</sup>P), will attack at the triple bond of alkynes, leading to a complex series of reaction pathways containing many intermediate and transition state species. Previous experiments by the Quandt research group at Illinois State University have demonstrated varying intensities of HCO formation for a series of alkynes. Computational methods have been utilized by the Standard research group of Illinois State University to map out the potential energy surfaces of these alkyne + O(<sup>3</sup>P) reactions. In this work, the reactions of O(<sup>3</sup>P) with a series of alkynes is investigated both experimentally and computationally. On the experimental front, cavity ring-down laser absorption spectroscopy (CRDLAS) was employed to detect the absorption spectrum of HCO for butyne, pentyne, and propargyl alcohol. In order to better understand the reaction mechanisms of HCO formation in these reactions, computational methods were employed to find optimized geometries, vibrational frequencies, and potential energies of reactant, intermediate, transition state, and product structures at the M06-2x/cc-pvTZ, MP2/6-311++G(d,p), and B3LYP/cc-pvTZ levels of theory. In addition, single-point energy calculations were carried out on the optimized molecular structures at the CCSD(T)/cc-pvTZ level of theory to construct potential energy profiles with more accurate energies. Computational methods are powerful tools that may help to reveal the number of HCO product pathways for different alkynes, explaining the various HCO absorption intensities observed in the CRDLAS studies.

## AGREEABLENESS AND SOCIAL-EMOTIONAL COMPREHENSION IN PRESCHOOLERS

Presenter	Elsenbroek, Melanie Undergraduate, Psychology
Mentor	Prof. Renée Tobin
Authorship	Melanie Elsenbroek; Kelsey Atterberry; Allison Curnock; Renée Tobin

A child's personality can influence how well a child understands and or retains an intervention. In particular, individual differences in Agreeableness have been related to children's responsiveness to social-emotional intervention. Agreeableness is one of the dimensions of personality in the Big Five. It has been defined as the motivation to accommodate the feelings of others for an overall goal of maintaining interpersonal relationships (Graziano & Eisenberg, 1997; Graziano & Habashi, 2010). Previous studies have shown that Agreeableness is related to differences in emotional experience and regulation. Tobin, Graziano, Vanman, and Tassinary (2000) found that persons who are high in agreeableness experience stronger emotional reactions to intense stimuli and apply greater efforts to regulate these emotions than their peers. Similarly, individuals who are high in agreeableness automatically engage in emotion regulation processes when exposed to negative stimuli (Haas, Omura, Constable, & Canli 2007). This study examines the relation between Agreeableness and children's outcomes following exposure to a social-emotional learning curriculum. A total of 72 preschoolers received 26 weeks of the social-emotional learning curriculum, Second Step: A Violence Prevention Curriculum (Committee for Children, 2011). This curriculum provides evidence-based social-emotional training for preschoolers including the development of

emotion regulation, empathy, and social problem solving skills. Before receiving this curriculum, one parent and one teacher per child provided ratings of Agreeableness using the Big Five Inventory (John & Srivastava, 1999). Before and after the curriculum, researchers conducted individual interviews with each child assessing their social-emotional learning knowledge. For this study, we will examine the relation between Agreeableness and children's change in social-emotional knowledge following exposure to the Second Step curriculum. I hypothesize that children who are high in agreeableness will retain the Second Step curriculum better than those who are lower in agreeableness. Results of this study have the potential to inform clinical practice. These and other results will be discussed.

## **INVESTIGATION OF OXIDOPYRYLIUM-ALKENE [5+2] CYCLOADDITIONS**

Presenter	Epplin, Rachel Undergraduate, Chemistry
Mentor	Prof. Andrew Mitchell
Authorship	Rachel Epplin; Andrew Mitchell

Many of the drugs we use today are found in nature, but are in limited quantity. This calls for an efficient way to reproduce them in the laboratory. Polycyclic ethers are a common occurrence in these biologically-active natural products, and oxidopyrylium-alkene [5+2] cycloadditions provide a convenient intermediate to synthesize them. Using inexpensive starting material, the six step synthesis produces the cycloadduct in decent yield. Investigating functional groups that will force regio-, diastereo-, and enantioselectivity will make these novel oxidopyrylium-alkene [5+2] cycloadditions more attractive.

## **REMBRANDT, DANIEL AND BEL: IDENTITY, RESISTANCE AND NEOCOLONIALISM**

Presenter	Ewers, Alexander Graduate, Communication
Mentor	Prof. Joseph Zompetti
Authorship	Alexander Ewers

Jewish culture, while existing for several millennia, has often struggled to do so. This struggle has frequently found itself expressed in Judaic storytelling. This paper seeks to understand artifacts of struggle and the appropriation of struggle in a neocolonial context. One such artifact of struggle, "Daniel and Bel," exemplifies Judaic struggle. The 2nd Century B.C.E. story functions as an enforcer of Jewish identity in a world where such an identity's survival was unknown and as a form of resistance against Seleucid colonizers. This study not only focuses on the function of the story but also the Dutch artist Rembrandt's depiction of the story in his 17th Century C.E. painting "Daniel and Cyrus Before the Idol Bel". Rembrandt's depiction of the story commodifies Jewish identity to legitimize the Christian colonization of the Judaic and is an appropriation of struggle. Rhetorical critique of these artifacts also led to a deeper understanding of neocolonial theory. Most notably this study argues that neocolonial theory ought to be divorced from a geographic understanding of colonization and understood in a more historical context. Such a reorganization of thought and theory would make neocolonial study more useful and effective in academia.

## **PAPER CONE SPRAY IONIZATION SOURCES FEATURING INTEGRATED EXTRACTION AND FILTRATION FOR ON-SITE FORENSIC APPLICATIONS**

Presenter	Fatigante, William Undergraduate, Chemistry
Mentor	Prof. Christopher Mulligan
Authorship	William Fatigante; Zachary Lawton; Alessandra Bruno; Shahaz Muktah; Michael Gizzi; Christopher Mulligan

Ambient ionization methods such as desorption electrospray ionization (DESI), direct analysis in real time (DART) and paper spray ionization have been shown particularly adept as allowing the direct analysis of unprepared samples. When examining the recent literature, there is an observed trend of coupling simple preparative methods (e.g. TLC, LLE, and SPE/SPME) with ambient MS techniques to obtain better experimental outcomes, from enhancing detection limits to allowing application problematic sample types. Newer ionization methods, such as paper cone spray ionization (PCSI), have integrated preparations such as sample extraction into the source itself. Forensic applications demonstrated during this study included the investigation of pharmaceutical tablets, adulterated food products and biomatrices of relevance to toxicology, and trace evidence filtration media (for the purposes of secondary chemical screening after trace evidence is obtained). Herein, we investigate a modified PCSI source that allows real-time extraction and filtration of forensic samples known to hinder screening on portable MS systems with minimal to no sample preparation.

## **EFFECT OF PM TASK ON TASK PERFORMANCE AND SPEED**

Presenter	Flaherty, Megan Undergraduate, Psychology
Mentor	Prof. Dawn McBride
Authorship	Megan Flaherty

Prospective memory (PM) is the act of remembering to perform a future intention (Einstein & McDaniel, 2005). The current study compared time-based and focal and nonfocal event-based prospective memory accuracy and cost. Focal PM tasks can be accomplished through spontaneous retrieval and nonfocal PM task can be accomplished through sustained attention monitoring. Type of PM task was manipulated in a between-subjects design. Oksanen et al. (2014) suggested that nonfocal tasks require irrelevant processing to the ongoing task, whereas focal tasks involve the processing of cues that naturally coincide with the ongoing task. Therefore, I hypothesized that the focal PM task would produce better PM accuracy than the nonfocal task. In addition, the time-based PM task will result in lower PM accuracy than both event-based tasks because accomplishing this task requires self-initiated processing, which may be cognitively exhausting. Cona et al. (2014) found that the more difficult the PM task was, the slower the response times would be. Consistent with this finding, I hypothesized that the focal task would produce the fastest response times, and the time condition would produce the slowest response times.

## **POLICE PERCEPTION OF GUN CONTROL**

Presenter	Foster, Morgan Graduate, Criminal Justice Sciences
Mentor	Prof. Cara Rabe-Hemp
Authorship	Cara Rabe-Hemp; Phil Mulvey

The issue of firearm regulations and how the United States citizens perceive them is a topic that has been exhaustively debated in today's society. With the Second Amendment's ambiguous wording, the subject of right-to-carry and self-protection, leaves the country divided as a whole on the stance of firearm control. An area that can shed more light on this issue is how police perceive firearms and right-to-carry. A literature analysis will be conducted in order to gain a better understanding of how police officers feel about citizens having the right-to-carry and whether or not they feel it will invoke more informal social control.

## **THE USE OF REAPPRAISAL DURING EXPRESSIVE WRITING AND ITS IMPACT ON AFFECT AND INSIGHT**

Presenter	Fuentes, Alleana Graduate, Psychology
Mentor	Prof. Jeffrey Kahn
Authorship	Alleana Fuentes

Emotion regulation is the process by which individuals try to influence what emotions they have, when they surface, and how they are experienced (Gross, 1998). Reappraisal is a specific form of emotion regulation that involves reinterpreting stressors and focusing on the positive aspect of events; which allows for greater positive emotions and fewer negative emotions (Gross & John, 2003). Several studies have established the positive outcomes of reappraisal; however, there is still a need to examine the feasibility of interventions involving emotion regulation processes such as these (Gross, 2015). One such helpful direction might be towards expressive writing interventions. Expressive writing involves writing about stressors or problems going on in one's life. Expressive writing has been shown to result in positive long-term health outcomes (Frattaroli, 2006; Frisina, Borod, & Lepore, 2004; Smyth, 1998). Although emotion regulation has been proposed to be a mechanism that explains the health outcomes of expressive writing (Lepore, Greenberg, Bruno, & Smyth, 2002), there remains a lack of research linking reappraisal specifically to the benefits of expressive writing. To determine whether reappraisal is a causal mechanism in benefits of expressive writing, a controlled, experimental study is conducted. College-student participants are tasked to write about a current stressor of theirs. They are instructed to use first-person language (i.e., writing about the stressor from their own perspective by using pronouns such as I and me) or third-person language (i.e., writing about the stressor as if it were happening to another person by using pronouns such as she or his). These instructions are designed to manipulate the amount of reappraisal the participant uses, such that third-person instructions should yield greater reappraisal than first-person instructions. I am measuring their affect (e.g., excited, distressed) both before and after the writing task, and I will also measure the amount of insight they have gained following the writing task. I hypothesize that reappraisal will be the causal mechanism in the affect- and insight-related changes due to expressive writing. Specifically, I expect that the third-person writing condition will lead to the more favorable outcomes - more positive affect, less negative affect, and greater insight - than the first-

person writing condition, provided that doing so changes the way individuals think about and perceive their stressful situations. Such a result would provide important empirical support for the use of reappraisal in health-related interventions that are based on expressive writing.

## **WHAT ARE OTHER STATES DOING WITH REGARD TO INJURY AND VIOLENCE SURVEILLANCE SYSTEMS THAT ILLINOIS MIGHT WANT TO CONSIDER?**

Presenter

Gardner, Antishay

Graduate, Social Work

Mentor

Prof. Kathryn Conley Wehrmann

The Illinois Department of Public Health (IDPH) has received funding to implement injury and violence prevention (IVP) strategies, grounded in public/private collaboration. In order to know best where to use the funding, the IDPH Office of Health Promotion, Injury and Violence Prevention Program (IVPP,) will be working on the development of a more comprehensive injury and violence surveillance tracking system. Injury and violence prevention strategies in Illinois. A key question to be answered is, what are other states doing with regard to injury and violence surveillance systems that Illinois might want to consider? A meta-analysis will be done using data included on websites of other state systems in order to identify components that are included. The complexity of injury related health issues demands the use of diverse and immense amount of data for a comprehensive understanding of what are the components for injury surveillance in the United States. The results of this study will inform the collection and analysis of injury-related data and help Illinois utilize the data to boost policy efforts by allowing for the capture of relevant data and tracking trends related to injury and violence. Having relevant data will also contribute to the development of injury and violence prevention plans. The availability of injury and violence data will also contribute to educating the general public.

## **THE EFFECT OF THERAPEUTIC CRY CUPPING ON HAMSTRING TIGHTNESS AND PATIENT PERCEIVED OUTCOMES**

Presenter

Gearhart, Connor

Graduate, Kinesiology & Recreation

Mentor

Prof. Becky Begalle

Authorship

Becky Begalle; Connor Gearhart

Hamstring injuries are among the most common sport related injuries. After return to sport the recurrence rate of these injuries is high and the effects on performance are imposing. Muscular tightness can predispose an individual to both initial injury and recurrence. Dry cupping therapy has been utilized in eastern medicine for thousands of years to treat muscle tightness and improve patient oriented outcomes. More recently it has gained popularity in the United States. Previous research has demonstrated decreased muscle tightness in the upper trapezius and low back region. However, the effects of therapeutic dry cupping on hamstring tightness and patients' perceived benefit are unknown. Objective: To determine the effects of a single therapeutic dry cupping intervention on hamstring flexibility and participant's perceived outcomes following therapy. Design: Cross-sectional. Participants: A sample of thirty physically active male and female college students with restricted hamstring flexibility participated in this study. Restricted hamstring flexibility was defined as limited passive knee extension range of motion (ROM) with the hip flexed to 90° (90/90 test). Physically active was defined as at least 90-minutes of exercise per week. All participants were injury free at the time of testing. All measurements and treatments were performed on the

dominant kicking leg. Procedures: Participants were randomly allocated to one of two groups; the intervention group (cup) or the control group (sham). Six stationary therapeutic cups were applied to the hamstring muscle group at least 2-2.5 in. apart. Three pumps were delivered to each cup to create a strong suction effect. Cups remained in place for 5-minutes following the placement of the last cup. The sham cupping group received the same treatment protocol with therapeutic cups that had been modified based on previous literature to decrease suction and eliminate any therapeutic benefits. Three trials of the 90/90 test were performed prior to, immediately following, and 30-minutes following the completion of treatment. All participants completed a subjective questionnaire to capture perceived outcomes following treatment. Main Outcome Measures: The mean of three trials of the 90/90 test will be compared between groups (cup, sham) and between time points (pre-, immediately post-, 30-minutes post) using a 2x3 analysis of variance. Qualitative analyses will be performed to describe patient reported outcomes.

## **ENGAGEMENT IN SECOND STEP INTERVENTION LESSONS AND SOCIAL-EMOTIONAL KNOWLEDGE OUTCOMES IN PRESCHOOLERS**

Presenter

Gebhardt, Kalyn

Undergraduate, Psychology

Mentor

Prof. Renée Tobin

Authorship

Kalyn Gebhardt; Kelsey Atteberry; Allison Curnock; Renée Tobin

Children who have higher developed social skills are more likely to engage in their classrooms and with the material being taught (Vitiello & Williford, 2015). Unfortunately not all children have developed these skills and therefore have a harder time forming relationships with peers and making larger strides in their learning. Social emotional learning curricula have been developed to assist the formation of social skills that children have not naturally learned; however, children's gain may be limited by the extent to which they are engaged in the curriculum. That is, students who are less engaged might also be more likely to have peer relational issues and engage in aggressive acts such as bullying (Low, Van Ryzin, Brown, Smith, & Haggerty, 2013). Engagement can be used to predict advances in learning and overall success in the classroom. In this study, we examined the engagement of preschoolers in a local learning center during a social emotional learning curriculum. To assess engagement, preschoolers in 6 classrooms were observed during the administration of the social emotional learning curriculum, Second Step: A Violence Prevention Program (The Committee for Children, 2011). Interviews were conducted before and after intervention to assess pre- and post- knowledge about social-emotional skills. This research will examine the correlation between engagement during the social emotional learning curriculum implementation and growth of social-emotional knowledge.

## **EXAMINING THE ROLE OF TRANSFER APPRIOPRIATE PROCESSING IN EVENT- AND TIME-BASED PROSPECTIVE MEMORY**

Presenter

Glossa, Olivia

Undergraduate, Psychology

Mentor

Prof. Dawn McBride

Prospective memory (PM) is remembering to enact a specific task intended for the future. Event-based PM can be activated by an event (e.g., seeing a grocery store on the way home from work), while Time-based PM can be triggered by a specific point in time (e.g., when it's 3:00 p.m. you know you have to pick your child up at 3:30 p.m. from school). During Event- and Time-based PM, there can be a concurrent overlap between when information is encoded to when it is retrieved, referred to as Transfer appropriate processing (TAP). The current study tests the

idea that performance will be higher when an ongoing task and PM task require the same processing (category ongoing task - event-based PM cues; time ongoing task - time based PM cues), instead of mismatched processing (category ongoing task - time-based PM cues; time ongoing task - event-based PM cues).

## **A PRE-MOTOR REGION USES MULTIPLE SCHEMES TO ENCODE SENSORY INFORMATION**

Presenter	Goldsmith, Christopher Graduate, Biological Sciences
Mentor	Prof. Wolfgang Stein
Authorship	Christopher Goldsmith; Rosangela Follmann; Wolfgang Stein

Animal motor function and behavior rely on appropriate processing and interpretation of sensory input by its nervous system. Thus, a fundamental goal of neuroscience is to understand the interplay between an organism's environment and its nervous system. Encoding of sensory information is typically achieved in a distributed fashion across several neuronal subpopulations, i.e. sensory information can be processed both in parallel and in series. Though, the transformation of sensory input to motor commands is not well understood because the signal is usually not reliably tracked at every point from its origination to extinction. Moreover, several different encoding schemes have been examined relating to spiking activities (rate and temporal coding) and number (population and combinatorial coding) of neurons. Much of this work is theoretical, and most findings emphasize one scheme for a particular region, circuit, or process of interest. We hypothesize that there are cases which demonstrate the use of more than one encoding scheme. Furthermore, this may be particularly important in lower-level processes utilizing a small number of neurons to handle a diverse collection of inputs and outputs. To test this, we used a simpler and well-characterized invertebrate system, the stomatogastric nervous system of the Jonah crab, *Cancer borealis*. This experimentally advantageous system allowed us to study how a pre-motor region with a limited number of components encodes and differentiates between distinct sensory inputs. We simultaneously controlled the inputs of a mechanosensory and chemosensory modality, recorded the activity of neurons in the pre-motor regions the modalities converge on, and monitored the activity of several uniquely identifiable neurons in the downstream motor centers. Using this approach, we avoided the problem of unreliably tracking sensory signals. When comparing the response of the pre-motor region to sensory inputs: neurons recruited by both inputs could respond with distinct changes in their firing frequencies; some neurons responded with excitation versus inhibition in one or the other modal conditions; the mechanosensory input had significantly larger proportions of excited cells, while the chemosensory input had a larger inhibitory effect on the population across animals; there were also subsets of uniquely responding cells for each population. These findings suggest that pre-motor regions may distinguish between convergent modal input through the incorporation of an assortment of rate, population, and combinatorial coding schema.

## **STRAIN IS COMING: A CONTENT ANALYSIS OF GAME OF THRONES**

Presenter	Green, Emilee Graduate, Criminal Justice Sciences
Mentor	Prof. Shelly Clevenger
Authorship	Emilee Green

General strain theory suggests that individuals commit crime due to various emotional stressors. These include the loss of positive stimuli, presentation of negative stimuli, inability to achieve a goal, to enact revenge, and to alleviate negative emotions. Strains are seen as unfair and must cause an individual to turn towards

noninstitutionalized means of coping. How is strain theory represented in popular media? HBO's Game of Thrones is one of the most popular series on television, amassing a wide international fan base and winning 38 Primetime Emmy Awards. A content analysis was completed on the first three seasons of Game of Thrones, focusing on eight of the main characters to examine strain within its universe. The highest amount of strain was caused by the inability to achieve a goal, likely due to the desire for power and familial influence in a world based loosely off of Medieval Europe. This project was completed for graduate course credit and thus remains limited to single-coder bias. However, the content analysis did provide insight on the motivations driving criminal behavior in Game of Thrones.

## **ASSOCIATION OF FRUIT AND VEGETABLE INTAKE WITH CARDIORESPIRATORY FITNESS IN ADOLESCENTS**

Presenter	Grimwood, Jonathan Graduate, Kinesiology & Recreation
Mentor	Prof. Dale D. Brown
Authorship	Jonathan Grimwood; Dale D. Brown; Kelly Laurson; Skip Williams; Mary Henninger; Jennifer Barnes; Dan Phelps

An association has been established between total energy intake and cardiorespiratory fitness (CRF) in adolescents; however, there is little research examining dietary components. **PURPOSE:** To determine if an association exists between F/V intake and CRF in adolescents. **METHODS:** A sample of 424 adolescents (234 males and 190 females) age 10-18 years completed the Dietary Behavior section of the Youth Risk Behavior Survey (YRBS) and the FITNESSGRAM 20 meter Pacer test (PACER). This section of the YRBS assesses F/V intake based on intake frequency over a one week period. Peak oxygen consumption (VO<sub>2</sub>peak) was calculated from the PACER results and categorized based on the FITNESSGRAM aerobic standards, placing individuals into one of three categories: Healthy Fitness Zone (HFZ), Needs Improvement (NI), and Needs Improvement - Health Risk (NI-HR). Mean differences in total F/V intake for participants in each of the CRF categories were assessed using a one way ANOVA. **RESULTS:** The mean total F/V intake values (times per week) showed slight differences between each of the categories. For male participants the F/V intake values in the HFZ, NI, and NI-HR categories were 19.9 (SD 15.2), 15.8 (SD 19.2), and 19.1 (SD 13.8) respectively. The mean F/V intake for female participants in the HFZ, NI, and NI-HR categories were 20.9 (SD 16.2), 20.3 (SD 19.6), and 15.9 (SD 9.6) respectively. However, none of these differences were statistically significant (all  $p > 0.05$ ). Average fruit and vegetable intakes were also individually analyzed, but with similar results (all  $p > 0.05$ ). **CONCLUSION:** F/V intake does not have a significant association with CRF in adolescents.

