

2018 Symposium

Individual Abstracts – Morning Session

INMATE PERCEPTIONS OF SEXUAL ASSAULT

Presenter	Acquaviva, Brittany Graduate, Criminal Justice Sciences
Mentor	Prof. Jessie Krienert
Authorship	Brittany L. Acquaviva Acquaviva

With the lack of research surrounding the perceptions of sexual assault among inmates within sexual assault literature, this study aims to bridge the gap and add new insight on the acceptance of rape culture and rape myths among inmates. Utilizing a thematic content analysis, this project compares and contrasts existing rape myths that convicted homicide, sex offender, robbery, and non-violent inmates exercise. With prison culture being heavily rooted in the thoughts and beliefs of inmates, results indicate most rape myth's that were present run parallel with rape myths that exist in the general public's acceptance of rape culture.

SPONTANEOUS IMITATION AND JOINT ATTENTION IN CHILDREN WITH AUTISM

Presenter	Anselmo, Shannon Graduate, Psychology
Mentor	Prof. Karla Doepke
Authorship	Claire Karlen; Shannon Anselmo

Children with autism spectrum disorder (ASD), by definition, have persistent deficits in social communication and social interaction across multiple contexts. Researchers have attempted to delineate the underlying causes of these difficulties. One line of research suggests that delays in the development of joint attention (sharing enjoyment with others) and imitation (copying what others do) may contribute to these broader social skills deficits, specifically impacting children's abilities to spontaneously engage with others and play. Furthermore, children with ASD tend to prefer non-social stimuli rather than social stimuli. That is, children with ASD may develop joint attention toward an object more quickly than with a person. Previous literature has theorized that children's joint attention skills must develop prior to the development of imitation skills; although research investigating the relationship between these two skills with children with autism has been mixed. This study examined the developmental relationship among joint attention and spontaneous imitation using both social and non-social stimuli. Participants included children between the ages of three and twelve years with a diagnosis of autism. Joint attention was measured through the Early Social Communication Scales-Abridged (ESCS), an observational measure of joint attention tasks such as gaze following. Imitation was measured by the Spontaneous Imitation Battery which includes ten trials of both object (e.g., pushing a car) and motor imitation (e.g. clapping hands) tasks. The social and non-social stimuli preferences were measured through a structured preference assessment. It is hypothesized that children with ASD will follow a similar joint attention and imitation progression to typically developing children. Furthermore, it is hypothesized that imitation with non-social stimuli will be easier for children with ASD than imitation with social stimuli.

QUANTUM MECHANICAL STUDIES OF SINGLET AND TRIPLET CHLORINE-, BROMINE-, AND IODINE-CONTAINING FLUOROCARBENES

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

Halofluorocarbons, commonly used as refrigerants, aerosol propellants, and in manufacturing, contribute to atmospheric ozone degradation. A key product of the breakdown of halofluorocarbons in the atmosphere are halofluorocarbenes. Because of the need to better understand these species, high-level quantum mechanical calculations have been performed for the singlet and triplet states of chlorofluoro-, bromofluoro-, and fluoroiodocarbene. Equilibrium geometries and harmonic vibrational frequencies were calculated using the CCSD(T) level of theory with the all-atom aug-cc-pVQZ basis set for C, F, Cl, and Br atoms. For iodine, the aug-cc-pVQZ-PP basis set with the corresponding effective core potential was employed. The equilibrium bond angles for the singlet states ranged from 106.8° to 107.6° and the triplet state angles ranged from 123.2° to 125.0°. A complete basis set extrapolation was performed for the CFX geometries and energies using CCSD(T)/aug-cc-pVXZ(X=D,T,Q,5) and fit to a Schwartz-4 extrapolation for the geometries. Core The singlet-triplet gaps (corrected for vibrational zero-point energies) for FCCL, FCBr, and FCI were determined to be 34.6, 32.4, 27.1 kcal/mol, respectively. The Core-Valence and relativistic corrections for the singlet-triplet gaps were also determined. Potential energy surfaces also have been generated for the singlet and triplet halofluorocarbenes via single point energy calculations at the CCSD(T)/aug-cc-pVQZ level on a two-dimensional grid involving variations in the F-C-X (X=Cl, Br, I) bond angle and C-X bond distance, with the C-F bond distance held fixed at its equilibrium value. To obtain the two-dimensional grid, the C-X bond distance was varied from 1.2 Å to 5.5 Å and the F-C-X angle was varied from 75 to 180 degrees. The potential energy surfaces will be employed to investigate the pathway to dissociation of the FCX molecules along the C-X bond coordinate as well as to compute vibrational eigenvalues and eigen functions for energy levels up to the dissociation limit.

NOVA READING PROGRAM: INCREASING ENGLISH LEARNING CHILDREN'S READING SKILLS

Presenter	AuBuchon, Stephanie Graduate, Psychology
Mentor	Prof. Gary Cates
Authorship	Stephanie AuBuchon; Gary Cates

Illinois State University's School Psychology Department was asked to consult with the coordinators of the local NOVA Reading Program. This program was started to provide reading lessons to English Learning children, while their parents were receiving English lessons. There were weekly sessions that last two hours for the duration of the school year. The children would engage in craft activities that related to the theme of the book that was read that night. While doing crafts, the children reviewed 2-3 letters' phonemes and graphemes. Through the crafts, lessons, and group reading, the children worked on their phonemes, graphemes, phonics, and fluency. The main focus of NOVA Reading Program was having the parents become more involved in their children's reading. Therefore, for 30 minutes a session the parents read with their child to help them increase their literacy skills. The parents were encouraged to read with their children throughout the week and record how much time they spent reading together.

During each session, the graduate clinician would administer either an AIMSweb probe or a book checklist. The two AIMSweb probes used were the letter naming fluency and the reading curriculum-based measure. Depending on the child's age and reading skills, they were give the probe that was most appropriate for their current skill level. However, the children under three years old were administered a book checklist assessment. This consisted of the child being handed a book, and the graduate clinician taking qualitative data on what the child did with the book, like open it, point to picture or words, etc. The graduate clinician then recorded the data for each week to progress monitor the children's reading skills. Also, data was collected on the children's attendance and number of minutes read throughout the week. The progress monitoring and attendance data were analyzed using percent of improvement and rate of growth. The results were used to help the NOVA Reading Program's coordinators understand how effective their program was at increasing English Learning children's reading skills, which will help them secure funds for next year.

IS THE ABUSE POTENTIAL OF PSYCHOSTIMULANTS RELATED TO ACTIVATION OF DOPAMINE TRANSIENTS?

Presenter	Avula, Swathi Graduate, Biological Sciences
Mentor	Prof. Paul Garris
Authorship	Swathi Avula; Paul Garris

Extensive research has been directed at identifying the mechanism of action of drugs with high abuse potential. The dominant hypothesis generated by this work is that all drugs of abuse act directly or indirectly on dopamine neurons and increase brain dopamine levels. Dopamine is a neurotransmitter involved in motor control, motivation, and cognition and has been associated with the neuropathologies of Parkinson' disease, addiction, and schizophrenia. More recent work has refined this hypothesis to postulate that drugs of abuse activate dopamine transients. These phasic dopamine signals, occurring on a sub-second to second temporal scale, are elicited by natural rewards and their predictive cues, and drive reward learning. In the new hypothesis, abused drugs are thought to hijack the reward-learning pathway by hyperactivating dopamine transients. However, whether all abused drugs activate dopamine transients is not known, and some drugs demonstrated to exhibit low or mixed abuse potential have been shown to activate these phasic dopamine signals. Thus, the relationship between abuse potential and dopamine transients is not established. The objective of this research is to compare the effects of two psychostimulants thought to exhibit different levels of abuse potential on dopamine transients. The prediction is that the psychostimulant with high abuse potential, methylphenidate (Ritalin®), will activate dopamine transients, whereas the psychostimulant with low or mixed abuse potential, modafinil (Provigil®) will not activate dopamine transients or activates these phasic dopamine signals to a lesser extent. Dopamine transients will be measured in the striatum of rats, a brain region implicated in reward learning, using the microsensor approach of fast-scan cyclic voltammetry at the carbon fiber microelectrode. Preliminary data suggests that methylphenidate activates dopamine transients to greater extent than modafinil.

COMPARING BMI PERCEPTION OF SELF- AND OTHERS BETWEEN KINESIOLOGY AND NON-KINESIOLOGY UNIVERSITY STUDENTS

Presenter Bahtic, Dzenita
Graduate, Kinesiology & Recreation
Mentor Prof. David Thomas
Authorship Dzenita Bahtic; David Thomas; Kristen Lagally; Scott Pierce

BACKGROUND: The world is experiencing a concerning global increase in the prevalence of obesity and overweight. During the sixties in the United States, the prevalence rate was approximately 10-15% obese and 25-30% overweight ("Overweight," 2017) whereas more recent data displays rates closer to 30% obese and 70% overweight (NHANES, 2014). European countries (Mikolajczyk, Maxwell, El Ansari, Stock, Petkeviciene, & Guillen-Grima, 2010), Indonesia (Hastuti, Rahmawati, & Suriyanto, 2014), Canada, France, Mexico and Switzerland have also reported increased prevalence rates of obesity and overweight ("Obesity Update," 2017). Due to the health consequences associated with weight gain, research studies have examined prevention and treatment options for the increasing rates, but several options have had limited to no success. Maximova, McGrath, Barnett, O'Loughlin, Paradis, & Lambert (2008) and Stice, Shaw, & Marti (2006) hypothesized technological advancements resulting in more sedentary lifestyles, "normalization" of higher weight, and misperception about weight status were potential factors attributing to the programs' lack of successes. Thus, the present study aimed to further examine one of the potential factors: misperception about weight status.

OBJECTIVE: The present study examined: 1) how participants perceived their own weight status, 2) how participants perceived others' weight status, and 3) if kinesiology majoring students could better identify BMI classifications than non-kinesiology majoring students.

METHODS: A 49-item questionnaire was sent through e-mail to university students attending Illinois State University and Central College. The questionnaire assessed participants perception of their own weight status by self-reporting height (meters) and weight (kilograms) and by selecting a body-size guide (BSG), developed by Harris, Bradlyn, Coffman, Gunel & Cottrell (2008), representing their current body weight status. Perception of others' weight status was assessed by having participants assign a BMI classification to 10 female and 10 male pictorial, body-size guides (BSG).

RESULTS: Data is still being collected. However, the results will be presented using general descriptive analysis and group comparisons for perceptions of self and others' weight status. Participants' BMI will be calculated using the following equation: $\text{weight (kg)} / \text{height (m}^2\text{)}$.

HOW BAD IS EVIL?

Presenter	Baker, Cameron Undergraduate, Philosophy
Mentor	Prof. Daniel Breyer

When superheros go to battle, we would like to say it's good versus evil; but, what does it actually mean to be evil? How bad must one be in order to "earn" such a title? Do they actually deserve it? My goal is to try and make sense of "evil" and what exactly it's function should be in our world, if there is one at all.

FOSTER CARE STABILITY AND TRAUMA INFORMED CARE

Presenter	Barta, Gabriel Graduate, Social Work
Mentor	Prof. Kathryn Conley Wehrmann

Foster parents work with one of the most vulnerable populations in the field of social work. Trauma-informed care can provide many of the needed tools for effective work with youth in care. These children have been through so much in a short time in their lives. The trauma that they have endured can be life-changing. Making sure that foster care parents have the tools and understanding in order to effectively help and work with these youth is extremely important. Foster parents who have a strong understanding of trauma-informed care and the negative outcomes of placement instability can cause are better equipped to work with these youth and help them achieve placement stability.

The purpose of this study is to identify areas of need for further trauma-informed care training of foster care parents at Children's Home Association of Illinois. The needs assessment survey to be conducted as a part of this project will better help the training committee in the foster care department to develop appropriate trauma-informed care training for their parents. Staff from both the foster care program and Intensive Placement Stability (IPS) work directly with foster care parents and youth. They will be able to give an informed perspective regarding foster family training needs.

DIETARY HIGH OLEIC SOYBEAN OIL: GROWTH PERFORMANCE, CARCASS PERFORMANCE, AND MEAT QUALITY OF MARKET LAMBS

Presenter Belon, Danielle
Graduate, Agriculture

Mentor Prof. Justin Rickard

Authorship Tylan Peckman; Margaret Shane; Bryon Wiegand; Justin Rickard

The objective of this study was to evaluate dietary high oleic soybean oil on the growth performance, carcass performance, and meat quality of market lambs. Spring born, weaned, crossbred wethers (n=20) of Dorset-Suffolk genetics weighing approximately 41.3kg 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 approval (Protocol #105-6898). Wethers were individually housed in a randomized complete block design and fed 1 of 2 treatments with ten replications per each treatment for 84d. The treatments included a control diet (CON) which was a finishing-diet consisting of corn silage, cracked corn, dried distiller's grains, soybean meal, and soybean oil. The experimental diet (HOS) consisted of corn silage, cracked corn, dried distiller's grains, soybean meal, and high oleic soybean oil (3%). Diets were mixed once daily, and feed was offered twice daily. Feed refusal collection was implemented in 5d periods. Two-day weights were taken every 14d, averaged, and used to calculate Average Daily Gain (ADG), Average Daily Feed Disappearance (ADFD), and Gain to Feed (G:F). Following finishing, wethers were transported 463km for humane slaughter and fabrication under USDA-FSIS inspection. Standard USDA carcass data (quality and yield grade) were recorded. Statistical analysis was performed using the MIXED procedure of SAS to obtain LSMEANS. No differences were found for the growth performance measures of ADG, ADFD, or G:F ($P > 0.05$). No differences were found for hot carcass weight, cold carcass weight, and dressing percentage ($P > 0.05$). Wethers fed HOS exhibited a decrease in a^* color value of the longissimus at the 12th rib junction ($P = .027$), with no differences in L^* or b^* values ($P > 0.05$). Percentage of metmyoglobin, deoxymyoglobin, or oxymyoglobin in the longissimus face at the 12th rib junction was not altered by treatment ($P > 0.05$). In this study, HOS inclusion did not impact standard growth and carcass characteristics in finishing wethers. However, further evaluation into the decreased redness value of the loineye in HOS-fed lambs is warranted.

BEHAVIORAL EFFECTS OF RNAI-MEDIATED SILENCING OF ELECTRICALLY COUPLED NEURONS IN MARBLED CRAYFISH

Presenter	Benson, Abigail Graduate, Biological Sciences
Mentor	Prof. Wolfgang Stein
Co-Mentor	Prof. Andrés Vidal-Gadea
Authorship	Casey Gährs; Andrés Vidal-Gadea; Wolfgang Stein;

Gap junctions facilitate intercellular communication and rapid information processing in the nervous system, mediating swift and coordinated behavioral responses. In invertebrates, innexin proteins serve as the structural components of gap junctions and provide direct entryways for electrical currents between adjacent neurons. While the molecular structure and function of gap junctions in networks are well known, their physiology is notoriously difficult to study. Consequently, the specific contribution of innexins to electrical coupling and their influences on neural circuit function and behavior remain poorly understood.

We use RNA interference (RNAi) to selectively suppress expression of specific innexins in the marbled crayfish, *Procambarus virginalis*. Crayfish have several well-characterized behaviors that are at least partially mediated by electrical coupling: the tail flip escape response and the coordinated movement of legs during locomotion. We hypothesize that Innexins contribute substantially to both behaviors. We have sequenced the genome of *P. virginalis* and have access to the transcriptome, allowing us to selectively target gene expression of innexin subtypes in these animals through RNAi.

Our initial analyses indicate that marbled crayfish share homology for seven innexin genes with other invertebrate species. We found ~84% homology to innexin-1 and innexin-3 in *Cancer borealis*, and 85% homology to innexin-2 and innexin-4 in *Homarus americanus* and *Homarus gammarus*. To test which innexins are expressed in the ventral nerve cord (containing neurons that mediate locomotion and escape responses), we designed innexin-specific primers and isolated RNA from ventral nerve cord tissue for reverse-transcription PCR, creating stable complementary DNA. Agarose gel analyses showed that at least innexin-4 and innexin-2 are expressed. We were able to characterize 90% of the exonic regions for the putative innexin-2 gene in marbled crayfish, and thus chose innexin-2 as the first candidate for investigating effects of innexin silencing on walking and tailflip behaviors. To induce RNAi, we created innexin-2 double stranded RNA (dsRNA; Ambion MEGAscript kit). Our agarose gel results show intact innexin-2 dsRNA of the expected size (~553 base pairs).

We are currently assessing innexin-2 contribution to locomotion and escape behaviors by injecting dsRNA into the tail and a three-fold analysis: 1) using real-time PCR to measure innexin-2 suppression levels. 2) Assessing the effects of innexin-2 suppression on electrical communication in the escape circuit by measuring action potential propagation in ventral nerve cord axons that mediate tail flip behavior. 3) Monitoring both behaviors at 24, 48, and 72 hours post injection.