## **REVEALING THE INVISIBLE: A CRITIQUE AND PLAN OF THE SOCIAL SCIENCES' APPROACH TO RESEARCH REGARDING CHRONIC ILLNESSES**

Presenter	Hall, Robert Graduate, Communication
Mentor	Prof. Aimee Miller-Ott

In this project, the author and mentor aimed to complete an extensive review of how various social science disciplines treat chronic illnesses in their research. After an extensive review, the researchers found that two chronic illnesses were mentioned extensively: HIV/AIDS and cancer. Researchers categorize stigma of these two chronic illnesses as an overarching term for all chronic illness. In doing so, Horan et al (2008) and their description of individuals affected by fibromyalgia put this illness on the same end of the spectrum as HIV/AIDS. This project aimed to shed light on the problems in overgeneralizing chronic illness and show the nuances that exist among chronic illness, thus preventing incorrect stigmatization of individuals affected by various chronic illnesses.

## **VICTIMIZATION OF SOCIETAL MEMBERS BY PEOPLE IN AUTHORITY IN THREE MOVIES ( IDI AMIN, HITLER, HOTEL RWANDA )**

Presenter Hammond, Queencilla  
Graduate, Criminal Justice Sciences

Mentor Prof. Shelly Clevenger

Various conflict theorists share a critical position about the social order in existence. However, there are differences in how these theorists conceptualize the nature of social order. Conservative (pluralist) and critical-radical are the two general forms of conflict theory. This study focuses on Marxist Criminology which falls under critical-radical (Class Discussion, 2016). Marx and Engels expressed their disapproval in the breakdown of human solidarity in the 1800s and believed, lack of oneness amongst people was a symptom of crime and would diminish if only societal members could unite. In their opinion, the political state was in existence as a mechanism for the continuation of capitalism and will hardly drift away for any form of sisterhood or brotherhood (Lilly, Cullen & Ball, 2015) For these authors, conflict was inbuilt in the state of social organizations under capitalism. They believe capitalism led to the great differences in interests and also gave the few at the top so much power over the many at the bottom. Thus, the purpose of this study is to find out how conflict theory that emphasizes capitalism and crime is portrayed in three movies. Hence, victimization of societal members by people in authority in the Rise and Fall of Idi Amin, the Rise of Adolf Hitler and Hotel Rwanda (Based on the Rwanda genocide of April, 1994).

## **TEMPORAL TRENDS IN VERTICAL PORE WATER FLUX IN THE HYPORHEIC ZONE OF A LOW GRADIENT THIRD ORDER STREAM**

Presenter Harris, Frances  
Graduate, Geography/Geology

Mentor Prof. Eric Peterson

Little Kickapoo Creek (LKC) is a low-gradient, third-order perennial stream with headwaters in Bloomington, IL. The study site is located south of Bloomington, Illinois and Little Kickapoo Creek ultimately feeds into Kickapoo Creek. In this study, vertical one-dimensional flux rates will be characterized in the hyporheic zone. In this study, the hyporheic zone is defined as the top 150 cm of the streambed. In 2009, LKC had six wells installed at the lowest points in the streambed along a 25-meter stretch spaced a 5-meter intervals. Each well recorded temperature at five separate depths logging at 15-minute intervals from February 2009 to March 2010: 30, 60, 90, 150 cm. Stage data were collected at 15- minute intervals on the stream bank adjacent to the well array. Vertical flux rates are calculated using temperature sensors pairs at depth with the one-dimensional conduction-advection-dispersion equation. The primary focus of the study is to determine if water level in the stream controls the direction and magnitude of vertical flux and to visualize how flux is changing temporally. I hypothesize that there will be a positive linear relationship between stage and flux; If stage rises, the stream loses water to the streambed (positive flux) and if the stage decreases, the stream gains water from the streambed (negative flux). This relationship is based on the idea that water flows from a high hydraulic head to low hydraulic head, which is a proxy for potential energy. I am also proposing that flux will be inversely proportional to stage, but the flux will always be moving from the ground into the stream since LKC is characterized as perennially gaining. As stage increases, the magnitude of flux will increase with stage and become more negative.

## HOW CAN PARENTAL ENGAGEMENT IN EARLY HEAD START BE INCREASED?

Presenter

Hedrick, Barbara  
Graduate, Social Work

Mentor

Prof. Kathryn Conley Wehrmann

The 1964 Head Start (HS) Act and 1995 Early Head Start (EHS) Act are federally funded, early intervention programs for low income families and children. The programs were designed to help break the cycle of poverty, by providing infants and preschool children of low-income families with a comprehensive program to meet their emotional, social, health, nutritional and psychological needs (History of Head Start, n.d). Since the program's inception it has always had a mandate that focused on parental involvement. In 2011 the Office of Head Start (OHS), advanced its mandate by forming the Parent, Family and Community Engagement (PFCE) Framework, in which they title a road map for progress. It is a research-based approach designed to help HS and EHS programs achieve outcomes that lead to positive change for children and families (Early Childhood Learning and Knowledge Center, 2011) As it name suggests, the PFCE framework's main focus is to increase parent and family engagement in the HS and EHS programs. This research study will focus on way in which parental engagement can be increased in the Early Head Start program through the analysis of survey data collected by Early Head Start staff from a total of 75 families enrolled in the program. The data to be analyzed includes responses to a total of four questions on the survey that asked parents: 1. What are the barriers or hindrance for your family attending socializations?2. What is the best day, time and location for your family to attend socializations?3. Do the topics or types of family socialization guide your decisions for attending?4. What will increase the likelihood of your family attending socializations? The findings from the survey will be used to inform our efforts to develop programming for families. It will also assist with organizing family socializations, an area in which the organization is desperately needing to raise the attendance. This will not only fulfill the mandate for the Office of Head Start but it will also enhance parent and child engagement which in turn will make for a successful collaboration of Early Head Start and the families that it serves.

## DIABETES HEALTH KNOWLEDGE IN OLDER LATINO ADULTS IN A PRIMARY CARE SETTING.

Presenter

Herrera, Arely  
Graduate, Social Work

Mentor

Prof. Kate Sheridan

This proposed research study aims to describe the level of diabetes health knowledge in older Latino adults in a primary care setting and how their level of knowledge differs from a younger Latino adult group at the Community Health Care Clinic. Using a record review of a diabetes texting program that took place at the Community Health Care Clinic, a variety of diabetes health knowledge will be examined. The Diabetes Texting Program includes text messages to people who signed up to receive texts on their cell phones regarding diabetes health information. Embedded in the texts were quiz items to gather information about the level of knowledge of text program participants regarding Diabetes. As part of the program, participants also had the option to ask questions of Community Health Clinic staff via text. The texting program lasted 25 weeks, with each week focusing on a different health topic related to Diabetes. There is little previous research regarding diabetes texting programs or studies regarding the level of diabetes health knowledge in Latino older adults. Findings will be used by administrators to distinguish what areas of diabetes education needs to be improved, specifically for the older Latino adult.

## **WHAT ARE THE RISK FACTORS FOR SECONDARY TRAUMATIC STRESS IN CHILD WELFARE WORKERS AND WHAT MIGHT BE DONE TO HELP FROM THE PERSPECTIVE**

Presenter Higgins, Saralyn  
Graduate, Social Work

Mentor Prof. Kathryn Conley Wehrmann

Working in a child welfare agency comes with an increased amount of responsibility and puts a child welfare worker at risk of Secondary Traumatic Stress (STS). According to The Children's Trauma Institute (2012), "Secondary traumatic stress is when the experience of people, usually professionals, are exposed to others' traumatic stories and as a result can develop their own traumatic symptoms and reactions." Child welfare staff have to deal with both direct and secondary exposure to dangerous situations and this combination can result in occupational stress. Workers can become susceptible to secondary traumatic stress due to the vulnerable nature of their clients, the uncertainty that comes with working in child welfare, the risk to personal and professional safety, and work culture (The Children's Trauma Institute, 2012). The study that will be implemented will look at the perspectives of child welfare supervisors at The Center for Youth and Family Solutions (CYFS), in regards to what specific risk factors are associated with STS and in their opinion, what can be done to help. The study will consist of interviewing the 5 CYFS supervisors via a focus group. The focus group will consist of 5 questions that will gather data about risk factors linked to STS from the perspectives of CYFS supervisors. The questions provided will be open ended. The study is a descriptive study, the data that will be collected will be qualitative, and a theme analysis will be utilized when presenting the qualitative data. The descriptive study will include determining the risk factors associated with STS that are reported by CYFS supervisor. By identifying risk factors of STS in child welfare workers, CYFS may be able to better equip themselves to support their workers more efficiently and to offer trainings to their workers on the risk factors of STS, in hope of lowering the occurrence of STS and child welfare worker turnover.

## **ACCESS TO HEALTH CARE IN CENTRAL ILLINOIS UNDER THE AFFORDABLE CARE ACT**

Presenter Hood, Molly  
Graduate, Social Work

Mentor Prof. Kate Sheridan

Authorship Karen Stipp

This study examines the perspectives of adults in Central Illinois regarding obtaining and using health insurance since the Affordable Care Act was enacted. The aim of the study is to better understand access to health care in Central Illinois.

## **THE INFLUENCE OF PREMATURITY ON LANGUAGE SKILLS IN SCHOOL-AGE CHILDREN WITH ATTENTION AS A MEDIATOR VARIABLE**

Presenter

Howe, Adrienne

Undergraduate, Communication Sciences and Disorders

Mentor

Prof. Jamie Smith

Prematurity is typically defined as birth before 37 weeks gestation (Bhutta et al., 2002), and many of the immediate consequences are well-known in the medical community, such as respiratory difficulties and underdeveloped organs. However, more preterm infants are surviving and less is known about the long-term effects of prematurity on cognitive and linguistic development throughout school-age and adolescence. Benassi et al. (2016) found that preterm infants generally have less developed communicative gestures and motor skills than full-term children at 12 months of age, and Ionio et al. (2016) concluded that toddlers who had been born preterm displayed lower cognitive and linguistic skills than their full-term peers. Ionio et al. (2016) believed that preterm children are able to catch up throughout childhood to reach the same cognitive level as their peers but are also at a higher risk for long-term language deficits. By learning more about the effects that prematurity has on cognitive and linguistic development, we will have a better understanding of what outcomes to expect in adulthood.

Children who are born prematurely have also shown higher incidences of behavioral disorders and executive functioning deficits (Grunau et al., 2014; Farooqi et al., 2016). Botting et al. (1997) discovered that Attention-deficit Hyperactivity Disorder (ADHD) was significantly more prevalent in children who were born at a very low birth weight at 12 years of age than their full-term peers. Previous research has found attention and behavioral disorders, such as ADHD, to have a significant impact in later language development (Green et al., 2014; Ribeiro et al., 2011). Based on these findings, we expect to find that attention problems will be more common in children who were born preterm.

Using archival data from a subset of the participants in the Western Reserve Reading Project (WRRP) conducted through Ohio State University, we analyzed the language samples collected during home visits when the children were 10 years old. We aim to determine clausal density while the participants were producing narratives because clausal density has been used in previous research to assess syntactic complexity (Nippold et al., 2014). We hypothesized that preterm children will demonstrate lower clausal densities than their full-term peers and that attention problems will strengthen this association.

## **PERSON-ORGANIZATION FIT AND COUNTERPRODUCTIVE WORK BEHAVIORS VIA ENGAGEMENT AND WORK-MOTIVES**

Presenter

Huber, Amy

Graduate, Psychology

Mentor

Prof. Dan Ispas

Authorship

Amy Huber; Alexandra Ilie; Dan Ispas; Dragos G. Iliescu

By some estimates, counterproductive work behavior (CWB) costs U.S. businesses approximately \$50 billion annually (Mount, Ilies, & Johnson, 2006). Examples of such behaviors include theft, misuse of resources, destruction of property, and more. Previous research has identified numerous individual and situational antecedents of deviant behavior like negative affectivity, job satisfaction, and organizational commitment. The present study

examined person-organization (P-O) fit as an additional antecedent and found that PO-fit negatively predicted CWB. Furthermore, we hypothesized that engagement would mediate this relationship such that P-O fit would no longer predict CWB once engagement was accounted for. This hypothesis was fully supported. We also examined how the interaction of engagement and approach/avoidance work-motives influence CWB. Approach and avoidance motives are biological temperaments that explain sensitivities toward positive and negative stimuli, respectively. Results showed that the negative relationship between engagement and CWB was stronger when approach motive was low and when avoidance motive was high. One possible explanation for this finding involves sensitivity to organizational stressors, a known situational predictor of CWB.

## USING SNAPCHAT AS A MARKETING TOOL IN COLLEGIATE SPORT

Presenter	Jorich, Hannah Graduate, Kinesiology & Recreation
Mentor	Prof. Rebecca Achen
Authorship	Hannah Jorich; Rebecca Achen

Social media have made it easy for organizations to communicate with potential consumers (Mangold & Faulds, 2009), and have become an especially popular marketing and communications medium in sport (Madden & Zichuhr, 2011). One social media outlet that has grown exponentially is Snapchat. The website Digital Marketing Ramblings (2015) indicates 77% of college (US) students use Snapchat daily, and the mobile app usage grew 67% from December 2013-May 2014 (Storesund, 2015). This type of ephemeral social media is unique and appeals to a younger demographic, which makes it essential to investigate its use in college sport.

The purpose of this research is to develop an understanding of marketing strategies used on Snapchat by investigating the experiences and perspectives of athletic department employees and college sport fans. This mixed methods study will involve conducting interviews with athletic department social media managers and surveying college sport fans. Approval from the Institutional Review Board has been granted and the data are currently being collected. Once collected, qualitative data will undergo a thematic analysis to examine themes in collegiate athletic department Snapchat strategy. Surveys will be analyzed using SPSS to determine the relationships between fan usage and perceived usefulness of Snapchat.

The results will help collegiate sport marketers learn strategies for using Snapchat, and reveal how fans prefer to engage with sports brands on Snapchat. This will improve athletic departments' use of this channel for marketing and communications.

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## SYNTHESIS OF NOVEL MIXED O, N, S DONOR LIGANDS

Presenter	Jugovic, Timothy Graduate, Chemistry
Mentor	Prof. Chris Hamaker

Mixed donor ligands provide a valuable resource of tailorable ligating compounds that can generate desired steric and electronic environments for metal centers. Synthesis and characterization of novel ligands containing O, N, and S ligation sites provides a catalogue of new structures for potential investigations into effects on the chemical properties of metal centers involved. Further comparison of cyclic and non-cyclic mixed donor ligands provides comparative analysis of their different effects on metal centers. Free ligands and complexes were analyzed using various spectrophotometric techniques. Foremost among the techniques used for analysis were X-ray crystallography,  $^1\text{H}$ ,  $^{13}\text{C}$  NMR, and GC-MS. Using these techniques, we show that investigated ligands were found to have unique arrays of hydrogen bonding based upon differing secondary structural elements. In addition, our analysis found that ligands investigated had different metal binding affinities based upon their unique steric and electronic environments. The investigations performed found that the potential for mixed O, N, and S donor ligands to create novel complexes with desirable properties is abundantly clear.

## INVESTIGATION OF ACETOXPYRANONE-ALKENE [5+2] CYCLOADDITIONS

Presenter	Kaufman, Riley Undergraduate, Chemistry
Mentor	Prof. Andrew Mitchell
Authorship	Riley Kaufman; Timothy Mitchell

Pharmaceuticals are always finding new medications that are life saving for patients. These medications don't always have a known synthesis in order to produce mass amounts of the product. Research into different reactions can be utilized for new drugs that are being discovered. Investigation into caged ethers from acetoxypyranone-alkenes is performed in order to develop a reaction scheme for all laboratories to use. Starting with a commercially available starting material, four to nine steps give a good yield to a variation of the desired tethered acetoxypyranone-alkene intermediates. The different variations of the intermediate produce widely varying yields in the [5+2] cycloaddition. In order to discover the best yield of the final caged ether, different functional alkenes are studied in order to get the best yield of the final [5+2] cycloaddition.



## **EMPLOYEE ENGAGEMENT IN A RESIDENTIAL TREATMENT CENTER SETTING**

Presenter Kinzer, Adam  
Graduate, Social Work

Mentor Prof. Kate Sheridan

This program evaluation utilizes a survey to gauge employee engagement in a residential treatment center setting. Findings will be used by administrators (stakeholders) to identify potential improvements to the program. Research indicates that program success and employee retention is related to the engagement level of their employees, therefore research studies such as this proposed research are important tools for program effectiveness.

## **CHANGES IN BIOLOGY MAJORS' CONCEPTUAL UNDERSTANDING OF HUMAN EVOLUTION IN AN UNDERGRADUATE EVOLUTION COURSE**

Presenter Klingler, Amanda  
Undergraduate, Biological Sciences

Mentor Prof. Rebekka Darner Gougis

Authorship Amanda N. Klingler; Diane L. Byers; Rebekka D. Gougis

Misunderstandings about evolutionary mechanisms, particularly when applied to human evolution, are common not only among the general public but also among novice biologists. Misconceptions are amplified by the common graphic depicting a chimpanzee transforming into a modern day human. The purpose of this research is to identify the scientific conceptions and misconceptions used to explain human evolution by biology majors enrolled in a college-level evolution course. The type, frequency, and correlation between the scientific conceptions and misconceptions were coded from three written assignments from the beginning, middle, and end of the course. This study helps to identify common patterns of conceptual change regarding evolutionary mechanisms as they relate to human evolution, the relationship between various scientific conceptions and misconceptions regarding evolution, and the overall effectiveness of the strategies used in instruction.

## **EFFECT OF WET BREWER'S GRAIN INCLUSION ON GROUND BEEF QUALITY**

Presenter Kolet, Amanda  
Undergraduate, Agriculture

Mentor Prof. Justin Rickard

Authorship Amanda Kolet; Riley Parmenter; Justin Rickard

The objective of this study was to evaluate the quality of ground beef patties made from boneless trim obtained from finishing cattle fed a diet including Wet Brewer's Grains (WBG). Boneless trim from Whole Primal Rib Sections (IMPS

#1103) (n=24) was ground through three plates (kidney, coarse (10mm), and fine (4.5mm)) and pressed into ~ 151g patties using a hand patty press (4 per rib section). Following the first plate, fat was removed or added to achieve an ~ 90:10/lean:fat ratio. Patties were weighed and recorded prior to packaging. Two patties from each rib section were labeled, wrapped in white freezer paper, and placed into frozen storage for 30 d at -20°C. Remaining patties (2 per rib) were labeled, placed on a foam tray with an absorbent pad, overwrapped in oxygen-permeable polyvinylchloride film, and placed into a deli-style retail cooler for 7 d at 4°C to simulate retail display. During retail display, color measurements were taken on d 0, 1, 4, and 7. On d 7, patties were removed from display, weighed, and cooked to determine package purge (PP) and cook loss (CL). Following storage, frozen patties were allowed to thaw in a deli-style retail cooler. Color measurements were taken on thawed patties at ~24 h. Patties were then weighed and cooked to determine PP and CL. Data from patties of each rib section was averaged by storage method and statistical analysis was modeled in a two-way fixed ANOVA utilizing the MIXED procedure of SAS. No significant treatment x sex interactions were observed (P>0.05). No differences (P>0.05) were found for PP during retail display of fresh patties, however PP decreased (P=0.0405) following frozen storage in WBG rib sections. No significant differences (P>0.05) were observed for CL in fresh patties during retail display or patties following frozen storage. Fresh patties of heifers exhibited significantly higher L\* scores over the total retail display period (P<0.05). Fresh patties of heifers also displayed significantly lower a\* scores on d 7 of retail display (P=0.0372), however no differences were observed for b\* of fresh patties (P>0.05). No significant differences (P>0.05) were observed in the color measurements (L\*, a\*, and b\*) of patties following frozen storage. This data indicates that the inclusion of WBG in a finishing diet maintains the quality of ground beef patties from boneless trim comparable to a conventional corn/corn silage finishing diet maintains the quality of ground beef patties from boneless trim comparable to a conventional corn/corn silage finishing diet.

## PERCEPTIONS OF WORKERS OF CLIENT'S TRAUMA AND THEIR EFFECTIVE INTERVENTIONS

Presenter

Langevin, Renee

Graduate, Social Work

Mentor

Prof. Kathryn Conley Wehrmann

Trauma among older adults is an area that is requiring more research (Krause, 2004). Research has been examining how older adults experience the effects of trauma. Older adults are more likely to experience social isolation, health problems, and low life satisfaction as a result of trauma (Krause, 2004; Park et al., 2016). Research regarding beneficial interventions when working with older adults and trauma has found that Cognitive Therapy (CT) and Cognitive-Behavioral Therapy (CBT) have been effective interventions when working with this population. In addition, some research has examined the impact of exposure therapy with this population.

The purpose of this study is to explore worker's perceptions of client trauma at The Center for Youth and Family Solutions within the New Day Senior Services program. Six counselors will be invited to participate in this study, who work within Tazewell, Fulton, Stark, Marshall, Peoria, and Woodford counties. A focus group will be held with the six counselors, where they will be asked questions focused on their perceptions of the trauma that clients have experienced, and how clients who have been exposed to trauma interpret it. They will also be asked what interventions they find beneficial when working with clients who have experienced trauma. Focus group data will be analyzed to identify key themes.

## EXAMINING FIFTH-GRADE IN-SCHOOL PHYSICAL ACTIVITY PATTERNS: HOW MANY DAYS OF MONITORING ARE NEEDED?

Presenter	Langosch, Tyler Graduate, Kinesiology & Recreation
Mentor	Prof. Dale D. Brown
Authorship	Tyler R. Langosch; Dale D. Brown; Kelly R. Laurson; Skip M. Williams

**Purpose:** The purpose of the study was to determine the minimum number of days necessary to estimate mean physical activity levels, as both moderate-to-vigorous physical activity (MVPA) and steps per day, in fifth-grade students using objective physical activity monitors across two semesters.

**Materials & Methods:** Activity patterns were assessed during two school semesters, spring (N = 82 boys & 84 girls) and fall (N = 89 boys & 91 girls), from 10-12 year old fifth-grade students in four Midwestern elementary schools. Data was collected using wrist worn activity trackers. The devices were administered by teachers at the start of each school day and collected at the end of each school day for two consecutive weeks. Monitors measured MVPA and steps per day. Demographic and anthropometric data were also recorded (age, height, weight). All data was uploaded to polargofit.com and then collected by the researchers. Steps and MVPA were examined, individually, with Cronbach's alpha to determine how many days of measurement were needed to assess mean activity patterns.