PROFESSIONAL CONTACTS AS A MODERATOR OF RISK FACTORS AND RECIDIVISM IN THE JUVENILE JUSTICE SYSTEM

Presenter	Bergschneider, Kellie Undergraduate, Psychology
Mentor	Prof. Adena Meyers
Authorship	Kellie Bergschneider; Danielle Gieschen; Adena Meyers; Renee Tobin; Brenda Hubor

The primary purpose of this research study is to examine whether the number of professional contacts a minor has moderates the association between risk factors (such as substance abuse and mental health problems) and recidivism in the juvenile justice system. Previous research has shown that substance use is a significant predictor of recidivism in youth who are going through emerging adulthood, and that substance use is predictive for both violent and non-violent offenses (Denney & Connor, 2016). A study that investigated the contribution of psychiatric disorders to recidivism found that externalizing disorders increased rates of recidivism for juvenile offenders, and that substance use and affective disorders predicted recidivism specifically among girls (McReynolds, Schwalbe, & Wasserman, 2010). In the current study, we defined recidivism as having more than one offense within the period of the study while the defendant was still a minor. Using hierarchical multiple regression with cross-product terms we will examine predictors of recidivism and the potential moderation effect of professional contacts by social service providers. We predict that professional contacts will moderate the association between recidivism and mental health/substance abuse problems such that these risk factors will be less influential in predicting recidivism among youth who meet frequently with professionals throughout their time in the juvenile justice system.

EXPLORING NURSES' PERCEPTIONS OF ADOLESCENT MOTHERS AND FAMILIES

Presenter	Bess, Danielle Graduate, Social Work
Mentor	Prof. Kathryn Conley Wehrmann
Authorship	Danielle Bess; Kathryn Conley Wehrmann

The purpose of this study is to explore the perceptions nursing staff have of adolescent mothers and families. Adolescent mothers, as they represent a vulnerable population, are often thought of in relation to the life-long, negative consequences that are caused by an early and unplanned pregnancy at this stage in life. Many programs and research studies focus on how to prevent adolescent pregnancy and on what an adolescent pregnancy will cause the adolescent family to be at a higher risk of having. Health disparities among childbearing adolescents and their children are well documented in research. Herrman (2010) states:

“Children of teen mothers are more likely to be hospitalized, have health problems and chronic illness, incur greater health care costs, live in poverty and become teen parents themselves ...[Additionally], children of young parents have a greater risk of being homeless, incarcerated and involved in juvenile delinquency, and to drop out of high school and to be abused...Young mothers...are less likely to graduate high school, more likely to require public subsidy and less likely to have stable home lives” (Herrman, 2010, p.214).

However, as professionals working with this vulnerable population, we must also examine how we are approaching childbearing adolescents and what is being done to support the success of adolescent families despite the documented disparities. Cassata and Dallas (2005) state that nurses are among the top professionals to interact with childbearing adolescents, especially in the field of healthcare. While there is not an extensive amount of research in this area, research does indicate that nursing staff can play an important and pivotal role in adolescent birth experiences and health outcomes. An exploratory study utilizing surveys distributed to nursing staff on labor and delivery, postpartum and nursery units will examine how nurses feel regarding various aspects of adolescent mothers' level of understanding, engagement and support before, during and after their child's birth. “Assessing attitudes of nurses is the beginning step towards research that can measure ways that nurses contribute to the health outcomes and minimize health disparities of childbearing adolescents and their families” (Cassata & Dallas, 2005, p.75). Through collecting both quantitative and qualitative data, the study should reflect whether or not the nursing staff's perceptions of adolescent mothers and families have an effect on the care they provide to childbearing adolescents. The goal of the study is to ultimately assess how the social worker can educate and assist nursing staff in ensuring that adolescent mothers have a positive labor, delivery and discharge experience.

Cassata, L., & Dallas, C. (2005). Nurses' Attitudes and Childbearing Adolescents: Bridging the Cultural Chasm. *The ABNF Journal*, 16(4), 71-76.

Herrman, J. W. (2010). Assessing the Teen Parent Family: The Role for Nurses. *Nursing for Women's Health*, 14(3), 212-221.

WOMEN, RACE, INTERSECTIONALITY, AND LEADERSHIP IN US ACADEMY

Presenter Bhattacharya, Arundhati
 Graduate, Educational Administration & Foundations

Mentor Prof. Pamela Hoff

Women are significantly under-represented among higher education leadership in the US academy; while women make up 57%

of the students in colleges and universities, only 26% of the college presidents are women. To unravel this inconsistency, my poster focuses on three aspects of female leadership: the psychic and tangible barriers restricting women becoming college presidents, gendered conceptualization of college and University leadership and pathways to overcome these barriers.

In pursuing answer to these questions, I use Noblit and Hare's (1988) qualitative method of 'Meta-Ethnography' which is a synthesis of interpretive research. Metaethnography, intends to enable more interpretive literature review, critical examination of multiple accounts of an event and situation. Using this method, I make systematic comparison of case studies to draw cross-case conclusion, comparing it to the work of others and construct synthesis of ethnographic studies" (Noblit and Hare, 1988 p. 12-13). My poster tries to connect the 'barrier' with the 'conceptualization of leadership as masculine' with the problem. While making the obvious challenges more obvious, this presentation tries to bring out the dubious aspects of female presidency.

When the woman is a person of color, it becomes even more difficult- almost an impenetrable maze for her to enter leadership roles.

The picture that emerged, was of women having to fight a 'glass ceiling'- an invisible but formidable encounter most of which came from a gendered conceptualization of leadership. In order to move forward women, need to fight the concept of leadership. While most researches shared "mentoring" as the common answer to this problem, my paper is critical of locating the problem within the women and not in the system.

AN ANALYSIS OF PARTICIPANT NEEDS IN CAMPUS RECREATION

Presenter	Binger, Michael Graduate, Kinesiology & Recreation
Mentor	Prof. Brent Beggs
Co-Mentor	Prof. Michael Mulvaney
Authorship	Michael Binger; Brent Beggs; Michael Mulvaney; Dawn Sanner

Campus Recreation provides programming and facilities that enhance wellness, academic performance, and opportunities for social and educational growth. The services of Campus Recreation have become an integral part of the college experience. So much so that assessing and understanding the effectiveness of Campus Recreation programming and facilities is essential. The purpose of this study was to assess the attitudes and motivations of users and nonusers of a Campus Recreation facility in order to evaluate the adequacy of Campus Recreation services and programming and clarify Campus Recreation's role in student recruitment and retention. A web-based survey was developed and information was collected in regard to Campus Recreation's impacts on physical and mental wellness, social interaction, and factors influencing program participation. In addition, data was collected examining barriers to participation and factors that prevented students from utilizing the services of Campus Recreation. When variables such as gender, year in school, and resident status were compared, ANOVA and T-test results indicated differences between groups. These findings suggest that students differ in motivating factors and perceived wellness, leading them to seek varying experiences based on demographic and psychographic variables.

PERSONALITY TRAITS AND LEARNING STYLES OF AGRICULTURE STUDENTS

Presenter	Braddock, Bradley Graduate, Agriculture
Mentor	Prof. Aslihan Spaulding
Co-Mentor	Prof. Iuliia Tetteh
Authorship	Bradley Braddock; Aslihan Spaulding; Iuliia Tetteh; Richard Steffen

Personality and learning styles are both likely to play an important role in influencing student motivation and academic achievement. Previous studies show a complex relationship between personality traits and learning styles. For example, students who prefer a structured autonomy are more likely to be anxious individuals and extraverts had better fact retention.

The purpose of this research is to 1) identify the personality traits and learning styles of Illinois State University and Purdue University agriculture students, 2) identify if students share similar personality traits and learning styles, 3) determine if a selected set of demographic variables influence personality traits and learning styles, and 4) explore interactions between learning styles and personality traits and their impact on students' success.

The personality assessment of this study is done using the Big Five Inventory (BFI), an assessment recognized by the American Psychological Association for assessing the following personality traits - extraversion, agreeableness, conscientiousness, neuroticism, and openness. Previous research on entrepreneurs indicates that entrepreneurs do share similar personality traits, which appear to be important to the success and longevity of a business. Similar studies in other fields have indicated the importance of personality traits that entrepreneurs possess on business success and longevity. The goal of this study is to identify those personality traits as related to the Illinois State University and Purdue University agriculture students to provide prospective entrepreneurs with an additional set of resources to use.

To assess learning styles, we used Inventory of Learning Processes (ILP) instrument. This instrument analyzes reflective learning styles (synthesis-analysis and elaborative processing) and agentic learning styles (methodical study and fact retention).

Illinois State University and Purdue University agriculture students completed a three-part survey instrument consisting of demographics, the Big Five Inventory, and the Inventory of Learning Processes. Survey was available in print and online. Data is entered into Excel and it is analyzed using SPSS.

The results of the study will help educators gain a better understanding of students and their educational needs. Faculty at ISU Department of Agriculture and Purdue Department of Agricultural Economics will be able to utilize information gleaned during this study when designing their future classes as to keep student needs and skillsets in mind. Students may also be able to better understand their own personality and learning style so that efficient study methods can be utilized. Students can develop strategies based on their learning styles to improve learning and academic success.