**Results:** The reliability analysis suggested that at least four days of measurement were needed to achieve an alpha of 0.80 for both steps ( $\alpha = 0.825$ , 95% CI [0.777-0.865]) and MVPA ( $\alpha = 0.839$ , 95% CI [0.795-0.87]) during spring collection. During the fall semester, at least four days were also necessary to achieve a reliability of 0.80 in steps ( $\alpha = 0.803$ , 95% CI [0.751-0.846]) and MVPA ( $\alpha = 0.811$ , 95% CI [0.761-0.852]). However, fall five-day activity patterns did exhibit greater variability than four-day activity patterns in both steps ( $\alpha = 0.784$ , 95% CI [0.730-0.830]) and MVPA ( $\alpha = 0.794$ , 95% CI [0.742-0.838]).

**Conclusions:** These results indicate that four-day activity monitoring protocols most accurately estimate the mean in-school physical activity patterns, steps and MVPA, in fifth grades students. It should be noted that the results indicate consistency was not improved by a fifth day of measurement in steps and MVPA during a five-day collection period.

## COMPARISON OF CLINICIAN ASSISTED VERSUS UNASSISTED PNF STRETCHING ON HAMSTRING FLEXIBILITY, ISOMETRIC FORCE OUTPUT, AND MAXIMUM VERTICAL

Presenter	Lockhart, Joel Graduate, Kinesiology & Recreation
Mentor	Prof. Rebecca Begalle
Co-Mentor(s)	Skip Williams
Authorship	Rebecca Begalle; Skip Williams; Noelle Selkow

**Introduction:** Hamstring strains are among one of the most common acute injuries that occur in soccer players. Previous research has shown that reduced hamstring flexibility is a risk factor for injury, however this is modifiable through stretching. Some stretching techniques have contributed to decreased performance on measures important to success in sport. Proprioceptive neuromuscular facilitation (PNF) is one effective stretching technique to improve hamstring flexibility, but requires a trained partner or clinician to perform. It is unknown if the performance of PNF stretching without a clinician's assistance could be as effective. It is also unknown if PNF stretching affects soccer related performance outcomes of force output and vertical jump height.

**Objective:** To determine the effects of clinician assisted versus unassisted contract-relax PNF stretching on hamstring flexibility, maximum voluntary isometric contraction (MVIC) of the hamstring muscle group, and athletic performance via vertical jump height.

**Design:** Cross-sectional.

**Participants:** A sample of forty-five physically active male and female college students with restricted hamstring flexibility, defined as limited hip flexion range of motion with the leg straight (<90 degrees), completed a 6-week stretching intervention in one of two groups (clinician assisted, unassisted). Physically active was defined as at least 90-minutes of exercise per week.

**Procedures:** Subjects were randomly allocated to one of three groups; the clinician assisted, unassisted, or control groups following confirmation of inclusion criteria. The control group completed pre- and post- test measures only. The intervention groups completed a 6-week stretching intervention (2 per week) either with the assistance of a clinician or utilizing a stretching strap. Pre- and Post- intervention measurements were recorded for all outcome variables.

**Main Outcome Measures:** Hip flexion range of motion was measured passively with the knee extended. Hamstring MVIC was assessed using a handheld dynamometer. Maximal vertical jump height was measured using a Vertec. Three trials were recorded for each measure and the arithmetic mean was used for data analysis. Group and time differences will be investigated using analysis of variance (ANOVA) with post-hoc testing to identify the location of any differences.

**Results: Conclusion:**

## **HYGIENE AND GROOMING CURRICULUM EFFECTS ACROSS TIME AND SETTINGS**

Presenter Mahaffey, Megan  
Graduate, Social Work

Mentor Prof. Kate Sheridan

A hygiene and grooming curriculum has been facilitated in the G.O.A.L.S. program at LaSalle-Peru Township High School during the fall semester of 2016. The G.O.A.L.S. program stands for Guidance for Occupation and Adult Living Skills, and offers special education courses for students with intellectual disabilities who need functional life applications. This program evaluation aims to describe the effects of the hygiene and grooming curriculum across time and different settings using interviews, a survey, and record reviews. These findings will be used by teachers, social workers, and administrators to inform improvements to the program.

## **SATISFACTION: DOES COUNSELING WORK?**

Presenter Mahon, Ashley  
Graduate, Social Work

Mentor Prof. Kate Sheridan

This proposed program evaluation aims to assess satisfaction among clients who have received counseling services at Heartland Community College counseling department in the past 2 years using an electronic survey. Findings will be used by administrators to identify potential improvements to the program.

## **WHAT ARE THE TRAINING NEEDS FOR CHILD HUMAN TRAFFICKING AWARENESS AT A LOCAL CHILD WELFARE AGENCY?**

Presenter

McClure, Jessica

Graduate, Social Work

Mentor

Prof. Kathryn Conley Wehrmann

The aim of this research is to assess the training needs for staff at a local child welfare agency regarding their current knowledge and awareness of child human trafficking. Trafficked youth are an underserved population and the special needs of this population have often been overlooked by both the criminal justice system and child welfare. Recent literature has identified youth in care as among the population of children and teens involved in trafficking. Youth in care are at a higher risk of being targeted and often have more opportunity to become involved being placed in facilities, such as residential facilities or group homes (Kotrka, 2010). By assessing the current awareness levels of direct service child welfare staff, the needs of this population can be better addressed. The goal of this research is to provide information to the participating agency on the specific needs for training of their staff. This research will include a questionnaire that participants will complete anonymously in order to assess their current knowledge and to conduct this needs assessment. Descriptive statistics will be used to analyze the data and frequency distributions will be used to summarize the data.

## **HOW EFFECTIVE IS A TIER II GROUP INTERVENTION ON MEETING THE SOCIAL AND EMOTIONAL LEARNING STANDARDS?**

Presenter

McGinnis, Stephanie

Graduate, Social Work

Mentor

Prof. Kathryn Conley Wehrmann

This research study will examine the effectiveness of a Tier II intervention in meeting the social and emotional learning standards set by the Illinois State Board of Education. Research has shown that developing social skills students can improve their classroom readiness, classroom behavior, academic performance, and social development. A Tier II intervention is a targeted small group intervention for at risk students in academics or behaviors. This research study will collect data from a Tier II intervention currently being provided to students at Shute Elementary School. Student receiving this service were identified by classroom teacher. The data collected will be from four to six students who are in kindergarten. Data will be collected through a pre-test and post-test on the student's ability to meet the social and emotional learning standards. The goal of this research study is to provide school staff with data on the effectiveness of a particular group intervention.

## SYNTHESIS OF AZULIPORPHYRIN DYADS

Presenter

Metallo, Mollie  
Graduate, Chemistry

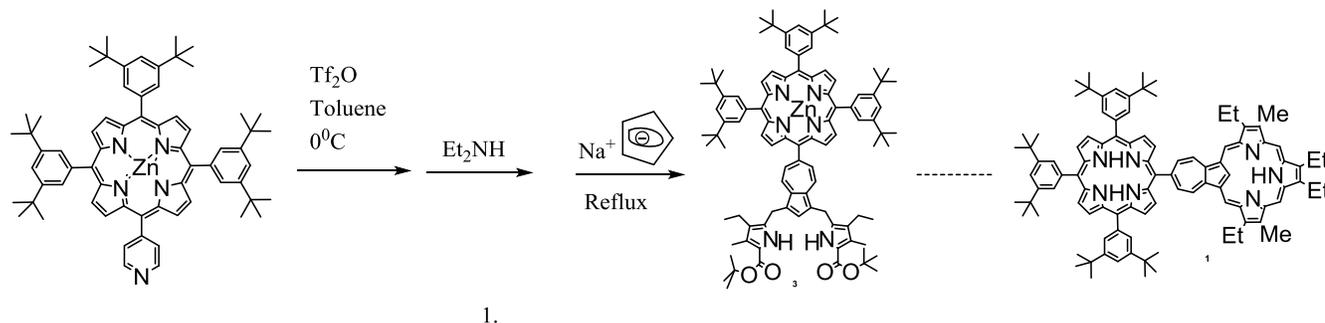
Mentor

Prof. Timothy Lash

Authorship

Mollie Metallo; Timothy Lash

Porphyryns can be linked through alkyl or aryl groups, or via metal coordination, to form porphyrin-porphyrin conjugates. The study of linked porphyrin systems provide insights on the effects of aromaticity, facilitates unique metalation chemistry, and allows the study of anionic and neutral substrate binding which has relevance to biological processes. However, the synthesis of linked carbaporphyrinoid structures has not yet been investigated. An azulenylporphyrin was prepared from **1** using the Ziegler-Hafner methodology and converted into a azulitripyrrane **2** that is directly connected to a porphyrin. This intermediate can be used to prepare porphyrin-azuliporphyrins dyads **3**. Alternative routes to azuliporphyrin dimers are also under investigation using bis-azulenylbenzene intermediates.



## THIN-SLICED JUDGMENTS OF POLITICIANS' VOICES

Presenter

Michaud, Melanie  
Graduate, Communication

Mentor

Prof. John Baldwin

The researcher conducted two focus groups to explore voter perceptions of politicians' voices and to investigate which vocalic cues helped form their impressions. The researcher used Bulgarian politicians' voices so that the message had no effect on participant responses. Participants perceived certain politicians more favorably than they perceived other politicians. These participants attributed this positivity to specific vocal cues: low loudness, high pitch variation, high speech rate, high fluency, and clear voice quality. The results showed that certain voices influenced different voter perceptions, though the reason why is indeterminable. The number of positive vocalic cues corresponded with positive voting perceptions, and the number of negative vocalic cues corresponded with negative voting perceptions. Due to the different individual interpretations, and due to the limited number of participants, further investigation should investigate why participants have these perceptions, and whether they are universal.

## IS A TRAINING ON PHYSICIAN ASSISTED SUICIDE EFFECTIVE AT INCREASING HOSPICE WORKERS' KNOWLEDGE ON PHYSICIAN ASSISTED SUICIDE?

Presenter Miller, Terri  
Graduate, Social Work

Mentor Prof. Kathryn Conley Wehrmann

Physician assisted suicide (PAS) refers to when an individual self-administers a lethal dose of medication that has been prescribed by a physician (Reese, 2013). A physician writes a prescription for a lethal medication, which the patient then obtains and is able to self-administer when the patient chooses. PAS is different from euthanasia, which is when a physician provides the lethal treatment (Reese, 2013).

Florida was the first state to consider a "right to die bill" in 1967. This bill was not enacted. Oregon became the first state to vote in favor of a right to die bill in 1994. This bill did not become enacted until 1997 due to an injunction from the United States Supreme Court (Compassion and Choices). Since 1994, there have been over 140 pieces of legislative proposed in 27 different states. (No DC Suicide).

Currently, there are six states that do allow PAS; these states are Oregon, Washington, Vermont, California, Montana, and Colorado. Colorado was the last state to enact PAS on November 8, 2016. Currently, there are twenty states that are considering PAS legislation (Death with Dignity). Washington DC has approved PAS in an initial vote and PAS is expected to pass the final vote, also (no DC Suicide).

It is expected that PAS legislation will be presented in Illinois in the near future. The purpose of this study is to determine if a training on PAS, that will be given to hospice workers, is effective at increasing the workers' knowledge on PAS. This study will consist of a pre and post-test and mixed methodology. The post-test will provide the subjects an opportunity to reflect on PAS, the effectiveness of the training and if the training had any impact on the subjects' thoughts on PAS.

## HIP, KNEE AND ANKLE JOINT POWER IN THREE WEIGHTED SQUAT JUMP TECHNIQUES

Presenter Morgan, Jason  
Undergraduate, Kinesiology & Recreation

Mentor Prof. Michael Torry  
Co-Mentor(s) Adam Jagodinsky

Authorship Jason Morgan; Michael Torry; Luke Hileman; Sophia Pollalis;  
Andrew Maeda

INTRODUCTION: The vertical jump is one movement used to train and assess power output of the legs. Specifically, loaded vertical jumps have been proven to increase vertical jump performance in a training environment. PURPOSE: The purpose of this study is to evaluate three loaded vertical jump training methods: the barbell back squat jump (BB), the goblet squat jump (GB) and the dumbbell squat jump (DB) on lower limb, peak joint powers. METHODS: Nine male volunteers (age:  $22.1 \pm 1.2$  yrs; Ht:  $1.75 \pm 0.05$  m; Wght:  $76.0 \pm 10.0$  Kg) with at least 2 yrs experience in weight lifting performed 5 trials in each condition of the goblet, back and dumbbell squat jumps (randomized order) utilizing 10% of their 1-RM back squat as the experimental weight. Ten infrared cameras (200Hz) and an AMTI force plate (1,000Hz) collected a full body, 3-marker per segment model and ground reaction force data. All data were smoothed using a 4th order Butterworth filter of 20Hz. GRF data were interpolated down to 200Hz to temporally

align camera and force data. Commercial software was used to calculate 3D lower limb joint angles, moments and powers via inverse dynamics. Differences in peak ankle, knee and hip power values during the jump were compared with RMANOVA ( $\alpha \leq 0.05$ ) with Bonferroni post hoc tests. RESULTS: DB resulted in greater COM maximal jump height compared to BB ( $p < .0001$ ) and GB ( $p = .005$ ). No differences were noted for peak hip joint power ( $p = .23$ ). Peak knee power was larger for DB compared to BB ( $p = .01$ ) but not GB ( $p = .06$ ). At the ankle, DB produced greater power than BB ( $p = .01$ ) and GB ( $p < .001$ ); but no differences were noted between GB and BB ( $p = .40$ ). CONCLUSION: DB produced a greater COM maximal jump height, and greater knee and ankle powers. DB may be a superior training tool to produce increased knee and ankle joint powers.

## **YOU'RE A SUPERWOMAN: A QUALITATIVE ANALYSIS OF A BREAST CANCER AWARENESS FACEBOOK PAGE**

Presenter Ndone, James  
Graduate, Communication

Mentor Prof. John Baldwin

The growth of social media channels over the years has made health communication and promotion easy. Social networking sites such as Twitter, Facebook, Instagram, and YouTube, have become popular avenues for organizations to disseminate health messages and encourage user participation in health topics. The effectiveness of social media in health promotion is becoming a popular area of study for many scholars. However, few studies have investigated actual interactions and user behaviors on Facebook in regards to health communication. This study presents a qualitative case study of a popular Facebook Page aimed at raising awareness of breast cancer. By employing the uses and gratifications theory, the researcher analyzes the content of Wall posts during Breast Cancer Awareness Month, October 2016. Common themes that the author identified included: open forums for self-expression, commodification of breast cancer, among others. Implications for social media and health communication are discussed.

## **COMPARISON OF THE POWER CLEAN AND HANG CLEAN IN RELATION TO FORCE DEVELOPMENT AND INJURY RISK**

Presenter Nimrick, Payton  
Undergraduate, Kinesiology & Recreation

Mentor Prof. Michael Torry  
Co-Mentor(s)

Authorship Luke Hileman; Adam Jagodinsky; Michael Torry

In almost all sports, force and torque development is a key component when it comes to sports performance. The purpose of the research was to compare the power clean and hang clean lifting techniques and their relation to force development and risk for lower back injury. The subjects recorded were college aged (put in ave group age here) male weightlifters with experience performing both the power clean and hang clean lifts. The subjects were fitted with EMG electrodes and reflective markers to capture 3D kinetic and kinematic data. Force plates were used to measure ground reaction forces under each foot. Each subject was required to complete 5 successful repetitions of each lifting technique with 60 percent of the subject's power clean 1RM. In the analysis of the triple extension phase of the movement ground reaction force, hip moment and waist moment of the left side were examined to determine torque development and injury risk. When comparing the average ground reaction forces of each

participant the hang clean technique generated more force than the power clean for every participant. The difference however was not significant with an average difference of 169 N and a SD (+/-137 N). There were differences in hip moment and waist moment when hang clean and power clean were compared. On average the participants recorded higher levels of hip torque (960 N.mm/kg) and higher levels of waist torque (1083 N.mm/kg) when performing the hang clean technique. From these finding when trying to maximize force development both power clean and hang clean techniques are equal effective. However, if injury risk is taken into effect the power clean technique has reduce hip and waist torque during the triple extension phase, reducing the likelihood of lower back injuries.

## **KINETIC CHARACTERIZATION OF LISTERIA MONOCYTOGENES 2-C-METHYL-D-ERYTHRITOL-4-PHOSPHATE CYTIDYLYLTRANSFERASE**

Presenter Oblazny, Mark  
Graduate, Chemistry

Mentor Prof. Jon Friesen

2-C-methyl-D-erythritol-4-phosphate cytidylyltransferase (CMS) converts 2-C-methyl-D-erythritol 4-phosphate (MEP) and cytidine triphosphate (CTP) to 4-diphosphocytidyl-2-C-methylerythritol (CDP-ME). This reaction catalyzes the 3rd step of the bacterial methyl erythritol pathway (MEP) essential for biosynthesis of isoprenes. Isoprenes are a group of precursor molecules involved in biosynthesis of critical metabolites necessary for biological function. Unlike bacteria which utilize the MEP pathway, mammals have the mevalonate dependent pathway for biosynthesis of these vital isoprene precursor molecules. With growing concern of antibiotic resistance, MEP pathway enzymes are promising targets for the development of new antibacterial therapeutics. Here we have cloned and characterized CMS from a pathogenic organism *Listeria monocytogenes* by a well-developed HPLC assay method. Intrinsic tryptophan fluorescence studies were performed to gain insight on a sequential binding order of substrates CTP and MEP. Further studies must be done on this enzyme, as it is key to the development of effective antibiotics to fight human pathogens.

## **KINGDOMS OF GOD: THE PROBLEM OF LATINO PENTECOSTAL ESCHATOLOGY AND SOCIAL ENGAGEMENT IN AMERICA**

Presenter Ott, Beau  
Undergraduate, History

Mentor Prof. Stewart Winger

This essay focuses on Latino Pentecostals in America and the ways they have reconciled their theology with their social ethic. Historically, Latino Pentecostal eschatology has been understood as the same escapist, otherworldly eschatology of 20th century white fundamentalism. Nothing could be done to improve the world, until Jesus came again in glory to judge the living and the dead. The belief in the rapture emphasized their hope for a sudden, dramatic change in their present situation. The general picture of "premillennial dispensationalists," either in the Reformed or Pentecostal/Methodist traditions, has been that because of their pessimism about worldly progress, they generally advocated evangelism and conversion but otherwise advocated withdrawal from the world to await a supernatural salvation. However, recent scholarship indicates that Latino Pentecostals in America have shown an increasing involvement in their social and political spheres. On a national level, Latino Pentecostals such as Samuel Rodriguez and Wilfredo de Jesús are engaging in political conversations on both sides of the spectrum, from immigration reform to pro-life advocacy. On a local level, Latino clergy and laypeople alike continue their century-long history of reaching out to the margins of society by combating drug and alcohol abuse, gang violence, and urban poverty, in addition to other social ills. My thesis contends that such sociopolitical engagement is theologically inconsistent with a pessimistic and escapist eschatology; the relationship between engagement and eschatology

that historians have previously understood Latino Pentecostals to have does not hold. Thus, a new, fuller understanding of Latino Pentecostal eschatology is required to reflect the change in this relationship. I suggest that Latino Pentecostals have adapted their eschatologies to address their present situation. In particular, I offer the contact of both 1970s Catholic Liberation Theology and Protestant prosperity theology with Latino Pentecostalism as the inspiration for these changes in eschatology. This paper draws extensively on secondary sources to identify a serious gap in the literature as well as primary sources such as newsletters, songs, and the periodical *La Luz Apostólica* to address that gap. Through both secondary source and primary source analysis, this study demonstrates that Latino Pentecostal eschatology, although nominally premillennial dispensationalism, has a more optimistic tone and receives less theological emphasis in actual practice due to the influence of external theologies.

## **EFFECT OF WET BREWER'S GRAINS ON THE GROWTH PERFORMANCE, CARCASS PERFORMANCE, AND MEAT QUALITY OF FINISHING CATTLE**

Presenter	Parmenter, Riley Graduate, Agriculture
Mentor	Prof. Justin Rickard
Authorship	Riley Parmenter; David James; Justin Rickard

The objective of this study was to determine the effects of Wet Brewer's Grains (WBG) on the growth performance, carcass performance, and meat quality of finishing cattle. Twenty-four ( $n=24$ ; 12 heifers, 12 steers) beef calves of Simmental-Angus genetics, heifers weighing approximately 303kg and steers weighing approximately 346kg, were utilized and finished at the Illinois State University (ISU) Farm. Animals were utilized in accordance with ISU's Institutional Animal Care and Use Committee (IACUC) approval (Protocol # 014 - 2015). Calves were paired by sex, blocked by body weight (BW) within sex in a 2 x 2 factorial arrangement with three replications per treatment, and fed for 140d. Control diets were a conventional finishing-diet consisting primarily of corn silage and shelled corn. Experimental diets were modeled after the control diet with the inclusion of WBG on a thirty-percent dry matter (DM) basis. Diets were mixed on a per week basis with feed refusal collection prior to the offering of new diet batches (~5d periods) and feed was offered once daily. Calves were weighed every 28d with two-day average weights collected and used to calculate Average Daily Gain (ADG), Average Daily Feed Disappearance (ADFD), and Gain to Feed (G:F). Daily feed offered was increased in constant increments, adjusted from feed refusal, and visually appraised by an industry procurement agent for degree of finish. Calves were transported 159km for slaughter and processing. Following harvest under USDA-FSIS inspection, whole primal ribs (IMPS #1103) were obtained and transported to the ISU Fresh Meat Lab for further fabrication. Boneless ribeye steaks (IMPS #1112) were fabricated from the ninth - eleventh ribs and utilized for further meat quality analyses. Statistical analysis was modeled in a two-way fixed ANOVA utilizing the MIXED procedure of SAS. No differences were observed in Total Gain (TG) and ADG between diets respectively ( $P = 0.6919$ ). Calves fed WBG exhibited an increase in ADFD ( $P < 0.0001$ ). Decreases in G:F was observed in calves fed WBG ( $P = 0.0121$ ). No differences were observed in Hot Carcass Weight (HCW), Yield Grade (YG), or Quality Grade (QG) respectively ( $P > 0.05$ ). No differences were observed in Warner-Bratzler Shear Force (WBSF), Package Purge (PP), or Cook Loss (CL) measurements respectively ( $P > 0.05$ ). This data indicates WBG inclusion supports growth performance, carcass performance, and meat quality of finishing cattle similar to that of a conventional corn-corn silage finishing diet.

## INVESTIGATING SPORE KILLER, A MEIOTIC DRIVE ELEMENT, IN THE FILAMENTOUS FUNGUS *FUSARIUM VERTICILLIOIDES*

Presenter	Patel, Tejas Undergraduate, Biological Sciences
Mentor	Prof. Thomas Hammond
Authorship	Tejas Patel; Jay Pyle; Jackson Stephenson; Thomas Hammond

Like humans, most mammals have a diploid genome in their somatic cell nucleus. However, gametes produced through meiosis are haploid and Mendelian genetics shows that each allele has an equal chance of getting propagated to the next generation. Contrastingly, discovery of selfish DNA or meiotic drive elements has shown their ability to distort the segregation ratio to favor one allele over another, skewing the ratio away from 1:1. *Fusarium verticillioides*, a filamentous fungus, is a haploid organism that harbors a meiotic drive element called *Spore Killer (SK)*. Our previous work on SK yielded a novel DNA sequence on chromosome V that is absent in strains not harboring the SK. The sequence appears to code for a protein which was named *Spore killer candidate 1 (SKC1)*. The possibility that SKC1 is responsible for segregation distortion is discussed.

## THE RELATION BETWEEN UNIMANUAL MANIPULATIONS AND RDBMS DURING INFANCY

Presenter	Pattanakul, Duangporn Graduate, Psychology
Mentor	Prof. Julie Campbell
Authorship	Duangporn Pattanakul; Julie Campbell

Unimanual manipulation appears temporally before the onset of role-differentiated bimanual manipulations (RDBM) (Nelson, Campbell, & Michel, 2013). Unimanual manipulations are behaviors in which one hand performs an action, while RDBMs require the use of two hands to perform complementary tasks simultaneously. Campbell, Marcinowski, Babik, & Michel (2015) observed that unimanual manipulations become more distinctive across 6 to 14-months. Babik and Michel (2016a) found that simple forms of RDBMs appear during infancy beginning around 9 months. In an attempt to examine the relation between these two developing types of hand use, we examined the frequency of unimanual manipulations and RDBMs simultaneously across the 9 to 14-month time period. In the current study, we examine the relation between the development of unimanual manipulations and the development of RDBMs by observing the frequencies of both behaviors across the 9 to 14-month time period in infancy.

Fifty infants were observed during a play situation in which a researcher presented 32 objects to an infant while seated at a table. During the unimanual manipulation portion of the trials, the objects were placed into the infant's hands, while during the RDBM manipulations, the objects were placed on the table within reaching distance of the infant. Video recordings of the session were then analyzed for the number of unimanual and RDBMs that the infant performed during each monthly session. Hierarchical linear modeling was used to create trajectories of each of the behaviors across the 9 to 14-month time period and to analyze the relation between the intercepts and slopes of these trajectories.

The results show that there is a relation between unimanual manipulations and RDBMs such that greater unimanual manipulation skill is related to the development of RDBM skill across the 9 to 14-month time period. Specifically, frequencies of unimanual manipulations were predictive of the number of both simple and difficult RDBMs performed from 9 to 14 months.

A strong understanding of how infants develop manual skills aids in our understanding of how infants increase cognitive abilities. Researchers have made links between manual exploration and other cognitive functions such as categorization and abstract representations (Iverson, 2010; Casasanto, 2009). Thus, establishing the development of manual skills is important for learning how infants begin to establish more complicated cognitive functions.

## **REACTIONS TO WEAK VS STRONG PUBLIC DISPLAYS OF AFFECTION BY A MASCULINE VS FEMININE GAY MAN**

Presenter	Pavlyuk, Vita Undergraduate, Psychology
Mentor	Prof. Eros DeSouza
Authorship	Vita Pavlyuk; Eros DeSouza

"Millennials," defined as people between the ages of 18 and 35, appear accepting of legal rights for lesbian, gay, bisexual, and transgender (LGBT) people, with 72-73% of sampled millennials supporting laws protecting LGBT individuals against discrimination in jobs, public accommodations, and housing (Cox & Jones, 2015). Similarly, a study with a nationally representative sample revealed strong support for formal rights (e.g., family leave) being extended to same-sex couples; however, there was clear antigay bias for all informal privileges that reflected public displays of affection (PDAs), with heterosexual men being especially less approving of two gay men holding hands, kissing on the cheek, and French kissing (Doan, Loehr, & Miller, 2014). Perceptions of two fictitious homosexual students (i.e., a pair of two gay men or a pair of two lesbians), with one being portrayed as stereotypically masculine and the other as stereotypically feminine, showed that male college students liked the masculine gay man more than the feminine gay man, whereas female college students liked both men the same; male and female respondents liked the feminine lesbian more than the masculine lesbian; these results suggest that compatibility with traditional gender roles, especially for male heterosexual students, influenced liking the fictitious students (Cohen, Hall, & Turtle, 2009). Moreover, Lick, Johnson, and Gill (2014) showed that sexual orientation is easily communicated through visible characteristics (e.g., mannerisms and appearance) across two studies. In Study 1, Lick et al. reported that gender-atypical gaits were viewed as being queer, communicated intent to "flaunt" one's sexual orientation, and predicted harsher evaluations. Lick et al. replicated these findings in Study 2 with gendered appearance (facial images). These studies suggest antigay bias against feminine gay men.

Concerning social distance (discomfort and avoidance), in an experimental study, Mahaffey, Bryan, and Hutchison (2005) found that heterosexual men showed more discomfort being near gay men than heterosexual women did around lesbians, as measured physiologically through startle eye blink, with male participants showing antigay bias (e.g., fear and disgust), but not female participants. Buck and Plant (2011) experimentally examined the timing of disclosure of sexual orientation. They found that male participants whose partner self-disclosed as gay early during an "interview" experiment reacted in a negative and avoidant manner, formed more stereotypic impressions of the gay partner (e.g., viewed him as more feminine and artsy), and reacted more angrily/aggressively toward him.

Thus, the current study is an experiment utilizing hypothetical scenarios in which a 20-something year old gay man is depicted in a feminine or masculine way while participants imagine talking with him while waiting for a train to arrive. Once the train arrives, the gay man and his boyfriend either show strong PDA (i.e., repeatedly hugging tightly and French-kissing passionately for a long time) or weak PDA (i.e., briefly hugging and kissing on the cheek only once). We predict that participants will dislike and avoid further interaction with the gay character when he is portrayed

in a feminine way than when he is portrayed in a masculine way. We also predict a significant two-way interaction: the scenario in which the gay man is portrayed in a feminine way and shows strong PDA toward his boyfriend will be rated as the most inappropriate and disgusting, and most likely to evoke a hostile verbal response toward the gay couple. Lastly, we will examine the following predictors of the scenario ratings: participants' gender, political conservatism/authoritarianism, attitudes toward gay people, and previous contact with gays. Specifically, we predict that men, socially conservative individuals, those holding negative attitudes toward gay people, and those with little contact with gay people will react more negatively to the scenarios than their counterparts.

## **CONFLICT THEORY IN HARRY POTTER**

Presenter	Ploss, Jessica Graduate, Criminal Justice Sciences
Mentor	Prof. Shelly Clevenger

The researcher took the eight Harry Potter movies and coded for the presence of Conflict Theory throughout the films. These films followed the story of a young man who finds himself thrown into a world he had no idea he had been apart of since birth. Using previously developed codes, the researcher analyzed the films and collected data on specific examples of various forms of power that occurred throughout the story. This study produced data that proved the existence of Conflict Theory in the Harry Potter series and proved previous research that has been discussed on the subject.

## **HOW WELL PREPARED WERE CLIENTS FOR PUBLIC SPEAKING IN A SEXUAL ASSAULT CRISIS TREATMENT PROGRAM?**

Presenter	Powe, Indea Graduate, Social Work
Mentor	Prof. Kathryn Conley Wehrmann

Public speaking is used as an avenue of healing for survivors of sexual assault. The purpose of this study is to evaluate the effectiveness of public speaking training offered through a sexual assault treatment program. This topic is important to the healing of sexual assault because it allows for survivors to translate their narratives into tools of empowerment while also educating the public on the severity of sexual assault. This is proven to be true with the Clothes Line Project (CLP). The CLP is a national event that takes place so survivors can express themselves through images and words on a T-shirt (Goodnow, 2005). This event offers survivors an opportunity to process their healing while also processing the healing of others (Goodnow, 2005). Public speaking allows for survivors to share their narratives and openly process their healing. Their audience is also given a chance to experience the survivor's journey of healing and empowerment.

In order to assess whether the public speaking training offered at a local's sexual assault treatment program is effective in preparing clients for the public speaking experience, this qualitative study will explore the perceptions of 6-8 former and current clients. Specific aspects to be explored with participants will include perceptions of preparation and the process used with participants following the public speaking engagements. The semi-structured interviews will include six open ended questions and will also offer participants the opportunity to discuss additional thoughts and opinions. Interviews will

be analyzed to identify major themes. Findings may be used to make modifications in the public speaking training and follow-up process of staff with clients.

## **USING LONGITUDINAL GROWTH MODELING TO MEASURE COMMUNICATION GROWTH OF STUDENTS WHO ARE DEAFBLIND**

Presenter Probst, Kristi  
Graduate, Special Education

Mentor Prof. Christina Borders

It may be possible to analyze and predict the communication growth trajectory for students who are DB using Growth Curve Modeling (GCM), a promising statistical method. Some research in the discipline of special education has successfully applied forms of GCM to predict and analyze both group and individual growth trajectories for children with disabilities. Using similar methods, it is hypothesized that the scores obtained from the Communication Matrix along with other variables (i.e., primary disability label and related services) can be used to model the communication growth trajectory for students who are deafblind.

## **READY, SET, GO: A CONTENT ANALYSIS OF THE FAST AND THE FURIOUS FILM SERIES**

Presenter Real, Megan  
Graduate, Criminal Justice Sciences

Mentor Prof. Shelly Clevenger

Sykes & Matza's Neutralization Theory suggest that individuals commit crime by justifying their criminal behavior with one or more of the five techniques of neutralization. These five techniques of neutralization include denial of responsibility, denial of injury, denial of the victim, condemnation of the condemners, and appeal to higher loyalties. A content analysis was completed on the first seven films of The Fast and The Furious film series. This analysis focused on fourteen of the main characters to examine if these characters used the techniques of neutralization as a way to justify their involvement in criminal activity. Results illustrated that appeal to higher loyalties, denial of victim, and denial of injury were the main techniques of neutralization that these characters used throughout this film series.

## **A COMPARISON OF THE IMMEDIATE EFFECTS OF MUSCLE ENERGY TECHNIQUE AND JOINT MOBILIZATIONS ON POSTERIOR SHOULDER TIGHTNESS IN THE YOUTH**

Presenter Reed, Maddox  
Graduate, Kinesiology & Recreation

Mentor Prof. Kevin Laudner  
Co-Mentor(s) Rebecca Begalle

Authorship Maddox Reed; Rebecca Begalle; Kevin Laudner

**Background:** Due to the extreme forces on the glenohumeral (GH) joint during the throwing motion, and the high number of repetitions that occur during overhead sports, alterations in range of motion (ROM) are a common occurrence in overhead athletes, particularly baseball and softball players. The presence of limited GH motion that occurs as a result of posterior shoulder tightness can increase the risk of injury. Despite clinical evidence pointing to the use of joint mobilizations and muscle energy technique (MET) for the treatment of various pathologies, there currently are no data examining comparing the overall effectiveness of joint mobilizations and MET to determine the best treatment method for posterior shoulder tightness.

**Purpose:** To compare the acute effectiveness of MET and joint mobilizations for reducing posterior shoulder tightness by increasing GH horizontal adduction and internal rotation.

**Methods:** Forty-two asymptomatic high school baseball and softball players were randomly assigned to one of three groups. Fourteen participants received one application of joint mobilizations, and fourteen participants received one cycle of MET, between pretest and posttest measures of passive GH internal rotation, external rotation, and horizontal adduction ROM. The remaining 14 participants served as the controls, and did not receive any applied treatment. Data were analyzed using separate one-way analysis of covariance, for both measures of internal rotation and horizontal adduction at two different time periods, immediately after treatment, and 15 minutes after treatment application. The dependent variables consisted of the post-test range of motion values and the covariates were the pre-test range of motion values.

**Results:** Acute results determined that the METgroup had significantly more horizontal adduction ROM post-treatment compared to the control group ( $p=0.04$ ). No differences existed between MET and joint mobilizations or joint mobilizations and the control group for horizontal adduction ( $p>0.16$ ). No significant between group differences existed acutely for internal rotation ( $p>.28$ ). There were no significant between group differences for either horizontal adduction or internal rotation at the 15-minute posttests ( $p>0.70$ ).

**Conclusion:** The results of this study indicate that the application of MET to the horizontal abductors provides acute improvements to GH horizontal adduction ROM in high school baseball and softball players.

## A MARKETING PERFECT STORM: A STUDY ON THE TIMING OF MARKETING PROMOTIONS IN NCAA MEN'S BASKETBALL

Presenter	Remington, Josh Graduate, Kinesiology & Recreation
Mentor	Prof. Rebecca Achen
Authorship	Josh Remington; Rebecca Achen

In sport, the in-game arena atmosphere must provide fans with an added benefit that would keep them from staying home and watching that game from their favorite chair (Boyd and Krehbiel, 2006). This is especially the case within college basketball, where student attendance across the board has seen a dip over the last couple years. Marketers must find new and exciting ways to engage fans of all ages, in hopes that the atmosphere of a live sporting event would trump that of a televised game at home (Boyd and Krehbiel, 2006). The purpose of this study is to identify which promotional marketing aspects or game details result in the highest attendance at men's basketball games across the Big Ten, Missouri Valley, and Ohio Valley Conferences.

Game attendance numbers and marketing plans for men's basketball programs in the Big Ten, Missouri Valley, and Ohio Valley Conferences were gathered by contacting marketers at each university in each conference. Promotions listed on these plans will be coded using a coding scheme adapted from Boyd and Krehbiel (2006). Using SPSS, a regression will be run with attendance as an outcome variable and promotion type as the predictor variable. Day of the week, time of the day, opponent, and winning percentage will be used as control variables. Data is currently being coded.

Based on previous research, games that feature a combination of a special theme and promotional giveaway are expected to see the highest attendance. The overall trend is expected to show that the more marketing aspects there are at a game, the higher the attendance will be, when controlling for other game variables.

Marketers at universities can benefit from this study because it will highlight which marketing initiatives result in higher attendance. This allows marketing administrators to stop putting money into promotional events or giveaways that are not effective, and rather put their efforts into more successful events. Attendance at college athletic events, and college basketball specifically, will be greater as a result.

References Boyd, T. C., & Krehbiel, T. C. (2006). An analysis of the effects of specific promotion types on attendance at Major League Baseball games. *American Journal of Business*, 21(2), 21-32.

## **VETERINARIANS AND THEIR PERCEPTION OF THE TREATMENT OF ANIMAL ABUSE CASES IN THE CRIMINAL JUSTICE SYSTEM**

Presenter	Richardson, Dustin Graduate, Criminal Justice Sciences
Mentor	Prof. Shelly Clevenger
Authorship	Dustin Richardson

This research examines veterinarians' perceptions of the treatment of animal abuse cases in the criminal justice system. Specifically, the researcher set out to uncover whether veterinarians believe the criminal justice system, including law enforcement and the courts, appropriately responds to cases of animal abuse. They were asked to discuss their familiarity with animal abuse and personal experiences in interacting with the criminal justice system in regards to the abuse. These medical professionals are uniquely positioned within society to champion for a population that the criminal justice system has historically failed to protect. Understanding how they view the response to animal abuse and what they believe an appropriate response consists of is imperative to effectively combat the issue of animal abuse. This topic has not been looked at in the criminal justice literature; therefore, this study helps close the gap in the literature. A convenience sampling method was employed to recruit participants. To study their perceptions, semi-structured qualitative interviews were conducted with veterinarians. These interviews were recorded and transcribed. Transcripts were used to develop a coding key; common themes were identified and coded. Preliminary results will be presented.

## **DID THE STAFF OF CHILDREN'S HOME AND AID, CENTRAL REGION, ABSORB THE TRAUMA 101 TRAINING?**

Presenter	Ristow, Leah Graduate, Social Work
Mentor	Prof. Kathryn Conley Wehrmann

Each staff member of Children's Home and Aid, Central Region, will be required to attend Trauma 101 training. By attending the Trauma 101 training, staff will receive a simplified explanation of the impact of trauma on the brain and the human stress response. In addition, they will receive content on how trauma impacts human behavior, emotion, and self-concept and in return become "trauma informed." Staff will learn about triggers and how to shift their thinking as helping professionals so that client behavior makes sense. The training will also explain the impact trauma has on attachment, relationships, physical health, emotional response, behavior, and long-term health consequences. Finally, staff members will learn about the human stress response and how staff can shift beliefs and language around trauma. Approximately 90 staff will attend one of the three scheduled 2 hour trainings. Once all three trainings have been presented, an email will be sent to each staff member inviting them

to participate in an anonymous survey via "Select Survey." The survey will consist of ten questions that will allow staff to rate the helpfulness of training, the quality of the trainers, and to assess whether they understood the material and trainers. The survey will also ask the staff members how much they knew about trauma prior to the training and what extra training might be needed. Survey results will provide the agency with a better understanding of what staff has learned about trauma, as well as their perception of additional trauma training needs.

## **EMBRACING STUDENTS' DIVERSE LITERACIES THROUGH TESTIMONIO: A PEDAGOGY OF THE FLESH**

Presenter Roncero-Bellido, Ana Isabel  
Graduate, English

Mentor Prof. Cynthia Huff  
Co-Mentor(s) Angela Haas

Feminist Latina scholarship has argued for the development of transformative pedagogies and the incorporation of Latina feminist literacies into the classroom (Anzaldúa; Delgado Bernal, Burciaga and Flores Carmona; Elenes; Saavedra and Salazar). These studies underscore the need to decolonize current forms of research and pedagogies of writing and their marginalization of diverse literacies. Building on Latina feminists' transformative methodologies and pedagogies, this presentation brings these issues to the field of rhetoric and composition by proposing a pedagogy of the flesh. This pedagogy introduces students to the genre of testimonio—a form of life writing that emerges out of a situation of oppression—and helps them to adapt the genre to give voice to their own struggles, both as they learn about Latina feminist rhetorics and as they identify with the histories and concepts studied. By reclaiming the genre of testimonio, this pedagogy turns students into active agents of their learning processes and fosters a sense of camaraderie and collegiality in the classroom. This project will study the pedagogical implications of the pedagogy of the flesh as observed in a Latina/o studies class at the undergraduate level and will address the following questions: How do students engage with the genre of testimonio to articulate and develop forms of knowledge? What writing assignments can facilitate the implementation of this pedagogy of the flesh and students' use of testimonio? How does testimonio facilitate students' understanding of Latina feminist rhetorics? And how does the use of testimonio encourage students to engage in solidarity with each other?

## **DEVELOPMENT OF NEW ROUTES FOR THE SYNTHESIS OF CARBAPORPHYRINS AND CARBACHLORINS.**

Presenter Sahota, Navneet  
Graduate, Chemistry

Mentor Prof. Timothy Lash

Carbaporphyrins and carbachlorins are porphyrin analogs in which one of the nitrogens is replaced with carbon within a porphyrin-like cavity. These systems form stable organometallic derivatives and exhibit unusual chemical reactivity. A new route to carbaporphyrins and carbachlorins has been developed. Diels-Alder adduct **1** was prepared from cyclopentadiene and dimethyl fumarate. This was converted in two steps to cyclopentane dialdehyde **2**. Condensation of **2** with tripyrrane **3** in the presence of TFA, followed by oxidation with DDQ in refluxing toluene gave the novel carbaporphyrin **4** in 50% yield together with a low yield of a related carbachlorin. Carbaporphyrin **4** retains macrocyclic aromaticity and afforded a stable silver(III) complex. In addition, alkylation with methyl iodide and potassium carbonate gave a C-methyl derivative and this underwent metalation with

palladium(II) acetate to give the related organometallic species. This approach is currently being adapted for the synthesis of carbachlorins.

## **EVALUATING RESIDENTIAL TREATMENT SUCCESS**

Presenter Sanderson, Naomi  
Graduate, Social Work

Mentor Prof. Kate Sheridan

Examining residential treatment success using a record review and survey for a traditional residential program during fiscal year 2016.

## **PROGRAM EVALUATION OF THE EFFECTIVENESS OF AN OUTPATIENT MENTAL HEALTH RECOVERY GROUP PROGRAM**

Presenter Satchwell, Jennifer  
Graduate, Social Work

Mentor Prof. Kate Sheridan

This research evaluated the effectiveness of an outpatient mental health recovery program at reducing symptoms of anxiety and depression for individuals with diagnosed mental illnesses. The evaluation consisted of two parts: a pre-treatment and post-treatment record review documenting client symptom severity and interviews with staff members who facilitated group curriculum. Findings will be used by program administrators and other stakeholders to evaluate the effectiveness of the program and to identify potential improvements.

## **WHAT FACTORS INFLUENCE RELAPSE IN ADULT DRUG COURT CLIENTS AT CHESTNUT HEALTH SYSTEMS?**

Presenter Satchwell, Kristen  
Graduate, Social Work

Mentor Prof. Kathryn Conley Wehrmann

Authorship Kristen Satchwell

Intensive outpatient and outpatient treatment for substance abuse disorders are a very time sensitive and rigorous form of intervention that is reductive of harm in nature. For those completing treatment as a probationary requirement, the limitations of the interventions are even more so. Unlike voluntary treatment programs, McLean County Adult Drug Court clients risk getting their probation revoked if additional charges are filed while in the program or if there is significant failure to remain sober. With successful sober living as the ultimate goal for clients in treatment, reduction of relapse is critical, especially for those in the McLean County Adult Drug Court program.

This multi-variant, exploratory case review study will use qualitative data to answer the research question: What factors influence relapse in Adult Drug Court clients at Chestnut Health Systems?

Each client enrolled in the McLean County Adult Drug Court program will have the opportunity to participate in this study. Recruitment for participation will take place before the start of group treatment sessions at Chestnut Health Systems. The invitation for participation will be given at several group treatment sessions in order to include everyone in the most efficient way possible. After consent to participate is given, each client's individual session case notes will be explored to identify social, environmental, or individual personal factors that contribute to, or lead to the cause of relapse of either alcohol or drugs. The probable factors have been identified through relative literature but any and all contributing factors found through this study will be included in the data collection. Findings of the research will be shared with Chestnut Health Systems staff. The results will show what factors influence relapse the most. These findings may assist Chestnut Health Systems staff in deciding what interventions or treatment work to give clients, based on what influences relapse the most, since the ultimate goal of the program is to increase successful sober living by decreasing relapse incidents.