INHIBITION OF LEISHMANIA TARONTOLE AND GLIAL CELLS IN CULTURE BY PREVIOUSLY SYNTHESIZED SODIUM DI(MALTOLATO)DIOXOVANADIUM(V) COMPLEX

Presenter	Braich, Kamaljit Undergraduate, Chemistry
Mentor	Prof. Craig McLauchlan
Co-Mentor	Prof. Marjorie Jones
Authorship	Kamaljit Braich; Craig McLauchlan; Marjorie Jones

Phosphatases serve as metabolic regulators that remove phosphate groups, PO_4^{2-} , from their substrate. It has been shown that phosphate's structural analog vanadate, VO_4^{2-} , can inhibit certain phosphatases. The complex, sodium di(maltolato)dioxovanadium(V), consists of two maltol ligands which can safely be ingested by human beings. Because both vanadate and sodium di(maltolato)dioxovanadium(V) have an oxidation number of five, it is believed that the complex will also be a good inhibitor of phosphatases. Because an inhibitor affects various enzymes differently, sodium di(maltolato)dioxovanadium(V) will be tested on both secreted acid phosphatases of *Leishmania tarentolae* and CNPases of glial cells in culture. The latest results are presented here.

TEMPORAL EFFECTS OF HEAT WAVES ON SEX RATIOS AND GENE EXPRESSION IN A FRESHWATER TURTLE

Presenter Breitenbach, Anthony
Graduate, Biological Sciences

Mentor Prof. Rachel Bowden

Authorship Anthony Breitenbach; Amanda Wilson-Carter; Ryan Paitz;
Rachel Bowden

As climate change progresses, average global temperatures are predicted to continue to increase as a result of longer, more frequent heat waves. This thermal variability arising from climate change has the potential to threaten thermally sensitive ectotherms, such as reptiles with temperature-dependent sex determination (TSD). In many turtle species with TSD, cooler temperatures produce males and warmer temperatures produce females by inducing the expression of testis and ovary associated genes, respectively. *Dmrt1* is one such gene associated with testis development while *aromatase* is associated with ovary development. I hypothesized that the timing of when embryos experience a heat wave during development will affect their propensity to develop as males or females by affecting the expression of *Dmrt1* and *aromatase*. Using ecologically relevant fluctuating temperature treatments, I varied the timing to which red-eared slider (*Trachemys scripta*) embryos were exposed to 15-day heat waves during incubation and analyzed resulting sex ratios. I also collected embryonic tissues during heat waves of 15 and 20 days to analyze *Dmrt1* and *aromatase* expression. I found that heat waves that at least partially occurred during days 20-40 of development produced mostly females, with a heat wave applied during days 24-38 resulting in 89% females. A heat wave applied during days 38-52 of development only produced 6% females, despite it occurring during the predicted window over which sex determination should still be sensitive to temperature. I also found that *aromatase* was up-regulated in response to a heat wave of 20 days while *Dmrt1* was up-regulated in the absence of a simulated heat wave. Overall, these results provide insights on the timing and length of the period over which sex determination is sensitive to temperature, and suggest that the window of sensitivity is likely to vary depending upon the thermal conditions experienced during development. These results also clarify the timing of up-regulation of certain sex determining genes and further our understanding of how sex ratios in species with TSD might respond to climate change.

CATALYTIC FUNCTION OF GOLD NANOPARTICLES SUPPORTED ON MESOPOROUS MATERIALS

Presenter	Burns, Karlee Undergraduate, Chemistry
Mentor	Prof. Jun-Hyun Kim
Authorship	Karlee Burns; Stephanie Swan; Tara Saracino; Wongi Jang; Jun-Hyun Kim

This study describes the synthesis of gold nanoparticles within mesoporous materials to serve as efficient heterogeneous catalysts in various chemical reactions. The formation and overall properties of these composite nanoparticles are thoroughly examined by electron microscope, atomic absorption spectrophotometer, gas chromatograph, and dynamic light scattering. Given the catalytic nature of nanoscale metal particles, these composites are tested in a C-C coupling reaction of phenylboronic acid to biphenyl. The resulting nanocomposites exhibit much greater catalytic activities and recyclabilities than those of bare gold nanoparticles due to the highly improved stability. Thus, investigating these types of hybrid materials in chemical reactions can allow for the development of high-yielding and cost-effective catalytic systems.

TO BOB OR NOT TO BOB: CONTEXT DEPENDENCE OF AN ANTIPREDATOR RESPONSE IN HARVESTMEN (ARACHNIDA: OPILIONES)

Presenter	Calhoun, Austin Graduate, Biological Sciences
Mentor	Prof. Ben Sadd
Authorship	Austin Calhoun; Kerrigan Tobin; Dylan Poorboy; Rachel Bowden; Ben Sadd

Many potential prey species exhibit antipredator responses to avoid predator detection or consumption. These responses include behavioral mechanisms that can be employed to confuse predators or deter attack. Yet, the utility of such mechanisms may be dependent on the context in which the behavior is performed, and natural selection will act on potential prey to only perform such behaviors under the conditions in which they are beneficial. Gregarious behavior itself may be an antipredator behavior, but the effectiveness of other defensive behaviors may be group-size dependent. Harvestmen are nocturnal arachnids that form aggregates as an antipredator response during the daytime, and have been reported to perform a bobbing behavior as a defense mechanism in combination with aggregation. While the existence of the bobbing behavior has been documented and proposed as being more effective when performed in groups, empirical evidence on the influence of aggregation on the propensity to perform the behavior is lacking. We addressed the hypothesis that individual harvestmen in aggregations will be more likely to engage in antipredator behaviors that are postulated to be more effective when employed by groups, rather than individuals. Using experimental chambers, groups and individual harvestmen were exposed to a predator stimulant, and subsequently monitored for the antipredator bobbing response. Harvestmen within groups were significantly more likely to bob than individuals. We further demonstrated that the propensity to bob is not influenced by sex ratio or harvestman density, leaving group size as the most parsimonious explanation for the observed differences. We propose that in groups the bobbing of individuals en masse serves to deter or confuse predators, but this antipredator behavior will have reduced effectiveness when performed by isolated individuals, and may even visually attract predators. Our results support the hypothesis that organisms will be selected to perform antipredator behaviors with context dependent benefits only under restricted environmental conditions.

DISPARAGING HUMOR, SOCIAL EXCLUSION, AND THE POWER OF ALLIES

Presenter	Campbell, Sean Undergraduate, Psychology
Mentor	Prof. Wesselmann Eric
Co-Mentor(s)	Prof. Kimberly Schneider, Prof. Eros DeSouza
Authorship	Sean Campbell

Individuals have a psychological need to belong (Baumeister & Leary, 1995). Whenever someone faces a threat to that belonging they experience negative physical and psychological reactions (e.g., pain, stress, lower self-esteem; Wesselmann et al., 2016). Disparaging humor, jokes that insult or devalue an individual or group of individuals, are often used to express prejudice (Mallett, Ford, & Woodzicka, 2016) and contribute to a hostile environment for members of the targeted group(s) (e.g.; Ford, Boxer, Armstrong, & Edel, 2008; Martinez, Ruggs, Sabat, Hebl, & Binggeli, 2013; Schneider, Wesselmann, & DeSouza, 2017). Our previous research suggests that individuals experience disparaging humor against their group as a social threat, showing similar effects as other threats to belonging (e.g., Wesselmann et al., 2016).

In this study, we investigate how the presence of an ally - someone who is not a member of one's in-group yet stands up for them and confronts the person telling the offensive joke - may influence the negative effects of the joke. We predicted that individuals will recall feeling less harmed when someone defends them compared with a situation where no one defends them.

We randomly assigned participants (current N=108; desired final N=150) to one of three conditions in which they recalled an autobiographical event. In condition 1, participants recalled the last time they ate breakfast (control condition). In conditions 2 and 3, they recalled a time in which someone made fun a social group to which they belong (e.g., race/ethnicity, gender, sexual orientation) and either another person (i.e., the ally) confronted the offender, or no one confronted the offender. Participants then completed a series of measures assessing how they recalled feeling during that event, such as their feelings of being ignored, threatened belonging, and emotional pain. We hypothesize that first that participants who experienced disparaging humor and no one defended them will report feeling more negative than both control group participants and ally group participants. We are uncertain on how participants in the ally group will compare to the control group. Our results will ultimately provide suggestions for future research on understanding the role that allies can play in confronting various forms of discrimination.