## **TRAUMA-INFORMED CARE IN THE SCHOOL SETTING IN MCLEAN COUNTY**

Presenter Schertz, Natasha  
Graduate, Social Work

Mentor Prof. Kate Sheridan

Using a survey, this proposed program evaluation aims to describe the knowledge and perspectives of trauma-informed care among staff (special education teachers, school social workers, and school psychologists) at Unit 5 school district. Findings will be used by administrators to identify potential improvements to staff training on trauma-informed care.

## **DIFFERENCES IN TRAIT PREFERENCES IN POTENTIAL PARTNERS BETWEEN MEN AND WOMEN**

Presenter Schladenhauffen, Kamie  
Undergraduate, Sociology/Anthropology

Mentor Prof. Susan Sprecher

Over the years, many studies have been conducted regarding the mate selection process. Men have been found, more than women, to value youth and physical attractiveness in a partner, and women have been found to value ambitious partners who have money and a higher social status more than men (e.g., Buss, 1989; Hatfield & Sprecher, 1995). These gender differences have been explained by evolutionary factors and social factors. This study extends the prior research in many ways. First, we consider preferences not studied in prior research, such as the importance of having a partner who is approved of by and can be integrated with one's social network. Many of the traits used in prior mate selection literature focus on characteristics of the other (such as physical attractiveness). Second, this study contributes to the literature on gender differences in mate preferences by also examining differences in men's and women's views of how their preferences have changed over time. A preliminary sample of 438 single (unattached) individuals (30.8% male, 69.2% female, with a mean age of 23.22 years) completed either an online version or a paper version of a survey that included several measures referring to being single and unattached. The survey measured how much the participants preferred various characteristics in a partner and included separate items asking how they believe their preferences have changed over time. For trait preferences in a partner, men desired all of the following in a partner significantly more than women did: intelligence, physical

attractiveness, physical fitness, similarity, and nice body. Women, on the other hand, desired all of the following traits in a partner significantly more than men did: financial security, network approval, friendliness, ambition, has a good job, kindness, good earning potential, good parenting potential, educated, and willingness to merge networks. For changes in preferences over time, men were less likely than women to say that the following traits had decreased in importance: physical attractiveness, physical fitness, friendliness, kindness, and nice body. Women were more likely than men to say that the following traits had increased in importance over time: intelligence, financial security, good personality, network approval, ambition, has a good job, good earning potential, good parenting potential, educated, and willingness to merge networks. These findings extend the prior research on gender differences in mate preferences by including previously unstudied traits and by looking at perceived changes over time.

## CHOICES COURSE PROGRAM EVALUATION

Presenter Seidelman, Laura  
Graduate, Social Work

Mentor Prof. Kate Sheridan

This mixed methods program evaluation aims to assess if there are specific interventions and/or variables which contribute to a student successfully completing the Choices course at Normal Community West High School.

## ORWELL AND THE EFFECTS OF THE BRITISH EMPIRE

Presenter Serpe, Carli  
Undergraduate, History

Mentor Prof. Sudipa Topdar

Though many simply overlook events of the past, the truth of the matter is that we are constantly shaped by the aftermath of history. George Orwell's novel *Burmese Days* (1934) is a perfect example of the connections between how the British Empire ruled its colonies and to our contemporary times in the United States. The novel not only demonstrates the contrast between progressive and conservative Englishmen and the natives of India and Burma, but also how their attitudes reflected the workings of racism as a fundamental part of colonization. Reading Orwell in today's United States shows a modern society a glimpse of the origin to some of our nation's most inconsolable issues.

George Orwell was an English writer and critic who fought for social equality. His novel *Burmese Days* reflects one Englishman's journey during his time in Burma when it was under British rule. The novel depicts his relationship between his fellow Englishmen, a Burmese doctor, and a young lady that he attempts to court. Though on the surface of the novel it may seem like a general story, it touches upon the topic of a progressive versus a conservative viewpoint through the eyes of its various characters. The conservative views are held by both the Englishmen (who believe that the Burmese men are inferior) as well as the Burmese doctor (who has internalized that all Englishmen are superior). Although the protagonist holds onto progressive views of equality for all men, he is too timid to voice those views in front of other Englishmen.

Throughout our nation's growth, the conflict between these conservative and progressive viewpoints remains supreme. The legacies of colonization, and the concept of a superior race and gender hierarchies, have parallels in the American

experience in the United States. Although, there are people willing to challenge conservative views, we are still a nation run by these principals, both subconsciously in terms of how our society is set up and consciously by those who we elect ignoring and creating policies that oppress minorities.

## **WHAT IS THE NEED FOR SUPPORT GROUPS FOR WOMEN EXPERIENCING POSTPARTUM DEPRESSION IN MCLEAN COUNTY, ILLINOIS?**

Presenter

Shaw, Abigail

Graduate, Social Work

Mentor

Prof. Kathryn Conley Wehrmann

The purpose of this study is a needs assessment to evaluate the need for support groups for women experiencing postpartum depression in McLean County, Illinois. This study seeks to find what services and supports are currently available in McLean County for women experiencing postpartum depression, as well as uncover any gaps in services/supports that need to be addressed in the future. The data collection method for this needs assessment is a three question survey that will be administered via telephone or e-mail with staff working at 17 different agencies in McLean County that serve women and children. The questions will assess the prevalence of postpartum depression with the population the agency serves, as well as where agency staff refer clients with symptoms of postpartum depression in the community; and whether or not they think that support groups would be a beneficial addition to the community for women with postpartum depression.

## **EXPLORATION OF OXIDOPYRYLIUM-ALKENE [5+2] CYCLOADDITION REACTIONS**

Presenter

Shaw, Jessica

Undergraduate, Chemistry

Mentor

Prof. Adrew Mitchell

Authorship

T Andrew Mitchell; Jessica Shaw

Bridged polycyclic ethers, produced by oxidopyrylium-alkene [5+2] Cycloadditions, are commonly found in diverse biologically active natural products. The overall goal is to increase selectivity and functional group compatibility for oxidopyrylium intermediates en route to cycloaddition reactions, in hopes to establish oxidopyrylium-alkene [5+2] cycloadditions as a synthetic tool. Starting with inexpensive materials a four-step synthesis led to an  $\alpha$ -silyloxyppyranone. Once this is produced in decent yield, two more steps will lead to the cycloaddition product, and then directing groups will be utilized to create regio-, diastereo-, and enantioselectivity within the cycloaddition product.

# THE EFFECTS OF TRX SUSPENSION TRAINING ON AN ASYMMETRICAL WEIGHT SHIFT DURING A DOUBLE-LEG SQUAT

Presenter

Shruck, Samantha

Graduate, Kinesiology & Recreation

Mentor

Prof. Rebecca Begalle

**Introduction:** It is estimated that 54% of all sport related injuries are to the lower extremity, specifically the knee and ankle. Following injury many individuals demonstrate an asymmetrical weight shift during a double-leg squat, which may increase risk of further injury. Asymmetries are driven by a variety of factors including range of motion and neuromuscular control. The goal of rehabilitation is to identify asymmetrical movement and utilize evidence-based techniques to retrain deficient movement patterns. The double-leg squat is a reliable movement task to identify asymmetrical weight shifts. Based on the theory and purpose of suspension training (TRX), it may be one clinical tool to aid in retraining movement and diminish asymmetrical loading. However, the effects are currently unknown.

**Objective:** To compare hip position (kinematics) in individuals with an asymmetrical weight shift during the double-leg squat with and without suspension training. A secondary objective is to describe passive hip rotation range of motion (ROM) in the same individuals.

**Methods:** Cross-Sectional Design.

**Population:** Healthy, 18-30 year old, participants with an asymmetrical weight shift during the double-leg squat. Participants were physically active and injury free at the time of testing. Physically active is defined as exercising at least three times per week or a total of 90 minutes.

**Procedures:** Potential participants were screened for the presence of an asymmetrical weight shift to be included in this study. After inclusion was verified, passive hip rotation range of motion measures were performed using a digital inclinometer on both legs. Participants performed five continuous double-leg squats for the baseline condition and then performed the same task with the TRX suspension trainer. A video of all squat trials were recorded using an iPad with two-dimensional motion analysis software to calculate hip joint angles during each condition.

**Main Outcome Measures:** Bilateral limbs of each participant were assigned as the limb shifted away from (AWAY) and limb shifted toward (TWRD) based on their asymmetrical squat during participant screening. Hip adduction angle during the double leg squat will be compared between limbs (AWAY, TWRD) and between conditions (Baseline, TRX) using a two way analysis of variance. Passive hip internal rotation ROM and external rotation ROM will be compared between limbs utilizing a paired samples t-test.

**Results: Conclusion:**

# A COMPARISON OF HIP AND KNEE STRENGTH IN INDIVIDUALS WITH AND WITHOUT PATELLOFEMORAL PAIN SYNDROME (PFPS)

Presenter

Slicer, Jeremy

Graduate, Kinesiology & Recreation

Mentor

Prof. Rebecca Begalle

**Introduction:** Patellofemoral pain syndrome (PFPS) is one of the most common lower extremity diagnoses seen in a physically active population that seek care at orthopedic clinics. Despite the high rate of incidence and straightforward symptoms, the underlying cause of this pathology is still in dispute. PFPS may have multiple pathological contributions,

one being increased anteriorly directed shear forces on the tibia. The shear force may be a result of a weakness of the hip extensor and an overreliance on the quadriceps by the individual during movement. Although there have been studies documenting that women are more likely to develop PFPS and that women have a significantly higher knee-hip extensor strength ratio when compared to men, no study has examined the relationship between PFPS and a knee-hip extensor strength (KE:HE) ratio.

**Objective:** To examine the relationship of knee extensor strength to hip extensor strength in healthy active individuals with and without PFPS.

**Design:** Case-control.

**Participants:** Fifty male and female participants, with and without PFPS, between the ages of 15-25 years old participated in the study. All participants were currently physically active, defined as some form of physical activity three times per week for at least 30-minutes, and had a history of at least 2-years of recreational and/or competitive sports participation in their lifetime. Participants with diagnosed PFPS were included if they met both subjective and objective clinical criteria.

**Procedures:** Inclusion criteria was confirmed for appropriate group allocation. All participants completed the Kujala Anterior Knee Pain Scale (AKPS) questionnaire. Participants then performed maximal voluntary isometric contractions for knee extension (quadriceps) and hip extension (gluteus maximus) strength. Strength measurements were taken for three trials of 5-seconds each, using a hand-held dynamometer.

**Main Outcome Measures:** Qualitative knee pain was measured with the AKPS questionnaire. Peak muscle force output was normalized using an allometric scaling method based on the principle of geometric similarity. The normalized values for the mean peak hip extensor strength, knee extensor strength, and KE:HE ratio were calculated. Independent samples t-tests were performed to compare subjects of the PFPS group to subjects of the healthy control on each measure.

**Results: Conclusion:**

## SYNTHESIS OF HETEROCARBAPORPHYRINS FROM CARBATRIPYRRIN INTERMEDIATES

Presenter	Smolczyk, Tyler Undergraduate, Chemistry
Mentor	Prof. Timothy Lash
Authorship	Tyler Smolczyk; Timothy Lash

Carbaporphyrinoid systems have been widely investigated due to their intriguing aromatic characteristics, unusual reactivity, and ability to form stable organometallic derivatives. In this project, a new approach to heterocarbaporphyrins has been developed. Base-catalyzed reaction of technical grade indene with pyrrole-2-carboxaldehyde produced the corresponding fulvene 1. Reduction of 1 with  $\text{LiAlH}_4$  gave a dihydrofulvene, and further reaction with furfural or thiophene-2-carboxaldehyde afforded the carbatripyrrin intermediates 2 and 3. Carbatripyrrin 2 reacted with aromatic dialdehydes to yield carbaporphyrinoid systems. In addition, condensation of 2 with aromatic dicarbinols gave a series of heterocarbaporphyrins 4. Using this methodology, the first examples of porphyrin analogues with four different atoms within the macrocyclic cavity have been synthesized.

## IS THE "ZONES OF REGULATION" CURRICULUM EFFECTIVE AS A GROUP THERAPY INTERVENTION WITH ELEMENTARY SCHOOL STUDENTS?

Presenter	Staker, Maggie Graduate, Social Work
Mentor	Prof. Kathryn Conley Wehrmann

The purpose of this study is to identify whether or not the Zones of Regulation Curriculum is effective as a small group therapy intervention with elementary school students. This curriculum is designed to help students learn to use strategies in the area of self-regulation, specifically, how to become more aware and independent in controlling their emotions and impulses, managing their sensory needs, and improving their ability to problem solve conflicts. This study will analyze data from four to six Peoria School District students' pre-test and post-tests, as well as identified teacher surveys to identify whether or not this curriculum is effective at teaching self-regulation skills. The questions on the students' pre-test and post-test will be answered using a five-point scale. The teacher survey will consist of four questions that focus on how the curriculum has impacted students' ability to manage emotions, problem solve more effectively, and interact more appropriately with peers and staff. Findings from the study may help guide decision making about the future use of the curriculum.

## **COPING WITH BULLYING: THE EFFECT OF BYSTANDER REACTIONS A QUALITATIVE FOLLOW-UP STUDY**

Presenter	Taylor, Anna Graduate, Psychology
Mentor	Prof. Leandra Parris
Authorship	Brooke Troisi; Anna Taylor

Victims of bullying are at risk for experiencing a wide range of adverse effects, including social stress, depression, and anxiety (Gini & Pozzoli, 2009; Kochenderfer-Ladd & Skinner, 2002; Lemstra, Nielsen, Rogers, Thompson, & Moraros, 2012). Furthermore, the reactions of bystanders when bullying occurs can exacerbate the negative impact that bullying has on the victim. In fact, many studies have shown that increases in the number of bystanders that respond passively to bullying is associated with increases in the negative feelings experienced by the bullying victim. While there has been a great deal of research on bystander reactions and recommendations for victims, little focus has been placed on how bystander responses to bullying impact how the victim chooses to cope. The present study is a qualitative follow up to a previous quantitative study. The study aims to examine if certain bystander reactions (e.g., peer support, ignoring, joining in the bullying) result in participants reporting they would use different forms of coping based on the observed bullying situation (e.g., it is possible that participants who witness bystanders standing up to a bully are more likely to report using a similar mechanism to cope when they experience bullying). The present study consisted of participants in 4th-8th grade. Students were presented with three hypothetical bullying situations in which the bystander supported the victim, joined in the bullying, or ignored the situation. Then, students were asked follow up questions to determine what coping mechanism they would use in each situation. Preliminary findings of the study indicated that students tended to report thoughts of self-blame and embarrassment when the bystander ignored the bullying, and feelings of anger when the bystander joined in the bullying. Full analyses of the codes and qualitative data, as well as comparisons to quantitative findings a previous study, will be completed Spring 2017. The findings from this study will be beneficial for school personnel and other individuals working with children, as they provide useful information about the impact that bystander reactions can have on how children cope with bullying.

## COMPUTATIONAL STUDIES OF THE REACTION OF ATOMIC OXYGEN WITH PROPARGYL CHLORIDE

Presenter	Tesar, Lucas Undergraduate, Chemistry
Mentor	Prof. Jean Standard
Authorship	Lucas Tesar; Jean Standard

One of the most popular energy sources for the U.S and the rest of the world is the combustion of hydrocarbons. This large use of fossil fuels along with a lack of strict pollution controls in many countries contributes to the estimated 2.4 million premature deaths per year due to cardiovascular and respiratory diseases [<http://pubs.healtheffects.org>]. Lower cost pollution controls are needed to mediate these effects. The development of lower cost pollution controls depends on a detailed understanding of the fundamental chemical reactions involved in combustion; however, the knowledge is incomplete for many types of combustion reactions. The first step in most combustion pathways involves the dissociation of diatomic oxygen,  $O_2$ , into two oxygen atoms,  $O(^3P)$ . In this study, the reaction pathways for the reaction of  $O(^3P)$  with propargyl chloride have been investigated computationally using the M062x level of theory and cc-pVTZ basis set. Geometry optimization and vibrational frequency calculations were carried out on key transition states and intermediates present in the reaction pathways. The calculations were performed using the software package Gaussian09. The geometrical parameters, electronic energies, and vibrational energies of the structures were recorded. Other pathways that involve the formation of HCl due to the presence of chlorine also have been investigated.

## PARENTING CLASSES AT CYFS

Presenter	Triplett, Jade Graduate, Social Work
Mentor	Prof. Kate Sheridan

The proposed study aims to assess gain in knowledge of parenting skills attained by clients who have completed parenting classes at the Center for Youth and Family Solutions. The study utilized a pre-posttest design to assess knowledge attainment. The parenting class encompasses 25 units, each focusing on an aspect of parenting.

## INCUBATION OF LEISHMANIA TARENTOLAE WITH VANADIUM COMPLEXES TO ASSESS THEIR POTENTIAL AS THERAPEUTIC DRUGS

Presenter	Wallace, Craig Graduate, Chemistry
Mentor	Prof. Craig McLauchlan
Co-Mentor(s)	Marjorie Jones
Authorship	Craig Wallace; Marjorie Jones; Craig McLauchlan

Leishmania is a genus of single cell parasitic organisms that are the cause of the leishmaniasis, a disease that can manifest itself as skin disorders or internal infections. These organisms are commonly found in the arid regions of the Middle East, as well as areas in and surrounding Central America and parts of South America, as well as India, and the eastern portion of China. Current medical treatments for leishmaniasis are expensive and have undesirable side effects, leading to large numbers of the infected populations untreated. This can lead to permanent disfigurement and other health issues or even death. For these reasons, newer and safer therapies for leishmaniasis treatments are desired. Using the species *Leishmania tarentolae* as a model system, previously synthesized vanadium complexes are tested for their anti-leishmanial properties thus potential therapies. These complexes have previously been tested in clinical trials for diabetic patients because of their ability to inhibit tyrosine phosphatase, allowing for more glucose uptake in diabetic persons. Incubation of the *Leishmania* cells with vanadium complexes and testing the viability of cells will help determine the potential for a new class of therapeutic drugs against this disease affecting fifteen to twenty million people worldwide. Our latest results are presented here.

## DEVELOPING A REVISED PERFORMANCE-PERCEPTUAL TEST USING QUICK SPEECH-IN-NOISE TEST MATERIAL

Presenter	Wetmore, Matthew Graduate, Communication Sciences and Disorders
Mentor	Prof. Hua Ou
Authorship	Matthew Wetmore; Hua Ou

**Objective:** Two audiometric speech measures have been recognized to be useful to predict hearing aid use success: the Quick Speech-in-Noise (QuickSIN) test and the Performance-Perceptual Test (PPT). The PPT involves using the same speech test material (Hearing In Noise Test; HINT) twice, to evaluate patients' objective and subjective speech recognition performance in noise and the discrepancy between the two measures (Performance-Perceptual Discrepancy; PPDIS). Utilizing the QuickSIN with the PPT (Revised-PPT) may provide a clinician with two important pieces of information from one test to help predict hearing aid use success and the need for counseling. This study aimed (1) to evaluate the validity and reliability of using the QuickSIN speech material to administer the PPT and establish normative data across listeners with normal hearing (NH) and hearing loss (HL); and (2) to examine the relationship between the Revised-PPT and hearing aid use outcome.

**Methods:** Of the total 65 participants between 18 and 88 years of age, 20 (31%) had normal hearing and 45 (69%) had essentially sensorineural hearing loss, ranging from mild to profound in both ears. Thirty-two of the 45 participants with hearing loss were hearing aid users. All participants completed the original PPT using HINT and the Revised-PPT using QuickSIN, via soundfield. Hearing aid users completed the tests unaided, along with completing the International Outcome Inventory for Hearing Aids (IOI-HA).

**Results:** There were no significant PPDIS differences between the NH and HL groups ( $t(63) = 1.08, p = .28$ ). Normative values for the Revised-PPT were established, placing underestimators with a PPDIS at  $\leq -1.0$  dB, overestimators at  $\geq 0.63$  dB, and accurate estimators in-between these two values. The results revealed 14% of disagreement across all participants when participants were identified as underestimators on the Revised-PPT but overestimators on the original PPT, or vice versa. The Revised-PPT provided high test-retest reliability (Performance  $r = 0.92$ ; Perceptual  $r = 0.84$ ; PPDIS  $r = 0.62$ ; all  $p$  values  $< .0001$ ). The results from a step-wise multiple regression indicated that the PPDIS from the Revised-PPT and age explained 18.5% of the variance in reported hearing aid outcome on the IOI-HA. It appeared that better self-reported hearing aid outcome on the IOI-HA is associated with older age and overestimation of listening ability.

**Conclusions:** It is concluded that the QuickSIN speech material can replace HINT to measure PPT. The Revised-PPT might be a useful tool in predicting hearing aid use success.

## **INVESTIGATING MULTICULTURALISM WITHIN RUDYARD KIPLING'S THE JUNGLE BOOK (1994)**

Presenter	Weyl, Emily Undergraduate, Teaching and Learning
Mentor	Prof. Miranda Lin
Authorship	Emily Weyl

James Banks' theory, the Dimensions of Multicultural Education (2006), is used by many educators to create a multicultural environment and promote multiculturalism within the classroom. The theory consists of five dimensions: content integration, the knowledge construction process, prejudice reduction, an equity pedagogy, and empowering school culture and social structure. In this presentation, I will talk about how Banks' theory was applied to analyze "The Jungle Book" (1994) written by Rudyard Kipling. The author grew up during the time period when India was being colonized by Britain, causing racial tensions that can be seen through the characterization and overall plot portrayed throughout his text. The Jungle Book is a chapter book compiled of seven short stories which demonstrate issues of white privilege, racial stereotypes, and racial hierarchy. In my presentation, I will use examples from the book to demonstrate issues of racism, social hierarchy, and white privilege. To conclude my presentation, I will address the implications of this presentation based on my analysis. For example, what teachers can do to minimize discrimination, generalization and judgments on individuals based on their race or culture in their curriculum and school settings will be discussed. In addition, how this book can be utilized to teach multiculturalism will be discussed as well.