PATIENCE AND ANXIETY: MINDFULNESS AS A MEDIATOR

Presenter	Cerullo, Robert Undergraduate, Psychology
Mentor	Prof. Suejung Han
Authorship	Robert Cerullo; Suejung Han;

Purpose: Approximately 28.8% of adults in the U.S. suffer from some degree of anxiety (Kessler, Berglund, Demler, Jin, & Walters, 2005). Anxiety can hinder a person's ability to function to one's potential. Mindfulness has been increasingly examined as a way to regulate anxiety. Mindfulness refers to self-regulation of attention and an orientation towards one's experience in the present moment (Bishop, et al., 2004). Researchers have shown that mindfulness-based interventions are efficacious at reducing anxiety (Bajaj, Robins, & Pande, 2016). Another resilience factor that could reduce anxiety is patience. Patience is defined as "the propensity of a person to wait calmly in the face of frustration, adversity, or suffering" (Schnitker, 2012, p. 263). Schnitker (2012) has shown that patience and well-being are positively correlated. However, it has not been examined how mindfulness and patience could be interrelated in reducing anxiety. We hypothesized that mindfulness would be associated with lower level of anxiety through patience, because mindfulness may require patience to obtain its benefits. We also tested another theoretically plausible alternative model that patience would be associated with anxiety through mindfulness, because patience can be seen as an acceptance of the present moment.

Procedure: A sample of 124 college students participated in this online survey study for psychology research participation credits. The mean ages were 19.5 (SD=3.15) for males (N=26) and 19.15 (SD = 1.34) for females (N=94). The survey included demographic questions, Mindful Attention Awareness Scale (Brown and Ryan, 2003), 3-Factor Patience Questionnaire (Schnitker, 2012), Gratitude Resentment and Appreciation Test (Watkins, P. C., Woodward, K., Stone, T., & Kolts, R. L., 2003), and the Depression Anxiety Stress Scale (Lovibond, S.H. and Lovibond, P.F., 1995).

Results: A path analysis using AMOS 22.0 revealed poor fit for the hypothesized mediation model, $\chi^2(1, 124) = 25.42, p < .001$, CFI = .13, RMSEA = .45 (90% CI = .31, .60). An alternative model that mindfulness mediates the association between patience and anxiety, however, fit the data well, $\chi^2(1, 124) = .006, p = .94$, CFI = 1.00, RMSEA = .00 (90% CI = .00, .06). All the paths coefficients were significant in the expected direction. Data collection is in progress and complete results will be presented at the conference if accepted.

Conclusion and Implications: Patience may be an important resilience/personality strength factor that could reduce anxiety by increased mindfulness. Using patience and mindfulness-based techniques may be useful for treating anxiety.

WHAT ARE THE CURRENT PERCEPTIONS OF A HIGH SCHOOL'S TEACHERS REGARDING TRAUMA-SENSITIVE PRACTICE? WHAT IS THE TEACHERS' PERCEIVED NEED FOR FUTURE TRAINING?

Presenter	Chandler, Marie Graduate, Social Work
Mentor	Prof. Kathryn Conley Wehrmann
Authorship	Marie Chandler

Research demonstrates that over half of the population in the United States has experienced at least one or more adverse childhood experiences (ACEs) (Trauma and Learning Policy Initiative, 2017). ACEs negatively affect brain development and physical and mental health, which creates barriers to a student's capacity to learn and function appropriately in the school environment. This study explores teacher perceptions of trauma-sensitive practices and their desire for future training through a survey that was given after an introductory training. Trauma-sensitive approaches to meeting student needs are associated with improvement in students' educational and behavioral outcomes, student retention, a decrease in disciplinary measures needed, reduction in special education needs and services, and a decrease in the stress of students and school personnel, to name a few (Crosby, 2015). Findings of the study will help a high school administration determine whether there is a perceived need for future trauma-sensitive training for their teachers.

JOB READINESS FOR AT-RISK YOUTH: A MIXED-METHODS STUDY

Presenter	Charczuk, Patricia Graduate, Psychology
Mentor	Prof. Dan Lannin
Co-Mentor	Prof. Leandra Parris
Authorship	Patricia Charczuk; Dan Lannin; Leandra Parris; Ani Yazedjian

Youth employment has been linked to a variety of short- and long-term benefits, including an increased income as well as personal and skill development (Carter, Ditchman, & Owens, 2011), which can counteract the many negative outcomes associated with living in poverty. However, in addition to lacking necessary resources, at-risk adolescents often lack confidence in their ability to obtain and keep employment. To address this, job readiness programs aim to teach employment skills in order to increase individuals' likelihood of obtaining and maintaining employment in the future (Reichert & Ridge, 2015). The present mixed-methods study aims to fill in the current gap in research pertaining to the effects of job readiness programs for at-risk youth, examining students' self-efficacy, outcome expectations, and qualitative data from focus groups.

In Champaign county, youth aged 15-24 were reached through community partners in the Champaign Area Relationship Education for Youth (CARE4U) program and completed surveys that were administered after parent permission and child assent were obtained; 101 students participated in a job-readiness program, and completed pretest (August, 2016) and posttest (April, 2017) surveys assessing job readiness (e.g., confidence in their skills related to obtaining a job). A total of 133 participants attended focus groups that targeted the Job Readiness component of the CARE4U program.

During the post-Job Readiness focus group interviews, participants indicated that they felt better about participating in job interviews, providing an elevator speech, and behaving professionally while trying to get, and subsequently keep, a job of their choice.

Quantitative results indicated that after completing the Job Readiness program students felt more confident in their ability to perform job-searching behaviors, and that their behaviors would result in getting a job, both $p = .03$. Whereas 34% of students had a resume before the program began, 82% had a resume by the program's end, and while 3% of students reported current employment at the start of the program, 45% were employed by the end.

Results indicate that the Job Readiness portion of the CARE4U program improved participants' self-efficacy and outcome expectations, especially in the areas of job-searching, interviewing, and maintaining employment. These findings suggest that future programming aimed to increase at-risk youth's ability to obtain and maintain employment should incorporate opportunities for participants to apply learned skills in real world settings.

THE EFFECTIVENESS OF THE VIVITROL PROGRAM

Presenter Clayton, Chelsea
Graduate, Social Work
Mentor Prof. Kate Sheridan

The purpose of the proposed study is to evaluate the effectiveness of the Vivitrol program on the participants over 18. Using a survey, this study examines if the intervention impacts as to whether the Vivitrol shot is helping the participants over 18 to stay clean and prevent relapse from opioids and or alcohol. Participants will include individuals who have relapsed on opioids and or alcohol. After the individual has been on Vivitrol, an interview will be completed to evaluate whether the client has stayed clean. Interviews will be completed with the case managers working in the program to see their view as to how well the program is working for the participants.

EXAMINING THE FINANCIAL IMPACT OF EMPLOYING PORTABLE MS SYSTEMS IN DRUG SCREENING AT CRIME SCENES

Presenter	Cleary, Scott Undergraduate, Chemistry
Mentor	Prof. Christopher Mulligan
Authorship	Scott Cleary; Chase Deberry; Sara Bell; Yasminda Ruiz; Jamie Wieland; Christopher Mulligan

Portable mass spectrometers (MS) featuring ambient ionization methods have shown proficiency towards the rapid identification of drug evidence types. If such technology is placed in the hands of crime scene and law enforcement practitioners, it could prove useful towards combating the current backlog of forensic casework while also providing enhanced investigatory capabilities. However, acquisition costs for such instrumentation could prove burdensome for local and state forensic/police agencies if there is no mechanisms for cost recovery from its implementation. In this work, our efforts towards assessing the financial impact of portable MS systems implemented in diverse investigative usage modes will be presented.

EVALUATION OF BIOGAS POTENTIAL FOR ORGANIC FARMS USING A CARTRIDGE STYLE ANAEROBIC DIGESTER SYSTEM

Presenter Corsolini, Summer
 Undergraduate, Health Sciences

Mentor Prof. Liangcheng Yang

Organic agriculture is a fast growing sector of the U.S. food industry. According to data released by the Organic Trade Association, total organic product sales hit a new benchmark of \$43.3 billion in 2015, which was up 11% from the previous year and much higher than the overall food market's growth rate of 3%. Along with the increase of organic food sales is the growing awareness among the agricultural community that, to achieve a sustainable agricultural system, wastes generated during the cultivation, processing, storage, and transportation of produces must be viewed and used as a resource rather than something to be disposed to landfill. Typical wastes from organic farms are crop residues, cover crop, processing residues, and food wastes, which are rich in plant nutrients and organic matters. This project used a recently developed cartridge style anaerobic digestion system to convert the wastes collected from organic farms into biogas, and evaluated the total potential energy production by using this system.

IS THERE A DIFFERENCE IN RDBM EFFICIENCY BETWEEN RIGHT AND LEFT-HANDED FEMALE INFANTS?

Presenter	Cortina, Sarai Undergraduate, Psychology
Mentor	Prof. Julie Campbell
Authorship	Sarai Cortina; Julie Campbell

Role-differentiated bimanual manipulations (RDBMs) are a complex action in which two hands, each performing a different task, work together to accomplish a mutual goal (Babik & Michel, 2015). RDBM actions can be used as an indicator of hemispheric specialization for hand preference, and hand preference has been implicated to have an impact on a host of cognitive abilities (Michel, 2017). Investigations of the development of RDBMs are useful for understanding the relation between hand preference and our cognitive abilities.

The purpose of this study is to compare the difference in efficiency of RDBM completion between right and left-handed female infants. Hand preference will be defined using object acquisition and the definition of hand preference as outlined by Michel et al., (2014). Efficiency of RDBM is defined as the amount of time for completion of the first successful RDBM after coming into contact with an object. To do the comparison, video data of 20 female infants (10 right- and 10 left-handed), will be analyzed from 9-14 months of age. These videos show the infants interacting with an object which has been shown to elicit RDBM actions among infants (Nelson, Campbell, & Michel, 2013). Infants have been found to show clear hand preference with objects requiring precision grips (Potier, Meguerditchian, & Fagard, 2013). Because precision grip with index-thumb opposition has been found to elicit stronger hand preference than whole-hand grip (Fagard & Lockman, 2005), the object observed in this study will be one that requires a precision grip to complete an RDBM. To determine if there is a significant difference between efficiency for right and left-handed infants, an independent samples t-test analysis will be conducted.

The expected results are that the right-handed infants will complete RDBMs more efficiently than left-handed infants, based on previous results showing that right-handed infants show a preference for skill earlier than left-handed infants (Campbell et al., 2015). Michel's concatenation theory proposes that hand preference develops gradually across infancy as a result of the concatenation of motor asymmetries. As one hand is used more often, the skills acquired with that hand are strengthened, increasing the probability of it becoming the preferred hand.

COMPATIBILITY OF ALFREDO SAUCE WHILE IMPROVING CONSUMER SATISFACTION

Presenter	Delach, Christina Undergraduate, Family and Consumer Sciences
Mentor	Prof. Julie Schumacher
Authorship	Christina Delach; Meredith Eply; Megan O'Grady; Ariel Beck

The intent of this experiment was to enhance the flavor, texture, and overall acceptability of a standardized alfredo sauce recipe while making it compatible with a Cook-Chill system. The variations of the study consisted of a control made with heavy cream, variation 1 made with greek yogurt, and variation 2 made with cream cheese. Three test samples of each variation were used for each of the objective tests. For the objective tests, each alfredo sauce variation was tested for cohesiveness and thickness three times. Cohesiveness was tested using a Brookfield CT-3 texture analyzer and thickness was tested using a standardized linespread test. For cohesiveness, variation 2 was found to be the most cohesive ($m=1.14$) while variation 1 was the least cohesive ($m=0.79$). It was also found that the control was the thinnest ($m=1$) while variation 1 was the thickest ($m=4.67$). Statistical significance was not calculated for the objective results. A convenience sample of 34 students at a large midwestern university participated in a taste test and filled out a ballot rating each alfredo sauce variation on appearance, flavor, and overall acceptability. The data was collected and then entered into SPSS. A paired-sample t-test was completed for appearance, flavor, and acceptability. It was found that the control scored significantly lower on appearance compared to either of the variations. For flavor and overall acceptability, variation 2 (cream cheese) scored significantly higher than the other two sauce recipes. It was concluded that alternative starches and cream bases can yield both a sauce with greater overall acceptability and Cook-Chill stabilization when compared to a standard alfredo sauce recipe.

PRE-SERVICE ELEMENTARY TEACHERS' UNDERSTANDING OF THE FORMATION OF IMPLICIT BIAS

Presenter Delgado, Dyani
 Undergraduate, Psychology
Mentor Prof. Rebekka Darner

Implicit biases about certain demographic groups have been observed to guide decision-making behaviors. Such behaviors have been observed in highly stressful situations and settings, such as in the field of medicine (Green et al., 2007; Sabin & Greenwald, 2012), during employee hiring (Eagly & Karau, 2002; Heilman et al., 1995; Rudman & Glick, 2001), and during policing in the criminal justice system (Eberhardt et al., 2004; Correll et al., 2007; Plant & Peruche, 2005). Teachers also work in various high-stress situations, as well as continuously make direct decisions that affect students receiving education. Thus, the likelihood of implicit bias surfacing within a classroom may be no different than another highly stressful situation. Pre-service teachers have been demonstrated to hold negative implicit biases toward non-dominant racial and ethnic student populations and positive implicit biases toward dominant racial and ethnic student populations, namely White and Asian students (Glock & Karbach, 2015). The aim of this study is to evaluate an instructional approach that sought to provide pre-service teachers more understanding about the formation of implicit bias. An instructional intervention was created in which pre-service teachers analyzed a science-related cartoon aimed toward preschoolers to identify instances of stereotype propagation. Pre-service teachers analyzed a teaching scenario exhibiting implicit bias about students' ability to perform science-related tasks before and after the teaching intervention. Pre-service teachers' written responses to the teaching scenario were qualitatively analyzed to determine if instruction was effective in fostering their understanding of the implicit nature of bias. Participants' pre/post-instruction self-reported implicit association test (IAT; implicit.harvard.edu) results were also collected for the Gender-STEM and Racial IATs. Qualitative codes of students' written responses were enumerated, and Wilcoxon signed-rank tests were performed to identify significant changes after the instructional intervention. Results indicated that there were no significant changes in the pre/post IAT results. However, participants showed statistically significant improvement in acknowledging implicit bias within the teaching scenario, and they provided constructive criticism on how to avoid the implicit bias displayed in the teaching scenario significantly more often after instruction, compared to before instruction. This study's findings indicate that while pre-service teachers' implicit biases may be too robust for a single intervention to address, brief instructional intervention can foster pre-service teachers' ability to identify and avoid bias in the classroom. To actually reverse science teacher biases about the abilities of certain demographic groups, teachers should be explicitly taught anti-bias strategies, such as those proposed by Lake and colleagues (2008).

MECHANISMS UNDERLYING CHANGES IN ENCODING OF NEURONAL INFORMATION BY BACKWARD TRAVELLING ACTION POTENTIALS

Presenter	DeMaegd, Margaret Graduate, Biological Sciences
Mentor	Prof. Wolfgang Stein
Authorship	Margaret DeMaegd; Wolfgang Stein

Neurons encode stimuli by generating action potentials at the axon origin and propagating them along the axon trunk. However, axons can also possess secondary (ectopic) action potentials initiation sites, far from the stimulus encoding site, the axon origin. Action potentials initiated at ectopic sites travel both forward and backward along the axon. We have previously shown that when action potentials travel backward they change how stimuli are encoded in neurons using an experimentally advantageous neuron in the stomatogastric nervous system of the crab, *Cancer borealis*. Specifically, increases in the frequency of ectopic action potentials delay the start time of encoding, reduce the number of action potentials produced, and decrease the burst duration of the encoded stimuli. While backward travelling action potentials clearly affect encoding, the mechanism underlying their actions remains unclear. Our current computational modelling indicates that these changes to encoding require a slow hyperpolarizing current to be present at the site of encoding. However, what this current changes at the site of initiation to promote changes in encoding remains unclear. Preliminary results indicate that as this current accumulates with increasing ectopic action potential frequencies, the total membrane conductance increases and the membrane potential hyperpolarizes. Consequently, other voltage-gated ionic conductances at the site of encoding are also affected, i.e. their open probabilities and activation states change. We hypothesize that the changes in membrane potential alone are necessary and sufficient to elicit the observed ectopic action potential frequency dependent modulation of sensory encoding. We are currently testing this hypothesis using models, which allow us to alter the membrane potential at the site of encoding independent of ectopic action potential frequency. This will provide a better understanding of the underlying mechanism facilitating the effects backward travelling action potentials on encoding observed physiologically.

ATTACHMENT STYLES AND READINESS FOR CHANGE; EMOTION REGULATION AS MEDIATOR?

Presenter	Deutsch, Elizabeth Graduate, Psychology
Mentor	Prof. Dan Lannin
Co-Mentor	Prof. Leandra Parris
Authorship	Lizzie Deutsch; Daniel Lannin; Leandra Parris; Ani Yazedjian

The present research assessed the relationship between attachment styles, ability to self-regulate emotions, and readiness to change. Attachment is a stable aspect of relating to others that is influenced by relationships with and proximity to close others during infancy (Christina & Sellborn, 2017). Securely attached infants are typically distressed at the absence of their mother, but content upon her return, whereas fearfully attached infants are typically distressed with or without their mother (Cooper, Shaver & Collins, 1998). Attachment styles affect components of self-regulation (Prosen & Vitulic, 2016) such as self-efficacy and coping styles (Brennan & Shaver, 1998). Because an individual's self-efficacy beliefs are important predictors of change, it is likely that increasing self-efficacy would increase one's readiness to change (Prochaska & Norcross, 2001). Therefore, we hypothesized that attachment styles' effect on readiness to change would be mediated by students' emotion-regulation self-efficacy.