## **CONFLICT THEORY IN PRISON BREAK**

Presenter	Worman, Timothy Graduate, Criminal Justice Sciences
Mentor	Prof. Shelly Clevenger

This research sought to understand the conflict paradigm at work in the Fox television series Prison Break. It has been well documented that the amount of power and status individuals have in society is correlated with their capacity to affect change, which is often in the furtherance of themselves and their interests. The research conducted found similar results; that is, one's status and power in society comes from the position they hold in society as well as the amount of influence and resources he or she has. To come up with this conclusion, the researcher used a content analysis to systematically evaluate thirteen characters on Prison Break, conducting two case studies, at which the results showed that power and status, and the level of influence and privilege that comes with, does lead to conflict due to the inequitable distribution of scarce resources and power inequality.

# 2017 Symposium Abstracts

## Morning Group Presentations

### EVIDENCED BASED READING ASSESSMENTS AND INTERVENTIONS

Group Leader	Alvarez, Cyndy Graduate, Psychology
Group Members	Jasmine Taylor, Graduate, Psychology. Anna Taylor, Graduate, Psychology. Heather Lacey, Graduate, Psychology
Mentor	Prof. Gary Cates
Authorship	Cyndy Alvarez; Jasmine Taylor; Anna Taylor; Heather Lacey

The average reading score according to the 2015 Nation's Report Card for fourth-grade students was not significantly different in comparison to 2013. Furthermore, 36% of fourth- and eighth-graders performed at or above the proficiency achievement level in reading. Given the above statistics, the area of reading achievement among students continues to be an area of concern, making it critical for educators to be familiar with Best Practices for reading, including evidence-based reading assessments and interventions. This research allows for individuals to learn about evidence based reading assessments and interventions that will address several reading areas (e.g., phonological awareness, alphabetic principles, oral reading fluency, and vocabulary) and cover the instructional hierarchy framework.

### TEACHING A DOG TO COUNT USING THE DO AS I DO SOCIAL LEARNING METHOD

Group Leader	Anderson, Kristina Undergraduate, Psychology
Group Members	Carley Catherine, Undergraduate, Psychology. Julia Henning, Undergraduate, Psychology
Mentor	Prof. Valeri Farmer-Dougan
Authorship	Kristina Anderson; Carley Catherine; Julia Henning

Dogs possess strong social cognition abilities, as well as a variety of quantitative abilities, such as counting and simple arithmetic. For example, bird dogs in a trial must know how many birds to retrieve, how many they have retrieved, and how many more they have to retrieve. Research, however, has suggested it is difficult to get dogs to count using abstract objects. Several researchers suggest that dogs can learn through observational learning, and that this may be a more efficient and natural way to learn. For example, the Do as I Do program, a modeling procedure developed by Claudia Fugazza, uses dogs' innate imitative ability. Dogs learn new behaviors by observing and copying their trainers. Initially, dogs are taught the "imitation rule", then this rule is utilized to teach higher cognitive tasks. The present project compares traditional shaping methods to the Do as I Do approach as a dog was taught to count. A 15-month old Golden Retriever was taught to detect one versus two items. The dog was initially shaped to touch a single yellow magnet placed several feet in front of him and then touch a similar magnet on one of 5 white boards placed on the display board. This was repeated with a blue colored magnet. Once the dog could successfully indicate the magnet on the board for 8 out of 10 consecutive trials, the counting program was begun. During shaping trials, one versus two magnets were placed on the board on the floor, and the dog was rewarded for moving to the display board with the corresponding number of magnets. The dog received a click and then a food reward. The number of blocks of 10 trials to criterion was recorded, with criterion being 8 out of 10 consecutive trials. During the Do as I Do condition, one versus two magnets were placed on the floor. The human model moved toward the board, looked at it, then

moved to the correct board on the display and touched it with her nose. The model moved back into the start position and the dog was prompted to "do it"; he received a food treat for a correct response. Again, the number of blocks of trials to criterion was recorded. Shaping versus the Do It conditions were then compared to determine which was a more effective means of teaching the dog to detect one versus two.

## **COPING STRATEGY DIFFERENCES AMONG BULLIES, VICTIMS, AND BULLY/VICTIMS**

Group Leader	Atteberry, Kelsey Graduate, Psychology
Group Member	Melissa Nink, Graduate, Psychology
Mentor	Prof. Steven Landau
Authorship	Kelsey Atteberry; Ashley Leja; Kristine Nichols; Melissa Nink; Leandra Parris; Steven Landau

Bullying is a common problem among school-aged children. Overt aggression involves hitting, kicking, pushing, or making threats, whereas relational aggression the removal or threat of removal one's relationships to cause harm, including spreading rumors, gossiping, or leaving others out (Mayeux, 2014). Children can be bullies, victims, or both (bully/victims). Both overt and relational aggression is associated with negative consequences, such as internalizing disorders, including anxiety and depression, externalizing problems, such as aggression, and suicide (Aluede, Adeleke, Omoike, & Afen-Akpaida, 2008; Bowker & Etkin, 2014). To overcome these potential negative consequences, children who are victimized need to effectively cope with their bullying experiences. Therefore, the purpose of this study is to examine differences in coping strategies among adolescent girls who engage in and are victimized by bullying. In this study, coping was defined by four strategies: problem-solving (e.g., think of ways to solve the problem), externalizing (e.g., lose your temper), internalizing (e.g., ignore the situation), and self-blame (e.g., think it's your fault). One hundred-ten middle school-aged girls (grades 5th-8th) served as participants. Each completed self-report measures of her history of overt and relational victimization and perpetration, her beliefs about the propriety of aggression to solve social problems, and her need to belong to a group. Participants also completed a self-report questionnaire regarding the strategies they have actually used to cope with bullying. We will assess the relationship between participants' victimization status (i.e., bully, victim, or bully/victim) and the coping strategies they use.

## **EARLY INTERVENTION CLINICIANS' USE OF LSL STRATEGIES WITH CHILDREN WITH HEARING LOSS IN HOME AND CLINIC SETTINGS**

Group Leader	Bricker, Kaitlyn Undergraduate, Special Education
Group Member	Emily Ronto, Undergraduate, Communication Sciences and Disorders
Mentor	Prof. Maribeth Lartz
Authorship	Kaitlyn Bricker; Emily Ronto

In this ongoing study, undergraduate student researchers examined graduate students' use of Listening and Spoken Language (LSL) strategies in early intervention therapy with children with hearing loss in home and clinic settings. Researchers coded these recorded early intervention sessions for the use of LSL strategies such as: 1) acoustic highlighting, 2) pause time, 3) positioning, 4) use of hand cue, 5) auditory sandwich, and 6) voice-action synchrony. These results will be used to identify the LSL strategies used consistently when working with children with hearing loss in home and clinic settings.

## UNDERSTANDING THE ANTECEDENTS OF STATE SUSPICION IN CYBER ENVIRONMENTS

Group Leader	Cerullo, Robert Undergraduate, Psychology
Group Member	Alison Slaughter, Graduate, Psychology
Mentor	Prof. Eric Wesselmann
Co-Mentor(s)	Prof. Alex Barelka
Authorship	Robert Cerullo; Alison Slaughter; Eric Wesselmann; Alex Barelka

We investigated individuals' suspicion - a person's state of simultaneous cognitive activity, uncertainty, and perceived malintent (Bobko et al., 2014) - during online interactions. Three separate factors facilitate suspicion in cyber environments: 1) missing information, 2) negative discrepancies, or 3) system and interface characteristics. In a previous study, we manipulated negative discrepancies by ostracizing participants during an online group interaction (i.e., an online ball-tossing game; Williams et al., 2000). People generally expect equal inclusion in this game, and when ostracized they experience negative outcomes (e.g., psychological need threat; Williams, 2009). Participants played Cyberball in a group of 3 (the participant and two avatars) and were either 1) equally included (33% of tosses), 2) partially ostracized (23% of tosses), or 3) fully ostracized (given 3% of tosses - two at the beginning of the game and then none for the remainder; Williams et al., 2000). We manipulated system characteristics by telling participants that the two avatars were either 1) real participants, 2) pre-programmed computer avatars, or 3) computer avatars that are programmed to "think like a human" and strategically formulate the best solution to complete the game as quickly as possible. Our data demonstrated that ostracism caused distress (e.g., need threat) and increased suspicion in participants, but there was no effect of system characteristics. Post-hoc analyses suggest participants may not have attended to the system characteristic manipulation.

We are currently conducting a follow-up study (150 thus far). We expect that ostracized participants (fully or partially) will experience more distress than included participants. We also expect participants to experience more suspicion when they think the avatars are controlled by humans, rather than computers. Finally, we expect that participants will be more suspicious when they think they are interacting with avatars controlled by a computer that "thinks like a human" compared to basic pre-programmed avatars.

We kept the same negative discrepancies manipulation as the previous study, but strengthened our system characteristics manipulation by 1) removing any previous language that may have induced participants to anthropomorphize the two computer conditions, 2) bolding the specific instructions that conveyed the avatar information, and 3) adding this information under the avatar icons during the game. Additionally, we ask participants attention check questions about the game instructions (including the avatar manipulation) before the game begins. After the game, participants complete a measure of their perceived ostracism and basic need satisfaction, as well as their current feelings of suspicion about the interaction.

## PRODUCTION AS PREDICTION DURING LANGUAGE COMPREHENSION

Group Leader	Chasteen, Terry Undergraduate, Psychology
Group Members	Nick Romero, Undergraduate, Psychology. Julie Pelosa, Undergraduate, Psychology. Aaron Neitzel, Graduate, Psychology
Mentor	Prof. John Cutting

Our study examines the relationship between the processes involved in language comprehension and production. Typically, during normal conversation, every participant switches between producing (e.g., speaking) and comprehending (e.g., listening) language. On the surface it may seem that production and comprehension involve the same set of representations (e.g., words and grammar) and processes, but it may not be that simple. The comprehender's role is to interpret potentially ambiguous linguistic input and determine the speaker's intended meaning. The producer, on the other hand, starts with the intended meaning, and needs to map that meaning on to the appropriate language representations, and then map these onto motor commands (to write or speak). Looking at it this way, imagining production and comprehension as potentially very different processes is not as counter-intuitive. Since both of these processes are used during conversation, they may be interconnected. Our research looked for evidence as to determine whether the production system makes predictions during comprehension.

Data collection is currently on-going. We report the results of two studies using the following procedure. Each participant listened to a recording on headphones of a person saying a sentence (ex. "The baby jumped over the chair") while watching an animation on a computer screen that would either match the audio or not (e.g., a picture of a baby/dog moving across the screen over a picture of a chair). The participants were to attempt to immediately repeat out loud what they heard as soon as possible after the sentence began. These utterances were recorded and transcribed. Experimental trials used pictures that had been previously normed to have clear dominant and subordinate "names." For example, the picture of the baby was typically called "baby" first, and "infant" second. Our expectation was that if production processes are used to predict comprehension, then participants will predict the dominant name "baby." If they hear the word they expect, then we predict their responses will be quicker. Our first factor was the match (dominant) / mismatch (subordinate) between what participants expected and what they heard. Our second factor was whether the critical object picture was located in the subject or the object position of the sentence to see if sentence position has an impact. For the second study, we reduced the delay between the pictures being displayed and the audio playing. This manipulation was used to further explore the time course of the predictions from the production system.

## THE ROLE OF WORKING MEMORY IN EFFECTIVE DIRECTION GIVING AND WAYFINDING

Group Leader	Cody, Olivia
	Graduate, Psychology
Group Member	Haley Hume, Undergraduate, Psychology
Mentor	Prof. Alycia Hund
Authorship	Olivia Cody; Haley Hume

The ability to find your way and communicate directions to others is a very important, multifaceted aspect of everyday life. Working memory is important for bringing together details and making decisions in the moment. These processes are especially important when dealing with direction giving and wayfinding because we need to make decisions rapidly. Working memory can be subdivided into three parts: the central executive, the visuospatial sketchpad, and the phonological loop. The central executive is the main control center. The visuospatial sketchpad stores visual and spatial details, whereas the phonological loop stores verbal information (Baddeley, 1992). Past research has found that wayfinding directions are less accurate when visuospatial working memory is being taxed, compared to verbal working memory and a control condition. Furthermore, wayfinding times were slower when visuospatial memory was being taxed compared to the control condition (Hund, 2016). Hölscher (2011) found that visual cues are important in effective route planning and direction giving. These findings suggest that visuospatial memory may be especially useful in wayfinding and direction giving. The present study investigated the role of working memory in direction giving and wayfinding using a within-subjects design. The sample consisted of 144 participants recruited from a local university. To test the role of working memory in direction giving and wayfinding, a dual-task methodology was used. The dual-tasks included making decisions about times on a clock (taxing visuospatial working memory) or distinguishing between actual or fictitious English words (taxing verbal working memory) while giving directions or finding the best route to a destination in the basement of a complex university building versus only giving directions or

wayfinding. Data on gender, wayfinding attitudes and preferences, and working memory capacity also were collected. As predicted, wayfinding was slower in the verbal and visuospatial dual task trials compared to the single task control trials, suggesting that both aspects of working memory are important for efficient wayfinding. When providing wayfinding directions, more spatial information was given in the control and verbal dual task trials relative to the visuospatial dual task trials, indicating that visuospatial working memory is important. Men provided significantly more spatial information in their wayfinding directions than did women. Low spatial anxiety, global wayfinding strategies, and good sense of direction were associated with more details provided in the wayfinding directions under the dual task conditions. These findings provide important information about the influence of working memory processes on wayfinding and direction giving.

## **VOCATIONAL INTERESTS: AGE AND SEX-BASED DIFFERENTIAL PREDICTION OF JOB PERFORMANCE**

Group Leader	Deering, Tim Graduate, Psychology
Group Member	Duc Nguyen, Graduate, Psychology
Mentor	Prof. Dan Ispas
Co-Mentor(s)	Alexandra Ilie
Authorship	Tim Deering; Duc Nguyen; Dan Ispas; Alexandra Ilie; Dragos G. Iliescu

Recent research has renewed interest in the study of vocational interests (VI) as predictors of important workplace outcomes (Iliescu et al., 2015, Nye et al., 2012, Van Iddekinge et al., 2011). In addition to interest scores (e.g. RIASEC), VI allow the computation of profile coefficients. In fact, recent evidence suggests that VI profile coefficients have stronger relationships with job performance than the "classic" interest scores (Iliescu et al., 2015; Nye et al., 2012). In addition to criterion-related validity, it is also important to examine the differential prediction of VI profile coefficients. Differential prediction occurs when there are subgroup differences in the regression lines linking predictor (in our case VI profile coefficients) to a relevant criterion (in our case job performance). The presence of differential prediction can result in important fairness-related and legal consequences. The goal of the current study is to explore the differential prediction of VI profile coefficients in relation to three dimensions of job performance: task performance, contextual performance and counterproductive work behaviors (CWB). We will employ data from four multi-source samples collected in Romania. The first sample (N = 366 supervisor-employee dyads) is focused on task and contextual performance. Sample 2 (N = 226 supervisor-employee dyads), Sample 3 (N = 189 employees and 76 supervisors) and Sample 4 (N = 245 supervisor-employee dyads) are focused on CWB as the criterion. To examine differential prediction by age and sex, we will conduct moderated regression analyses in each sample. While VI and profile coefficients have shown potential as predictors of job performance, we are not aware of studies investigating their differential prediction. The current study will fill this gap and address an important issue for scientists and practitioners. Implications for the findings will be discussed.

## **OLDER MALES SWITCH UP SOONER: A DYNAMIC TERMINAL INVESTMENT THRESHOLD IN MALE CRICKETS**

Group Leader	Duffield, Kristin
School	Graduate, Biological Sciences
Group Member	Kylie Hampton, Graduate, Biological Sciences
Mentor	Prof. Ben Sadd
Co-Mentor(s)	Scott Sakaluk
Authorship	Kristin Duffield; Kylie Hampton; Scott Sakaluk; Ben Sadd

Reproductive strategies can be influenced by a variety of intrinsic and extrinsic factors, with life history theory evolution explaining fundamental shifts in reproductive effort. For example, the terminal investment hypothesis proposes that a decreased expectation of future reproduction (e.g. arising from a mortality threat) will precipitate increased investment in current reproduction. Transient increases in reproductive effort should also result in decreased immune function due to trade-offs between reproductive effort and immune function. Terminal investment has been widely demonstrated, but it is largely viewed as a static strategy. However, the level at which a cue of decreased future reproduction is sufficient to trigger increased current reproductive effort (i.e., the terminal investment threshold) may depend on context (e.g. an individual's age or intrinsic condition). Using a simulated infection cue in male decorated crickets (*Gryllobates sigillatus*), we investigated a dynamic terminal investment threshold for reproductive effort that is based on intrinsic differences related to age, and the corresponding immune investment. Specifically, we measured reproductive effort (time spent calling to attract mates) and immune function (hemocyte proliferation and lysozyme-like activity) in young and old male crickets across a gradient of increasing infection cue. For calling effort, the level of infection cue showed an interaction with age. Young males reduced their calling effort at all infection levels, but older males increased calling at moderate and high levels. Immune analyses are ongoing, and will also be presented. Overall the results support the existence of a dynamic terminal investment threshold that merits wider consideration in empirical tests of life history theory.

## **"SLIDE OUT OF MY DMS": COMPUTER-MEDIATED COMMUNICATION VERSUS FACE-TO-FACE COMMUNICATION IN GETTING-ACQUAINTED INTERACTIONS**

Group Leader	Econie, Alexis Undergraduate, Sociology/Anthropology
Group Members	Cristian Lucas, Undergraduate, Psychology. Christian Reather, Undergraduate, Psychology. Kamie Schladenhauffen, Undergraduate, Sociology/Anthropology. Brandon Stewart, Undergraduate, Sociology/Anthropology. James Pokorn, Undergraduate, Sociology/Anthropology. Bianca Morales, Undergraduate, Psychology
Mentor	Prof. Susan Sprecher
Authorship	Alexis Econie; Cristian Lucas; Christian Reather; Kamie Schladenhauffen; Brandon Stewart; James Pokorn; Bianca Morales.

Initial contact via social networking sites is becoming increasingly popular. In certain circumstances, people meet briefly in face-to-face situations and then later continue contact through computer-mediated communication (CMC). Alternatively, people can meet online, engage in CMC, and later communicate face-to-face (FtF). Theory and recent research suggest that brief interactions that occur over CMC are not as effective as FtF interactions due to factors such as diminished contextual cues and nonverbal language. However, text-based CMC is an increasingly common method that people use to develop relationships. Therefore, more research is needed to examine how CMC differs from FtF communication on a number of dimensions. As an interdisciplinary team of undergraduate students working in Dr. Sprecher's Social Interaction lab in Schroeder hall, we are continuing work on an experiment (that began in fall of 2016) examining the outcomes of getting-acquainted dyads of interacting first FtF and then through CMC versus interacting first over CMC and then FtF. Thus far, approximately 20 dyads (obtained from the Psychology Participant pool) have participated in our experiment, although more data collection will be done before the spring symposium. The dyads are randomly assigned to either begin their interaction through Skype instant messaging or through FtF while using a list of provided self-disclosure topics. After the first approximately 10-minute interaction, they complete a brief online survey about their reactions to the interaction. Then, the dyads switch the medium of communication in a second interaction (i.e., those who engaged in text messages move to a FtF interaction and vice versa). After the second interaction, also lasting approximately 10 minutes, the participants complete a second online survey assessing their reactions. Both online surveys assess many reactions including: perceived closeness, enjoyment of the interaction, liking for each other, and responsiveness of the other. Sample analyses indicate that after the first interaction, there is a clear benefit of initial FtF interaction dyads assigned to the FtF condition in the initial interaction reported more enjoyment, fun, closeness, and so forth. However, the differences were small after the second interaction. Condition comparisons indicated that the slight differences occurred primarily because of the boost in positive reactions occurring for dyads, initially in the text condition moving to FtF. Although society has grown progressively more inclusive to the use of CMC, our preliminary findings suggest FtF interaction provides unmatched benefits in the getting-acquainted process.

## **STIGMA BY ASSOCIATION AMONG RURAL HIGH-SCHOOL YOUTH**

Group Leader	Ferdon, Kathryn Graduate, Psychology
Group Members	Heather Lacey, Graduate, Psychology. Danielle Gieschen, Graduate, Psychology
Mentor	Prof. Adena Meyers
Co-Mentor(s)	Prof. Renée Tobin
Authorship	Kristal Shelvin; Brenda Huber

Stigma by Association (SBA) is the process through which individuals are devalued by others because of relationships with stigmatized persons (Pryor, Reeder, & Monroe, 2012). Family, friends, and even casual acquaintances can experience stigma and devaluation from knowing people with stigmatizing conditions such as illnesses, disabilities, and mental health difficulties. Research consistently suggests that individuals affiliated with someone who has a stigmatizing condition are more likely to conceal their relationship with the stigmatized person, avoid others, and experience mental health symptoms of their own (Stutterheim et al., 2013). Previous research has described SBA among adult relatives of people with HIV/AIDS, disabilities, and mental illness. The present study examines SBA among rural high school youth affiliated with individuals with mental health problems. The sample included 115 students from 3 high schools, 89 (77%) of whom reported knowing someone with a mental health problem. Students affiliated with a stigmatized individual answered free response questions in which they listed their relationship to the individual (e.g., family member, friend, acquaintance) as well as the condition (e.g., depression). Students' perceptions of SBA were assessed with an abbreviated and adapted version of the Stigma-by-Association Scale (Pryor, et al., 2012). This scale assesses cognitive, affective, and behavioral elements of SBA, and also includes subscales measuring perceptions of public stigma (the degree to which the respondent believes people in the community devalue individuals with mental health difficulties) and the amount of social support the respondent provides to the

affiliated person with a mental health condition. Frequency counts were conducted for both relationship and condition type. The most frequently reported conditions were depression (28%) and ADHD (15%). The least frequently reported conditions were eating disorders (.01%) and addiction (.01%). Furthermore, students most often reported knowing a friend or best friend with a stigmatizing condition (59%), compared to a family member (17%). Correlational analyses demonstrated strong relations between all emotional, cognitive, and behavioral components of SBA ( $r=.68$  to  $r=.87$ ,  $p<.001$ ). Students who experienced greater amounts of SBA also reported greater amounts of public stigma ( $r=.64$ ,  $p<.001$ ), and reported providing less support to the individual they know with a mental health condition ( $r= -.51$ ,  $p<.001$ ). These results are consistent with findings from previous research on SBA (van der Sanden et al., 2013; Mak et al., 2008). Results will help school-based professionals support students who may experience stress due to their mental health difficulties.