PROCESSING STYLE VARIANCES IN RECOLLECTION OF EMOTIONAL FACES

Presenter	DeVore, Amanda Undergraduate, Psychology
Mentor	Prof. Dawn McBride
Authorship	Amanda DeVore

It is speculated that direct and indirect processing styles have unique effects on the accurate recollection of certain emotional faces (Patel, Girard, & Green, 2012), though some recollection will fade over time. To test the hypotheses that recollection for happy faces will be consistent across processing types, but recollection for angry faces will be higher with direct processing and fade over the delay periods, standardized photographs of male and female faces expressing two particular emotions (i.e., anger and happiness) will be presented in two processing conditions (i.e., direct and indirect) with two delay periods between study and test. During the study phase, participants will be asked to identify either the genders of the individuals in the images or the emotions being expressed in the images. In the testing phase, participants will be asked to identify each face as 'new' or 'old.' These results will contribute to our understanding of facial recognition based on emotional expression.

WILL AN IN-SERVICE TRAINING ON AWARENESS OF COMPASSION FATIGUE INCREASE THE IMPORTANCE OF SELF-CARE AMONGST PATIENT-CENTERED HOSPICE STAFF?

Presenter	Dickson, Kaylee Graduate, Social Work
Mentor	Prof. Kathryn Conley Wehrmann

Those who have constant direct contact with hospice patients are regularly exposed to seeing the ravaging effects of various terminal illnesses in many aspects of a patient's life, including death, as well as the effects of the illness and death on patient caregivers. As patient-centered care professionals in the hospice field strive to put their clients' needs and requests ahead of all else, they may experience a wearing down in many aspects: mentally, physically, emotionally, and spiritually, commonly known as compassion fatigue. Compassion fatigue is defined as "a deep physical, emotional, and spiritual exhaustion accompanied by acute emotional pain" (Alkema, Linton, & Davies, 2008). Compassion fatigue can also be characterized by the "adverse psychological outcomes associated with the stress of helping or wanting to help a traumatized or suffering person" (West, 2015). A factor that can help alleviate the risk of compassion fatigue and its sudden onset is self-care.

The goal of this study is to measure the effect of a brief training on participant knowledge related to compassion fatigue and self-care. The participants for the training and evaluation will include ten to twenty patient-centered hospice workers, (nurse practitioners, registered nurses, licensed practical nurses, certified nursing assistants, social workers, and chaplains).

A pre-test post-test design and mixed methods approach will be used.

THE ROLE OF SOCIAL WORKERS IN PALLIATIVE AND END-OF-LIFE CARE: WHAT ESSENTIAL ELEMENTS AND SKILLS ARE NEEDED?

Presenter	DiLorenzo, Lauren Graduate, Social Work
Mentor	Prof. Kate Sheridan

In palliative and end-of-life care settings, where patients are often in a critical stage of life, social workers collaborate with the interdisciplinary team to provide care to patients and families. However, the role of the social worker varies greatly. The proposed program evaluation aims to understand the role of the social worker from the social workers' perspective, exploring how social workers value their role in providing end-of-life care, and what factors may impede or help them in that role.

The sample will consist of current case managers, social workers, and palliative care members at OSF Healthcare St. Joseph Medical Center in Bloomington, IL. Data was collected using an online survey tool.

TEACHER-COACH PERCEPTIONS OF LIFE SKILLS TRANSFER FROM HIGH SCHOOL SPORT TO THE CLASSROOM

Presenter	Dinu, Daniel Graduate, Kinesiology & Recreation
Mentor	Prof. Scott Pierce
Authorship	Daniel Dinu

Recent positive youth development (PYD) frameworks have posited that youth can implicitly develop life skills through general interactions in the youth sport climate and explicitly through direct teaching of life skills from coaches (Holt, Neely, Slater, Camiré, Coté, Fraser-Thomas, MacDonald, Strachan & Tamminen, 2016). This transfer of skills does not automatically happen because of participation in sport to life domains such as a classroom, as it is ultimately the athlete's interpretation of the environment that aids or hinders this possibility of transfer. There is a need to examine the high school sport environment and its developmental assumptions, and teacher-coaches are uniquely positioned, due to their dual roles in high school, to offer valuable insight into the existence and applicability of PYD in such an environment. Thus, the purpose of this research was to gain information from the teacher-coaches regarding the individual student-athlete psychosocial factors, the high school sport factors, and the classroom factors and determine how those intertwined factors play a role into the transfer of skills from sport to the classroom. Twelve teacher coaches were interviewed using a constructivist qualitative approach. For this presentation, the thematic analysis of the perceptions of all 12 coaches will be presented along with three teacher coach case studies. These findings revealed that teacher-coaches believed that student-athletes do learn life skills through implicit and explicit developmental experiences in sport, but that challenges exist in transferring those skills to the classroom. Classroom learning environments, awareness of the existence and utility of certain skills, and personal factors such as confidence, motivation, and a growth mindset were paramount in the ability of transferring skills for student-athletes. These findings will be framed to help researchers, teacher-coaches, and student-athletes examine and understand the complex process of sport-based PYD and life skills transfer.

CONSTRUCTING A DATA-BASED MORTALITY PROFILE FOR AVIAN TOWER KILLS AT COMMUNICATION TOWERS IN ILLINOIS

Presenter	DiPietro, Rachel Graduate, Biological Sciences
Mentor	Prof. Angelo Capparella

Every spring and fall, Neotropical migratory songbirds travel nocturnally across the Western Hemisphere between their wintering and breeding grounds. During this energy-demanding period, they often encounter man-made threats. One hazard that has gained considerable publicity in recent decades is the communication tower. On nights with poor visibility, birds may orient towards the lights on communication towers, and, upon reaching the tower, they will circle it until fatally colliding with one of the guy wires supporting the tower. Towers can be modified or newly constructed with certain specifications that reduce the hazard, but because of expense and lack of concern, these upgrades have not been made universally. While there have been many tower kill studies recorded, there has been no attempt at predicting the risk of towers based on their different attributes (e.g., height, type of light, landscape placement) over a regional scale. The objective of this study is to create seasonal state-wide mortality profile maps in GIS for Illinois, based on tower attributes combined with key factors such as bird movement and migration hotspots, elevation, and weather patterns as predictors of the combination of factors that most determine if a mortality event will occur at a certain tower in a particular part of the state. Data from previous tower kill studies, compiled into a meta-dataset, will be used to determine the relative importance of the various attributes and factors so that appropriate statistical weight can be given to each item used in assembling the spatial data layers.

LIKELIHOOD OF PARENTAL CARE IS INFLUENCED BY EXPERIMENTAL THREAT TO PATERNITY IN MALE HOUSE WRENS

Presenter	DiSciullo, Rachael Graduate, Biological Sciences
Mentor	Prof. Charles Thompson
Co-Mentor	Prof. Scott Sakaluk
Authorship	Rachael A. DiSciullo

Biparental care is a critical (and sometimes unequally) shared obligation that ensures young survive to maturity. Such care may be complicated in systems in which one parent, typically the male, is unsure of his genetic relatedness to the young. Males may reduce paternal provisioning when full paternity is not assured, as occurs in mating systems in which females engage in extra-pair copulations. Moreover, other factors independent of extra-pair matings, such as male personality traits and the number of offspring requiring care, likely also affect the level of paternal care. In this study, we determined the effect of a paternity threat event (i.e., a conspecific or a heterospecific territory intrusion) and the level of male aggressiveness (i.e., personality) on provisioning effort by male house wrens (*Troglodytes aedon*) in broods of varying size. Males were more likely to attack a conspecific intruder than a heterospecific intruder. Males that were exposed to a conspecific intruder were less likely to provision young at all. However, of those males that did feed the young in their nest, male provisioning effort relative to the female was greater for more aggressive males, and, male provisioning effort relative to the female was reduced when there were more young in the nest. These findings suggest that the likelihood of paternal care is influenced by perceived threats to paternity, but when males do opt to contribute to the care of young, both male aggressiveness and number of young play an important role in levels of male provisioning.

EXPLORING THE EXPERIENCE OF WOMEN IN SPORT LEADERSHIP AND MANAGEMENT

Presenter	Dixon, Chrishaya Graduate, Kinesiology & Recreation
Mentor	Prof. Tracy Mainieri
Authorship	Chrishaya Dixon; Tracy Mainieri

Shaw and Frisby (2006) suggested researchers must go beyond the liberal feminist approach toward understanding discrimination in sport organizations, and instead must explore the challenges of the power structures within these organizations. Thus, it is important to examine the careers of women who have succeeded in achieving these positions by examining their career paths, identifying the most and least enjoyable aspects of their jobs, listing greatest challenges, and providing career advice to women considering a career in intercollegiate athletic administration (Bowers & Humms, 2013). While a number of theoretical frameworks have been used to address under-representation of women within leadership positions of sport organizations, little attention has been paid to the internal identity processes of women seeking membership in and advancement within these organizations (Satore & Cunningham, 2007). The purpose of this study is to explore the experiences of women in sports leadership and management. Individual interviews will be utilized to gather data from collegiate women sport administrators. Results of this study will provide insight to the experiences of women collegiate sports administrators.