## **PROMOTING EMOTIONAL REGULATION DEVELOPMENT THROUGH RELATIONSHIP EDUCATION**

Presenter	Gatziolis, Chloe Undergraduate, Psychology
Group Member	Sarah Koppenhoefer, Graduate, School Psychology
Mentor	Prof. Renée Tobin
Co-Mentor(s)	Prof. Leandra Parris

Emotional regulation encompasses the internal processes that relate to an individual's perception of and subsequent portrayal of emotion (Eisenberg, Champion, & Ma, 2004). This form of regulation refers to the extent to which an individual can take in, process, and respond to situational and environmental cues, including the ability to express, as well as inhibit, certain responses when appropriate. Developing effective emotion regulation skills is a key aspect of maintaining healthy relationships. That is, previous research has shown that emotional regulation plays a central role in effective communication and conflict resolution within relationships (English, John, & Gross, 2013). The purpose of the current study is to examine whether engagement in a relationship education curriculum is associated with changes in emotional regulation efficacy. It is expected that students who are more engaged and attend more relationship education sessions will have a greater increase in emotion regulation skills. Participants in the present study complete a relationship education program, Love Notes (Pearson, 2016). This program is a 12-session, evidence-based curriculum that fosters healthy communication, conflict resolution, and emotional regulation skills. Before and after completing this program, participants completed the 14-item Regulatory Emotional Self-Efficacy Scale (RESE; Caprara, Di Giunta, Eisenberg, Gerbino, Pastorelli, & Tramontano, 2008). During each Love Notes session, researchers observed and collected data relating to the session, including the perceived engagement of each participant. Ratings of engagement over time will be correlated with changes in emotional regulation efficacy scores. Results from this study and their implications will be discussed.

## **ADDRESSING MENTAL HEALTH AND SUBSTANCE USE AMONG JUVENILE OFFENDERS**

Group Leader	Gieschen, Danielle Graduate, Psychology
Group Members	Heather Lacey, Graduate, Psychology. Margaret Christie, Graduate, Psychology
Mentor	Prof. Renée Tobin
Co-Mentor(s)	Prof. Adena Meyers
Authorship	Danielle Gieschen; Heather Lacey; Margaret Christie; Renée Tobin; Adena Meyers; Brenda Huber

In recent years, the number of adolescents involved in the juvenile justice system has continued to increase. Recent studies estimate that more than 31 million adolescents are involved in the juvenile court system. (Hockenberry & Puzanchera, 2015; Puzanchera, Adams, & Sickmund, 2011). Theory suggests that children in conflict with the law may require a broader range of services than is typically available in criminal courts, and as such juvenile courts are charged with the responsibility of reducing the barriers that exist in order for children to be rehabilitated (Zang, 2015). As a result, mental health services and substance use counseling has become a concern of juvenile court systems. The prevalence of mental health disorders among juvenile offenders is over 66%, where rates of mental health disorders in the general community is estimated at 20% (Cauffman, 2004). Additionally, research indicates that children with the most serious emotional disturbances were only receiving services within the juvenile justice system and were not being serviced by other agencies (Burns et al., 1995). These results emphasize the importance of providing mental health services to juvenile offenders. The purpose of this study was to examine whether mental health concerns and substance use influenced juvenile offender's likelihood to reoffend in a rural Illinois county. A total of 50 youths probation and court records from 2010 to 2015 were examined and coded to determine whether the youths were receiving mental health counseling or using substances, and if these factors affected recidivism rates. Overall, substance use and receiving mental health services were significant predictors of further re-offenses and involvement in the juvenile justice system, but there was no evidence that substance use treatment was related to recidivism rates. These results also suggest that substance abuse treatment may be important for juvenile offenders in order to reduce future contacts with the juvenile justice system. Results of this study and their implications for intervention and service delivery in juvenile court systems, as well as predictors of recidivism among rural juvenile offenders, will be discussed. These findings have implications for professionals serving youth with juvenile justice involvement. The results support the importance of professionals assessing at-risk youth for mental health and alcohol/substance use and linking them with appropriate mental health and alcohol/substance abuse treatment programs.

## **THE INITIAL EFFECT OF A SELF-MOBILIZATION-WITH-MOVEMENT TECHNIQUES ON INDIVIDUALS WITH LIMITED ANKLE DORSIFLEXION: A RANDOMIZED CONTROLLED**

Group Leader	Hanson, Caleb Undergraduate, Kinesiology & Recreation
Group Member	Jake Parish, Undergraduate, Kinesiology & Recreation
Mentor	Prof. Justin Stanek
Authorship	Alex Pieczynski; Justin Stanek; Caleb Hanson; Jake Parish

Decreased dorsiflexion range of motion (DF ROM) is thought to contribute to functional instability of the ankle and can predispose individuals to injury. Various techniques have previously been shown to increase ROM, however, some techniques require the assistance of a clinician. Because clinicians are not always available to work with patients, especially in the athletic settings, self-mobilizations are sometimes used. Objective: To compare the initial effects of clinician-assisted-mobilization (CLIN) and a self-mobilization (SELF) technique on ankle DF ROM in a group of subjects with limited ankle motion. Design: Cohort study. Setting: Patient clinic. Patients or Other Participants: Forty-seven ankles from 34 participants (age:  $20.8 \pm 1.5$  years, mass:  $80.2 \pm 8.66$ kg, height:  $176.54 \pm 10.87$ cm) met the inclusion criteria and were recruited to participate. Interventions: Participants weight-bearing DF ROM were recorded in a standing and kneeling position by one examiner. Participants' ankles with  $<35^\circ$  of motion were randomized into CLIN, SELF, or control conditions. Participants in the control condition sat quietly for 5 minutes. Participants in the CLIN group were positioned in half-kneeling with the test ankle forward. The examiner applied a posteriorly directed force to the talus while the subject rhythmically lunged forward for 2 seconds and returned to the starting position for 2 seconds. Participants performed 15 repetitions and held the end-range position for 30 seconds on the last repetition. This was repeated for a total of 3 times. Participants in the SELF group performed the exact same procedure with the exception of using an elastic band to provide the posterior force to the talus. Main Outcome Measures: Weight-bearing DF ROM was recorded before and after the intervention. Change scores were calculated and a one-way ANOVA was used for analysis. Results: A significant difference between groups was found for the standing ( $F_{2,44}=4.80$ ,  $p=0.01$ ) and kneeling positions ( $F_{2,44}=7.64$ ,  $p=0.001$ ). Post-hoc testing for the standing condition revealed a significant difference between the control and SELF ( $p=0.01$ , effect size=1.12, 95% CI: 0.37-1.88) but not the control and CLIN

( $p=0.06$ ) or CLIN and SELF ( $p=0.81$ ). For the kneeling position, significant differences between groups was found between the control and CLIN ( $p=0.003$ , effect size=1.28, 95% CI: 0.50-2.05) and control and SELF ( $p=0.005$ , effect size=1.33, 95% CI: 0.55-2.11) but not between CLIN and SELF ( $p=0.99$ ) Conclusions: These results suggest both CLIN and SELF applied mobilizations are effective in improving ROM.

## EVIDENCED-BASED LITERACY ASSESSMENTS AND INTERVENTIONS

Group Leader	Harris, Brooke Graduate, Psychology
Group Members	Jessica Lucas-Nihej, Graduate, Psychology. Jennifer Hilger, Graduate, Psychology
Mentor	Prof. Gary Cates

This poster will give an overview of the instructional hierarchy as it relates to direct instruction, literacy, and written language skills, including empirical information on assessments, interventions, and curricula programs. The instructional hierarchy (Haring & Eaton, 1978) is a framework designed to analyze stages of student learning. It is useful in deciding how to address students' academic deficits. Interventions for students first acquiring a skill look different from teaching how to apply a skill in a range of contexts. Direct instruction is a curriculum programming, which utilizes strategically planned lessons, clearly defined instructional techniques, and explicit instruction. It is effective because instruction is matched to students' skill level and modified to accommodate their rate of learning (National Institute for Direct Instruction, 2015). A foundational skill for reading and writing is spelling. Spelling success leads to reading words automatically, which in turn increases reading fluency and comprehension. Knowing word spellings also compliments students' writing skills. Students who excel at spelling can focus their cognitive efforts on the structural, syntactic, and creative components of writing. Written expression - the larger academic category that encompasses spelling, grammar, creativity, and penmanship - is another important yet often overlooked instructional area. This poster will discuss some challenges behind assessing and teaching writing skills and give an overview of evidence-based assessments and interventions. Spelling and writing instruction should be tied to the student's level in the instructional hierarchy. For example, students at the acquisition phase might require demonstration, modeling, and immediate corrective feedback. Fluency spelling strategies may focus more on spelling drills of error patterns, timed spelling tasks, and altering the presentation of words. This poster will highlight this link between the academic area and instructional hierarchy and how it relates to specific interventions. The selected empirical interventions will be described through outlining the cost, target populations, time involved, and more. This poster will demonstrate the connections between the instructional hierarchy, direct instruction, literacy, and written language skills. The main takeaway from this poster is to learn how to select specific literacy-based interventions using an instructional hierarchy.

## GENDER DIFFERENCES IN FRONTAL PLANE KNEE ANGLES IN YOUTH DURING A JUMP LANDING MOTION

Group Leader	Heinrich, Kevin Undergraduate, Kinesiology & Recreation
Group Member	Marissa Maeder, Undergraduate, Kinesiology & Recreation
Mentor	Prof. Michael Torry
Authorship	Kevin Heinrich; Marissa Maeder; Adam Jagodinsky; Michael R. Torry

Introduction: Adolescent and post-adolescent females, age 11 and older, exhibit anterior cruciate ligament (ACL) injuries 2-10 times more often than their male counterparts. During the landing portion of a jump, increased knee valgus motions are predictive of an ACL injury. Common changes in the female skeletal anatomy such as a wider pelvis and increased knee quadriceps-angle, which occur from maturational growth, may be the underlying cause of an increased valgus knee, and therefore, predispose females to a greater chance of an ACL injury. If true, pre-adolescent females should perform landings similarly to age-matched males, as the predisposing anatomical adaptations have not yet occurred. Purpose: The purpose of the study is to evaluate the frontal plane knee landing characteristics of pre-adolescents to determine if the injurious landing patterns observed in adolescent and post-adolescent females also appear in pre-adolescent females. Methods: Thirty-two volunteers (males = 16; females = 16) performed maximal vertical jump landings while being recorded for biomechanical analysis. Differences in landing varus/valgus knee angle for left and right knees at contact and peak varus/valgus knee angle were extracted from the data for each gender and the results were compared by an unpaired t-test:  $\alpha \leq 0.05$ . Results: There were no differences between limbs so data were aggregated across limbs for each gender. The average valgus knee angle at initial ground contact was 4.7 degrees for males and 3.0 degrees for females ( $p = .39$ ). The average peak knee valgus angle was 6.7 degrees for males and 1.0 degrees for females but were not different due to high variability in each group ( $p = .62$ ). Conclusion: It can be concluded there is not a significant difference between pre-adolescent male and female valgus knee angles. Therefore, maturational skeletal growth emerges as a causative factor for changes in the landing patterns leading to higher rates of ACL injury in post-adolescent females.

## THE FIELD TESTING OF A MTSS/RTI PROGRAM EVALUATION MODEL

Group Leader	Hilger, Jennifer Graduate, Psychology
Group Member	Nick Niekra, Undergraduate, Psychology
Mentor	Prof. Mark Swerdlik
Authorship	Jennifer Hilger; Mark Swerdlik; Nick Niekra

The purpose of this study was to field test a program evaluation model for a Multi-Tiered System of Supports/Response to Intervention (MTSS/RtI) program, a tiered system that provides multiple levels of academic and mental health preventive and responsive services, at two elementary schools. This poster will highlight the formative-based process behind that model and share the results of the program evaluation for the two schools. Data collection began through interviews with key stakeholders, including the director of special education, the two principals, core leadership teams (e.g., teachers, school psychologists, and interventionists), and the district literacy team, to learn about their MTSS/RtI programs and develop research questions to be explored in the staff and parent surveys. Data collection continued through online surveys, which were completed by staff members and parents. The staff survey focused on the effectiveness of the MTSS/RtI program at the different tiers and areas of instruction, the implementation aspects of the MTSS/RTI programs (e.g., flexibility, collaboration), barriers to implementation, and family-school collaboration. Similarly, the parent survey focused on the parents' awareness and perceived effectiveness of the program. To collect an objective measure of the MTSS/RtI programs, progress monitoring data were examined from each of the schools. This data involved curriculum-based measures (CBM) administered to students in the most intensive interventions over the past three to four years, which were analyzed to assess the effectiveness of these individualized academic interventions. Attempts were made to collect additional student outcome data, including schoolwide measures, but this was not possible due to limited time to collate the data. Key themes related to the implementation of this program evaluation model included the importance of individualizing the program evaluation to the given school (e.g., involving key stakeholders), setting main objectives for the purpose of the program evaluation, and clearly outlining all aspects of the project (e.g., the sources of data collection). The results from the program evaluation at the schools showed that the area of reading was the most effective within their MTSS/RtI framework and that the social-emotional/behavioral program was the least developed. The results also demonstrated some of the common barriers that the schools face and how family-school collaboration could be improved within this process. Specific recommendations were provided to the schools

addressing the identified areas of improvement. This project highlights how similar program evaluations could be conducted and offers suggestions for current elementary schools in their implementation of a MTSS/RTI program.

## **DIAGONAL PROPERTY FOR POLYNOMIAL RINGS OVER MODULAR INTEGERS**

Group Leader	Kordick, Emily Undergraduate, Mathematics
Group Members	Lauren Cullen, Undergraduate, Mathematics. Jenna Parks, Undergraduate, Mathematics. Alex Symonds, Undergraduate, Mathematics. Amy Sickman, Undergraduate, Mathematics
Mentor	Prof. Sunil Chebolu
Authorship	Emily Kordick; Lauren Cullen; Jenna Parks; Alex Symonds; Amy Sickman

Let  $R$  be a unital ring. We say that  $R$  has the diagonal property if 1's in the multiplication table of  $R$  occur only on the main diagonal. In this project we investigate the diagonal property and related problems in the ring of polynomials over modular integers.

## **DEVELOPMENT OF A CARTRIDGE DESIGN ANAEROBIC DIGESTION SYSTEM FOR LIGNOCELLULOSIC BIOMASS**

Group Leader	Kottke, Alisha Undergraduate, Health Sciences
Group Members	Matthew Johnson, Undergraduate, Health Sciences. Ivan Peremitin, Graduate, Business Administration
Mentor	Liangcheng Yang
Authorship	Liangcheng Yang; David Kopsel; Alisha Kottke; Matthew Johnson

A novel cartridge design anaerobic digestion system was developed for the treatment of lignocellulosic biomass. This new design is composed of a novel anaerobic digestion chamber with three replaceable feedstock cartridges, a clarifier, and an ammonia stripper. This novel design is featured of multiple advantages, e.g. high stability, easy to operate, and no liquid waste, over conventional anaerobic digestion systems. In a seven-month preliminary test, corn stover was employed as the feedstock, and the system was operated at three scenarios: no rotation of cartridge, rotation with 14 g corn stover in each cartridge, and rotation with 28 g corn stover in each cartridge. Results showed that biogas production from this system is comparable to solid-state anaerobic digestion units, and the rotation of cartridges significantly improved the stability of daily methane yield, reduced hydrogen sulfide concentration, and decreased ammonia concentration in effluent. Effluent was completely reused in the rotation tests.

## **HORROR FILMS AND TERROR MANAGEMENT THEORY**

Group Leader	Landa, Nicole Undergraduate, Psychology
Group Members	Abigail McFall, Undergraduate, Psychology. Marissa McGraw, Undergraduate, Psychology
Mentor	Prof. Eric Wesselmann
Authorship	Nicole Landa; Abigail McFall; Marissa McGraw; Eric Wesselmann

Individuals have long been fascinated with watching horror films, even though these films evoke strong negative emotions (e.g., disgust, fear, and uneasiness). Empirical evidence from psychological research supports film theorists' arguments that such media allows the viewer to face thoughts of their own mortality in a safe way (Goldstein, 1999, Johnston, 1995; Tamborini & Weaver, 1996). These findings support a Terror Management Theory approach to understanding the cognitive experience of watching horror films. Terror Management Theory (Greenberg, Pyszczynski, & Solomon, 1986; Greenberg, Solomon, & Pyszczynski, 1997) argues that when individuals are confronted with images of death, they experience anxiety and an increase in death-related thoughts. Previous studies have used video clips that involve death, but to our knowledge no studies have specifically used horror film clips. We designed research to replicate the basic death-related thoughts effect using clips from a popular horror film (i.e., Halloween). We collected data from 240 undergraduate students who were compensated by receiving experiment credit. We randomly assigned participants to one of three horror film clip conditions: control, suspense, or death clip. Participants watched the clip, and then were given a word-stem completion task, which is a common measure of death-thought accessibility in Terror Management Theory research. Several words can be completed using either death- or non-death words (e.g., sk---: skill vs. skull). We recently completed data collection and are beginning data analysis. We hypothesize that participants who watched the death clip will report more death-related words than participants in the control condition. We are agnostic about how the suspense condition will compare to the other two conditions - pilot testing suggested participant in this condition will report fewer death-related words than the death condition, and more death-related words than the control condition, but this pattern may not be statistically significant. This study will add empirical evidence to how horror films evoke thoughts of mortality and suggest future studies on what cognitive processes help reduce this anxiety (e.g., world-view defense; victim blaming).

## **COMPARATIVE ANALYSIS OF MEDIA'S PORTRAYAL ON DIVERSITY AND ETHNICITY IN FASHION MAGAZINE COVERS**

Group Leader	Lauf, Audie Undergraduate, Family and Consumer Sciences
Group Members	Madison Willer, Undergraduate, Family and Consumer Sciences. Jaime Campbell, Undergraduate, Family and Consumer Sciences. Savannah Wetzel, Undergraduate, Family and Consumer Sciences
Mentor	Prof. Ui-Jeen Yu
Authorship	Audie Lauf; Savannah Wetzel; Madison Willer; Jaime Campbell; Ui-Jeen Yu

There is a lack of diverse models in terms of ethnicity and thinness on fashion magazine covers. Fashion magazine covers still tend to portray biased beauty ideals that primarily represent white, thin models and rarely place minority, average-sized models. On the basis of social comparison theory, the purpose of this study was to investigate how fashion magazine covers portray American beauty ideals with regards to ethnicity and thinness in both female and

male fashion magazines. A content analysis was conducted using 60 covers collected from American Vogue and 60 covers from Gentleman's Quarterly (GQ) over six decades. A total of 120 covers were analyzed with regards to ethnicity and thinness of female models. Results indicated of the 78 depicted female models on Vogue covers, only 5% of the models were Black or African American, while 95% of the models were white or European. While GQ covers featured 12 female models out of a total of 73, 100% of the female models were white or European. Female models in Vogue were very thin and thinner than female models in GQ. Results from the analysis provided an insight on the bias of the fashion magazines that represent the image of beauty ideals in American society. Fashion magazine covers have not progressed in terms of ethnic diversity and thinness of female model images over the past six decades.

## **DOES EFFORTFUL CONTROL MEDIATE THE RELATION BETWEEN PRESCHOOL CLASSROOM CLIMATE AND SOCIAL READINESS FOR KINDERGARTEN?**

Group Leader	Lucas-Nihei, Jessie Graduate, Psychology
Group Members	Leah Cohen Marks, Graduate, Psychology. Jasmin Smith, Graduate, Psychology
Mentor	Prof. Alycia Hund

Every year, teachers and parents of preschool-aged children determine whether they are ready for kindergarten. School readiness is "the state of child competencies at the time of school entry that are important for later success," which includes pre-academic and social-emotional competencies (Liew, 2012). The goal of this project is to examine whether preschoolers' effortful control mediates the relation between preschool classroom climate and social readiness for kindergarten. Classroom climate evaluates the quality of classroom components that impact child development (Pianta et al., 2002). Effortful control is the ability to regulate one's emotions, attention, and behavior in response to environmental stimuli (Blair & Razza, 2007). Effortful control enables young children to successfully participate within their classroom (Liew, 2012). An important aspect of school readiness is social readiness, or children's developing capacity to manage their emotions to establish meaningful interpersonal relationships (Heller et al., 2012). To date, 42 4-year-old children from 10 early childhood classrooms have participated. Children completed the Head, Toes, Knees, Shoulders Task (HTKS; Ponitz et al., 2008) to assess effortful control. Children were asked to touch their head/toes/knees/shoulders but expected to touch the opposite on each of 20 trials. Higher scores indicate higher effortful control. Three-hour observation sessions were used to evaluate the developmentally-appropriate practices implemented within the classrooms, utilizing the Early Childhood Environment Rating Scale-Revised Edition's (ECERS-R; Harms, Clifford, & Cryer, 1998) five subscales (1 is Inadequate, 3 is Minimal, 5 is Good, and 7 is Excellent). Teachers completed the Preschool and Kindergarten Behavior Scales-Second Edition (PKBS-2; Fernández et al., 2010) to measure social-emotional readiness. Higher ratings indicate stronger social skills. On the HTKS Task, preschoolers' effortful control scores showed strong individual differences. The classrooms' overall average ECERS-R scores ranged from near adequacy to approaching excellence with the most variability in Language-Reasoning and the lowest ratings for Activities. The PKBS-2 composite standard scores indicated individual differences in social readiness distributed around the expected mean. Data collection is ongoing. Once our target sample size is reached, we will use regression equations to test for mediation, including 1) classroom climate predicting effortful control, 2) classroom climate predicting social readiness for kindergarten, and 3) classroom climate and effortful control together predicting social readiness (Baron & Kenny, 1986). It is expected that effortful control will mediate the positive relation between preschool classroom climate and social readiness.

## **UNDERSTANDING AND EVALUATING THE PRESCHOOL CLASSROOM CLIMATE**

Group Leader	Lucas-Nihei, Jessie Graduate, Psychology
Group Members	Leah Cohen Marks, Graduate, Psychology. Jasmin Smith, Graduate, Psychology
Mentor	Prof. Alycia Hund

Every year, teachers and parents determine whether preschoolers are ready to transition to kindergarten. School readiness is “the state of child competencies at the time of school entry that are important for later success,” including pre-academic and social-emotional competencies (Liew, 2012). Classroom climate is one predictor of school readiness, as it encompasses the quality of classroom components that impacts development such as student-teacher interactions (Pianta, La Paro, Payne, Cox, & Bradley, 2002), effective teaching instruction, and proactive classroom management (Raver et al., 2008). Classroom arrangement, supervision, activities, interactions between children and teachers, and program structure all affect classroom climate (Clifford, Reszka, & Rossbach, 2010). The goal of our research project was to evaluate the classroom climate vis-à-vis developmentally appropriate practices implemented within 32 classrooms from 15 early childhood education programs.

The Early Childhood Environment Rating Scale, Revised Edition (ECERS-R; Harms, Clifford, & Cryer, 1998), a widely used rating scale for both research and program evaluation, was used to measure classroom climate (Harms et al., 1998) by assessing the quality of developmentally appropriate practices (Clifford et al., 2010). An abbreviated version of the ECERS-R was used in this project, where 31 items on the following five subscales were evaluated: Space and Furnishings, Language-Reasoning, Activities, Interactions, and Program Structure. The developmentally appropriate practices were rated on a 7-point Likert scale, where 1 is Inadequate, 3 is Minimal, 5 is Good, and 7 is Excellent.

The ECERS-R subscale rating scores varied across the 32 classrooms: Space and Furnishings ranged from 4.00 to 7.00 (M = 5.65, SD = .71); Language-Reasoning ranged widely from 1.00 to 7.00 (M = 4.48, SD = 1.82); Activities ranged from 2.40 to 6.22 (M = 3.98, SD = .91); Interactions ranged widely from 1.00 to 7.00 (M = 5.19, SD = 1.68); Program Structure ranged widely from 1.35 to 7.00 (M = 4.98, SD = 1.41); and overall classroom averages ranged from 2.80 to 6.45 (M = 4.82, SD = .94).

General trends observed in the classroom ratings suggested that early childhood standards were upheld among the early childhood education programs, regardless of the program structure. One limitation of implementing the ECERS-R is the level of difficulty in evaluating the quality of different activities, such as science and math, within classroom settings. These activities may not be used on a daily basis. Future classroom climate research would benefit from utilizing multiple measures to evaluate the quality of preschool programs.

## **GENDER DIFFERENCES IN SAGGITAL PLANE KNEE ANGLES IN YOUTH DURING A JUMP LANDING MOTION**

Group Leader	Maeder, Marissa Undergraduate, Kinesiology & Recreation
Group Member	Kevin Heinrich, Undergraduate, Kinesiology & Recreation
Mentor	Prof. Michael Torry
Authorship	Marissa Maeder; Kevin Heinrich; Adam Jagodinsky; Michael Torry

**INTRODUCTION:** Adolescent, ages 11-16 yrs, and post-adolescent, ages >16 yrs, females exhibit anterior cruciate ligament (ACL) injury rates 2-10 times more likely than males. Research shows that females tend to land in a more erect position and with less knee flexion than males, which can cause the ACL to be in a more vulnerable position and more susceptible to injury. **PURPOSE:** The purpose of this study is to evaluate the sagittal plane knee landing characteristics of pre-adolescence males and females to determine if the injurious landing patterns observed in adolescent and post-adolescent females are also apparent in pre-adolescent females. **METHODS:** Thirty-two male and female volunteers (16 females and 16 males) performed maximal jump and landing motions while being recorded for biomechanical analysis. Differences in knee flexion angle for left and right knees at contact, peak knee flexion angle and total knee flexion Range of Motion (ROM) were extracted from the data for each gender and the results were compared via unpaired t-test:  $\alpha \leq 0.05$ . **RESULTS:** There were no differences between knee flexion angles at initial contact as they performed the landings symmetrically with 5.0 degree differences between left and right limbs for males and 2.0 degrees for females ( $p > 0.5$ ). The average flexion angle at initial ground contact was 16.1 degrees for males and 20.7 degrees for females ( $p = 06$ ). The average maximal knee flexion angle was 53.2 degrees for males and 60.9 degrees for females ( $p = 09$ ). Total ROM for males was 37.1 degrees and females was 40.1 degrees ( $p = .42$ ). **CONCLUSION:** Based on these results, we conclude that there is no difference between pre-adolescent male and female sagittal plane knee landing characteristics. This suggests that the differences that contribute to female's being more susceptible to ACL injury become a factor during or post-adolescent skeletal maturation.

## YOUNG CHILDREN'S UNDERSTANDING OF ORDINAL, SPATIAL, AND ALPHABET LABELS IN A SPATIAL SEARCH TASK

Group Leader	Monla, Analeese Undergraduate, Psychology
Group Members	Megan Flaherty, Undergraduate, Psychology. Morgan Maydew, Undergraduate, Psychology. Kristina Okamura, Undergraduate, Psychology. Lauren Gregory, Undergraduate, Psychology
Mentor	Prof. Alycia Hund
Authorship	Analeese Monla; Megan Flaherty; Morgan Maydew; Kristina Okamura; Lauren Gregory

Preschool children demonstrate rapid gains in conceptual understanding and language comprehension. Understanding temporal and spatial ordering is important in everyday life, such as when completing instructions in order, understanding narrative sequences, and keeping track of locations in space. Recent research findings highlighted 4- and 5-year-old children's emerging ability to understand ordinal labels (e.g., first, second, third) to help them search for stickers hidden in toy train cars (Miller, Marcovitch, Boseovski, & Lewkowicz, 2015). The goal of this project is to replicate this work and extend it in two important ways: (1) to extend the age range downward to 3 years to more fully understand the developmental trajectory, and (2) to compare the ordinal labels used by Miller et al. (2015) (first, second, third) to spatial labels (front, middle, back) and to a control condition also using a familiar sequence (A, B, C). Three-, 4-, and 5-year-old children will be familiarized with a toy train that includes an engine, three identical cars, and a caboose and with the labels used in their experimental condition. Then, children will complete six test trials where they hear the labels for the cars (depending on their condition) and try to find a sticker hidden in the indicated car when they have been hidden from view. The proportion of correct searches will be calculated. Parents/Guardians will be asked to complete a brief demographic survey and a language checklist to provide additional details about child language development. We expect that search performance will differ across conditions and will increase with age, especially for the most difficult spatial condition. We also expect that search performance will be related to parent reports of child language. These findings will provide important details about young children's understanding of ordinal and spatial language.

## **TRAINING A CONGENITALLY DEAF/BLIND DOG TO SEARCH FOR 3 SCENTS UNDER 4 LOCATION CONDITIONS**

Group Leader	Perez, Stephen Undergraduate, Psychology
Group Members	Antonia Berenbaum, Undergraduate, Psychology. Jennifer Gavin, Undergraduate, Psychology
Mentor	Prof. Valeri Farmer-Dougan
Authorship	Stephen Perez; Antonia Berenbaum; Jennifer Gavin

The project involved training a congenitally deaf/blind Australian Shepherd dog to detect three different scents as well as scent combinations in 4 different settings: 1) Boxes; 2) Interior search; 3) exterior search and 4) vehicle search. The dog was initially taught to detect each scent using food pairings. The dog was conditioned to find highly salient dog treats (little Zukes mini treats, hot dogs or chicken) hidden in 3 to 12 boxes placed randomly and in line on the laboratory floor. When the dog showed fluency detecting food, the initial scent (birch) was then paired with the food. Food was then faded until only the birch scent was placed in the box. This was repeated for anise and clove scents. The dog was then taught to search interior rooms (ranging from a 12 ft. x 100 ft. hallway to small 6 x 8 lab rooms); exterior searches (outdoor areas around campus, including outside campus buildings, the quad and parking lots) and vehicle searches (1 to 6 cars in various configurations). The criteria for each search was the dog must find the "hide" within the 2-minute time limit and signal the find with the handler correctly calling alert. Number of training trials to criterion were recorded for each scent and each area; duration of each find was also recorded. The order of training was examined to determine if each new scent or combination scent was learned faster in terms of both trials and duration of time to find. In addition, differences in the number of trials to criterion and time to finds between the scent/scent combinations and locations were compared.

## **DIAGONAL PROPERTY FOR MATRIX RINGS OVER MODULAR INTEGERS**

Group Leader	Potentler, Bryanna Undergraduate, Mathematics
Group Members	Emily Rosenquist, Undergraduate, Mathematics. Cara Wilson, Undergraduate, Mathematics. Rachel Miller, Undergraduate, Mathematics. Jackson Ward, Undergraduate, Mathematics. Julian Brancero, Undergraduate, Mathematics
Mentor	Prof. Sunil Chebolu
Authorship	Bryanna Potentler; Emily Rosenquist; Cara Wilson; Rachel Miller; Jackson Ward; Julian Brancero

Let  $R$  be a unital ring. We say that  $R$  has the diagonal property if 1's in the multiplication table of  $R$  occur only on the main diagonal. In this project we investigate the diagonal property and related problems in the ring of matrices over modular integers.

## **NONCONTINGENT PRAISE: A PRACTICAL EVIDENCE-BASED PRESCHOOL INTERVENTION**

Group Leader	Poirot, Kelly Graduate, Psychology
Group Member	Jennifer Hilger, Graduate, Psychology
Mentor	Prof. Gary Cates

Finding evidence-based behavioral interventions that are cost and time effective is difficult; however, noncontingent praise (NCP) is an intervention that teachers of large classrooms easily can utilize to produce a positive, praise-filled environment and fewer student disruptions. Learn how to evaluate the effectiveness of an intervention utilizing an alternating treatments single case design. Learn about NCP as an evidence-based intervention and its effects on student and teacher behaviors.

## **CANINES' CRITICAL POINT STRESSORS WHEN PERCEIVING AFFORDANCES**

Group Leader	Raymundo, Isabella Undergraduate, Psychology
Group Member	Matthew Langley, Graduate, Psychology
Mentor	Prof. Valeri Farmer-Dougan
Authorship	Isabella Raymundo; Matthew Langley

Any behavior requires the proper means to do so, as well as the ability to recognize that one can perform it. From the ecological approach, the possibilities for such behaviors are known as affordances (Gibson, 1966; Reed, 1996). Perception of affordances is demonstrated through action-scaling which is an organism's fit between its action capabilities and the environmental properties presented. Researchers that have experimented with human activities (e.g. moving through doorways) have found perceptual boundaries between one set of behaviors (i.e. walking through a doorway with straight shoulders) and another set of behaviors (i.e. turning shoulders sideways). For example, a ratio of approximately 1.2 doorway-to-shoulder-width is required for perceiving that a doorway can be walked through without turning. Exploring this in non-humans, Cabreraa, et al. (2013) found that hamsters and rats perceived affordances when lever pressing. The ratio of lever pressing to height was found to be nearly identical for both rats and hamsters. The current experiment seeks to investigate canines' abilities to communicate the perceptual deliberation that is made at the critical point (or perceptual boundary) between low effort to high effort. If the critical point remains constant among dogs, there should be a pattern of no stress signs at a height of zero, high stress at each dog's perceptual boundary height, and low stress as the height drops again with intermediate stress signs in between. This study systematically presented treats at increasing heights to dogs until they transitioned from reaching with the head to rearing up to 200% dog height (shoulder to floor), and then decreasing heights back down to 0% dog height. These sessions were recorded and then observed for specified behavioral stress signs that occur before, during, and after the critical point. The data yielded a significant correlation between treat height and level of stress among the dogs, showing a consistent arching pattern. This is comparable to shoulder to floor height and rearing ratios found in the Doggone Affordances study conducted by Wagman, et al. (2016). Understanding how these findings can assist dog trainers and identifying those needs are discussed from theoretical and applied perspectives.

## EFFECTS OF MOOD ON PROCESSING IN EVENT-BASED PROSPECTIVE MEMORY

Group Leader	Shouse, Margaret Undergraduate, Psychology
Group Member	Rachel Workman, Graduate, Psychology
Mentor	Prof. Dawn McBride
Authorship	Margaret Shouse; Rachel Workman

Effects of Mood on Processing in Event-Based Prospective Memory Prospective memory is known as remembering to complete a future task. It is also evident that different moods may also affect prospective memory. The current study will be emphasizing focal and nonfocal memory tasks to investigate how different moods affect prospective memory. One hundred and eighty students will be participating in this research study. After completing a lexical decision task, the participants will be asked to perform either a focal or nonfocal memory task. After being given this set of instructions, the participants will be given a distractor task (Sudoku) for three minutes. The participants will then receive a mood induction, which will be either positive or negative. After the induction, the participant will complete the lexical decision task again; this time with the PM task embedded within it. After this task is completed, all of the participants will get a positive mood induction to ensure they leave the lab in a positive mood. It is anticipated that the focal memory task will produce the best prospective memory performance when participants are in the positive mood condition. Because a positive mood elicits a global processing style, it is predicted that a positive mood will rely on spontaneous retrieval for a focal task. It is also expected that for the nonfocal PM task, a negative mood will produce better PM performance. This is expected because an item specific processing style, when a negative mood is induced, encourages monitoring-an important factor in a nonfocal PM task.

## DO FACEBOOK PROFILE PHOTOS INFLUENCE ONE'S PERCEIVED PERSONALITY AND LIKABILITY

Group Leader	Slaughter, Alison Graduate, Psychology
Group Members	Jessie Shafer, Graduate, Psychology. Kelsie Tibble, Graduate, Psychology
Mentor	Prof. Eric Wesselmann

Problem or Major Purpose: We investigated how people form impressions based on online profiles. Generally, people rely more on visual stimuli (e.g., photos) than textual information when judging others' personality (Van Der Heide, D'Angelo, & Schumaker, 2012). People who are pictured socializing are rated as more fun-loving, friendly, and happy compared to people pictured alone (Wu, Chang, & Yuan, 2015). People may also use profile photos of themselves with their pets. It is unclear how these photos may influence profile ratings, but data suggest pet owners are perceived as more social than non-owners (Johnson & Rule, 1991). Further, no studies have compared photos of people with friends to photos of people with pets on personality ratings. We conducted an exploratory study that manipulated a target person's Facebook profile photo to see if their gender and being pictured with friends (vs. pets) influenced perceptions of their personality.

Procedure: Ninety-four college students participated in a 2 (target gender: male, female) × 2 (photo content: cats vs. friends in photo) between-subjects design. Aside from our manipulations, we kept constant the number of mutual friends, type of job, college s/he is attending, etc. across profiles. Participants rated the target on eight personality traits (5-point scales). Participants also completed measures of the target's perceived likability. We also asked participants about their own attitudes towards pets and their perceived sociability as potential covariates.

Results: We conducted an exploratory factor analysis and found 3 main factors: Cooperation and Perseverance, Friendship Potential, and Social Competence. A multivariate analysis revealed an overall effect of photo content,  $p < .001$ .  $hp^2 = .18$ . Social competence explained the most variance of this effect,  $hp^2 = .16$ , and the means revealed that targets were rated more socially competent in the friend condition than in the cat condition. A univariate analysis also revealed that across all conditions, female targets were rated significantly more likable than male targets,  $p = .037$ ,  $hp^2 = .05$ . This study exhibited that a target's Facebook profile photo influences other's judgements. An exploratory analysis showed that 74% of participants reported that the target's profile photo at least "somewhat" influenced their perceptions of the target's likability.

Conclusions and implications: These findings are important because potential romantic partners, hiring managers, and college admissions officers may judge how fitting an applicant is based on his/her profile photo.

## THE EFFECTS OF TASK TYPE ON PROSPECTIVE MEMORY

Presenter	VonderHaar, Rachel Graduate, Psychology
Group Member	Shelby Karch, Undergraduate, Psychology
Mentor	Prof. Dawn McBride
Authorship	Rachel VonderHaar

The precrastination effect is the finding that individuals will complete actions earlier in order to "get it out of the way" (Rosenbaum, Gong, & Potts, 2014). Rosenbaum et al. (2014) let participants chose when they wanted to complete the task (i.e., picking up a bucket and moving it to a different table). Rosenbaum et al. (2014) found this effect for easy tasks, but found that precrastination decreased when the task was more difficult. The current study added a prospective memory (PM) aspect in order to determine if precrastination generalizes to other psychological areas. A PM task involves remembering to complete a future task (Einstein & McDaniel, 2005). We investigated whether or not PM effort affects when participants choose to complete the PM task. We hypothesized that the more difficult the PM task, the later the participants would choose to do it. We also hypothesized that a harder PM task would show longer reaction times because it is more cognitively demanding. Our results supported our first hypothesis, indicating that the harder the PM task, the later participants chose to complete the task. Contrary to our second hypothesis, there were no significant differences between reaction times.

## DOES CLICKER TRAINING IMPROVE THE RATE OF ACQUISITION, ACCURACY OR LATENCY TO FIND DURING SCENT TRAINING?

Group Leader	Weber, Christian Undergraduate, Psychology
Group Members	Antonia Berenbaum, Undergraduate, Psychology. Alex Shelton, Undergraduate, Psychology. Taylor Skierkiewicz, Undergraduate, Psychology
Mentor	Prof. Valeri Farmer-Dougan
Authorship	Christian Weber; Antonia Berenbaum; Alex Shelton; Taylor Skierkiewicz

The project involved training six dogs to detect up to three different scents in two different settings: 1) Boxes; and 2) an Interior search. Three dogs were placed in the clicker group, in which an audible marker (a clicker) was used to signal the correct find, followed by a food reinforcer; the remaining three dogs were given no marker, but only a food reinforcer. Each dog was initially taught to detect each scent using food pairings. The dog was conditioned to find highly salient dog treats (little Zukes mini treats, hot dogs or chicken) hidden in 3 to 12 boxes placed randomly and in line on the laboratory floor. When the dog showed fluency detecting food, the initial scent (birch) was then paired with the food. Food was then faded until only the birch scent was placed in the box. This was repeated for anise and clove scents. Each dog was tested under two conditions: 1) box search (12 identical boxes, 11 distractor and 1 with scent or food) placed in two lines of 6 boxes; and 2) 3 identical interior searches (search areas ranged from 12 ft. x 30 ft. hallway, a 20 x 20 ft classroom, and a small 6' x 8' lab room). The criteria for each search was the dog must find the "hide" within the 2-minute time limit and signal the find with the handler correctly calling alert. In order to be considered fluent, dogs must have successfully completed each search three consecutive times. The number of training trials to criterion were recorded for each scent and each area; duration of each find was also recorded. The clicker group data were then compared to the no-marker group to determine which was a more effective training method.

## **"GOOD ENOUGH": HOW EMERGING OUT OF EMERGING ADULTHOOD AFFECTS CHOOSINESS IN MATE PREFERENCES**

Group Leader

Willard, Ryan

Graduate, Sociology/Anthropology

Group Members

Alexis Econie, Undergraduate, Sociology/Anthropology. Lisa Lodesky, Undergraduate, Psychology. Katie Ruehle, Undergraduate, Psychology. Cristian Lucas, Undergraduate, Psychology. Cristian Raether, Undergraduate, Psychology. Kamie Schladenhauffen, Undergraduate, Sociology/Anthropology

Mentor

Prof. Susan Sprecher

Authorship

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Much research has focused on gender differences in relationship preferences (e.g., Buss, 1989). Studies generally show that women value ambition, education, intelligence, and stable finances more than men; whereas men prefer more than women young, physically attractive partners who want a home life and children (Buunk, Dijkstra, Kenrick, & Warntjes, 2001). However, less research has examined the effects of age, from emerging adulthood to adulthood, on relationship preferences. In order to better understand the changes in relationship preferences as a function of age, we analyzed data on partner preferences of adults, and considered the age groups 18-20, 21-25, and 26 and older. In the current sample (more data may be collected by the spring symposium), 437 participants (69% female) who were single and unattached responded, as part of a larger questionnaire, about their mate preferences, and in two ways. First, and similar to most past research assessing mate preferences (Schwarz & Hasebrauck, 2012), participants rated the importance of several characteristics in a potential partner, on a 4-point scale that ranged from 1 = "average on this characteristic would be fine for me" to 4 = "prefer someone very above average on this characteristic; a partner needs to 'stand out' on this characteristic". In a second section, we asked participants if these preferences have become more important to them, less important to them, or had no change in importance "in the past 2-3 years". With these data, we will examine age differences in mate preferences in several ways. First, we will conduct a cross-sectional analysis to compare the preferences as a function of age. For example, we predict that those who are older (26 and older) will be less "choosy" overall in their preferences than younger adults. Second, we will examine how people say their preferences have changed over the past 2-3 years (as they have become older). Third, we will examine whether people of different ages report that their preferences have changed in different ways (in the prior 2-3 years). We will also examine whether age moderates gender differences in mate preferences. Based on previous

research (e.g., Shackelford, Schmitt, & Buss, 2005), we predict significant differences in relationship preferences between men and women in emerging adulthood (18-25 years old), especially for physical attractiveness and social status. However, we will explore whether the gender differences are more pronounced for the youngest age groups and then decrease with age.

## **ASSESSMENT OF CONSUMPTION OF SUGAR SWEETENED BEVERAGES**

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Assessment of Consumption of Sugar-Sweetened Beverages The purpose for this study is to understand how much sugar -sweetened beverages are consumed in the Bloomington-Normal community. The reason this assessment is of importance is because "In the state of Illinois 1 in 3 children are obese. Scientific evidence has found that just 1 sugar sweetened beverage per day increases a child's odds of becoming obese by 60%." (Chaloupka). In addition to children, "adults that drink 1 to 2 servings a day are 20% more likely to develop Type 2 Diabetes than those who drink zero to 1 beverage per month." (Harvard School of Public Health). These stats are important because numbers of death in the United States alone have sky-rocketed and we want to know why and what measures can we take to provide knowledge to multiple communities about the harm of over consumption of sugar-sweetened beverages. Questions: At what age are sugar-sweetened beverages consumed the most? How much sugar-sweetened beverages are people consuming? Why do people buy sugar-sweetened beverages? We will use a variety of methods to collect data that include: interviews and surveys. Regarding interviews we will interview experts in nutrition as well as legislators who are in favor of and are opposed to the HEAL Act. We will also be interviewing fitness experts as well as people of different ages and ethnicities in the Bloomington-Normal community. We will conduct surveys electronically and by hand when it comes to surveying residents halls, meetings, and RSO's that group members are a part of. Electronic surveys will be distributed by email to all Illinois State University students and distributed through social media to reach out to people in the Bloomington-Normal community. We plan to have surveys out before March 10th and interviews started and or completed throughout the month of February. Beyond a shadow of a doubt in the next 10 days we will reach out to people about conducting interviews.