HAVING FUN WITH MINDFULNESS: ENGAGING THE WHOLE CLASSROOM

Presenter	Dukett, Joel Graduate, Psychology
Mentor	Prof. Karla Doepke
Authorship	Joel Dukett

Social and emotional concerns that children and adolescents experience can lead to a myriad of negative physical and psychological outcomes. Many treatments have been developed to address these concerns. Recently, there has been a proliferation of studies examining mindfulness and many treatment modalities are beginning to incorporate mindfulness practice. In adult research, benefits of mindfulness are clearly demonstrated (e.g., reducing depression and anxiety symptoms). While research exists for the use of mindfulness practice with children, again demonstrating positive social and emotional outcomes, less is known about how to most effectively deliver this treatment within a whole classroom setting (Greenberg & Harris, 2012). At its core, mindfulness is nonjudgmentally bringing one's awareness to attention to their experience in the current moment. The current study investigated the effectiveness of an eleven-week classroom mindfulness intervention. Participants included 21 fifth grade students in a Midwestern grade school. The program included components of psychoeducation, mindfulness practice, and emotion regulation training. The results indicated that students demonstrated a significant increase in attention, mental control, and mindfulness related skills from week one to week eleven of the intervention. Also, students demonstrated a significant decrease in internalizing problems such as anxiety, low self-esteem, and stress. The research indicates that brief mindfulness training could improve student social-emotional outcomes and attention in academic and social functioning. Researchers followed up with the classroom teacher at six-week post-intervention. The teachers self-report indicated that student gains in prosocial and reduced internal symptoms maintained at follow-up.

LGBTQ+ EXPERIENCES OF BARRIERS TO MEDICAL AND MENTAL HEALTHCARE

Presenter	Ersland, Nicole Graduate, Social Work
Mentor	Prof. Kate Sheridan
Authorship	Nicole Ersland

This research seeks to explore the nature of the barriers LGBTQ+ individuals face in accessing mental and medical health care, specifically the barriers which are the result of prejudiced, ignorant, or otherwise non-inclusive practices within the fields of social work, psychology, medicine, and other helping professions. LGBTQ+ individuals are an economically and socially marginalized population. This population accesses health care at rates lower than their heterosexual and cisgender counterparts. This occurs despite LGBTQ+ individuals experiencing higher levels of some mental and physical health concerns. The purpose of this study is to explore the reasons LGBTQ+ individuals have lower rates of access for mental and medical health care, and the perceptions this population has of the barriers they face. This study will be conducted using a 50-item electronic survey given to individuals 18-years of age or older who identify as LGBTQ+.

TOWARDS AN INTER-SOURCE COMPARISON OF DART-MS AND PSI-MS FOR DRUG EVIDENCE PROCESSING ON COMMERCIAL AND PORTABLE SYSTEMS

Presenter	Fatigante, William Graduate, Chemistry
Mentor	Prof. Christopher Mulligan
Authorships	William Fatigante; Christopher Mulligan

The comparisons efforts presented here sought to elucidate the effect of employed source, evidence type, instrument utilized, and incorporated handling methods. For inter-instrument testing, a Thermo LCQ Fleet ion trap MS and a FLIR Systems AI-MS 1.2 portable ion trap MS were used to determine relative performance across commercial-grade and portable MS systems. Across bulk and trace-level testing, variable sample handling methods were examined. For direct sampling of bulk powder, glass capillary tubes (DART-MS) or paper substrates (PSI-MS) were directly exposed to the condensed phase and analyzed as-is. Alternatively, the examination of bulk evidence dissolved in methanol was explored in a similar way. For trace evidence analysis, an MQuant blank strip was wetted and used to probe a surface-bound analyte from glass. This substrate was placed directly in the DART analysis region or used as the disposable ion source for PSI.

For each test variable, at least 100 samples were processed to allow statistical assessment of analytical performance, including spectra intensity, duration of analyte signal, and false positive/false negative error rates. In an effort to assess the overall usability of the sources, sample throughput, observed carryover rates, and hygiene protocols required to mitigate carryover were tracked. From this, overall user comfort with the methodology can be discerned. Initial results suggests that while both sources are capable of processing the intended evidence, situational proficiencies can be observed. For instance, as user experience grows, DART-MS was shown to have overall higher sample throughput, but PSI-MS was marked by overall higher spectral intensity. This address will highlight the general trends observed across this comprehensive study.

COMPARATIVE STUDY OF VULNERABILITIES IN LTE CRYPTOGRAPHIC ALGORITHM

Presenter Fatma, Nilofer
Graduate, Information Technology

Mentor Prof. Jihad Qaddour

Long Term Evolution (LTE) is a standard for high-speed wireless communication for mobile and data terminals based on Global System for Mobile Communication (GSM) and Universal Mobile Telecommunications Service (UMTS) Technologies. The goal of LTE is to increase the capacity and speed of wireless data networks using new DSP (digital signal processing) techniques. LTE provides high spectral efficiency, high peak data rates, short round trip time as well as flexibility in frequency and bandwidth. One of the main purpose of LTE security is to perform user's authentication and to provide data integrity and confidentiality. Two standardized algorithms were provided by LTE technology to ensure data integrity and confidentiality protection via air interface named as EPS Encryption Algorithm and EPS Integrity Algorithm. Even LTE has complex and a vigorous set of security mechanisms, but there is still need for improvement.

This research paper investigate and discusses three sets of cryptographic algorithms that work on LTE technology. These three sets of the LTE cryptographic algorithms are SNOW-3G, ZUC and AES algorithm. This paper presents a comparative study of these cryptographic algorithms as well as related attacks and the contribution of various researchers in overcoming these attacks. A complete study has been done in comparing the three algorithms, their respective challenges and solutions proposed by various researchers. After complete analysis and investigation on the advantages and disadvantages of these algorithms, we concluded that AES is one of the strongest among the three cryptographic algorithms, whereas SNOW 3G is the weakest.

ARE PSYCHOPATHS BLAMELESS?

Presenter Foree, Katie
 Undergraduate, Philosophy

Mentor Prof. Daniel Breyer

I am going to look whether or not psychopaths should be held responsibility for their moral decisions.

THE ROLE OF TRM PROTEINS IN PLANT CELL DIVISION

Presenter	Fornero, Christy Graduate, Biological Sciences
Mentor	Prof. Viktor Kirik
Authorship	Christy Fornero; Taylor Judd; Viktor Kirik

Plant cells determine the plane of cell division before mitosis with the formation of a cortical microtubule array encircling the nucleus. Little is known about the assembly of this preprophase band (PPB) of microtubules, or the precise mechanisms by which it marks the future division plane. Arabidopsis plants harboring mutations in the TON1 and TON2 genes display a complete absence of PPBs and random cell division plane placement. Though it is known that TON1 and TON2 play important roles in PPB formation, exactly what these proteins are doing and how they are regulated is not known. It is suspected that TON1 Recruiting Motif (TRM) proteins may be involved in TON1 and TON2 recruitment to the PPB. My research focuses on seven members of the TRM superfamily, TRM1, TRM12, TRM13, TRM14, TRM15, TRM18 and TRM33. Yeast-two-hybrid assays indicate that TRMs 1, 12, 13, 14, and 15 interact with TON1. TRM1 has been previously shown to target TON1 to microtubules, and is thus a good candidate for PPB related function. BLAST analysis of the TRMs reveals that TRMs 12, 13, 14, 15, 18, and 33, are all putative phosphatidylinositol n-acetylglucosaminyltransferase subunit Ps (PIGPs). PIGs are involved in the synthesis of glycosyl phosphatidylinositol (GPI) anchors, which are posttranslational modifications that attach the modified proteins in the outer leaflet of the plasma membrane. Targeted disruption of these putative PIGP TRMs, along with localization studies of a larger subset of TRMs, may shed light on the mechanisms responsible for PPB formation in Arabidopsis, and land plants in general.

COLLEGE STUDENTS PERCEPTION OF RIGHT-TO-CARRY ON CAMPUS IN THE UNITED STATES

Presenter	Foster, Morgan Graduate, Criminal Justice Sciences
Mentor	Prof. Cara Rabe-Hemp

The purpose of this study is to explore college student's perception of right-to-carry on campus. With gun control being one of the most widely contested topics in both media and society, understanding how the youth of this country's future perceive firearms is imperative in order to interpret how policies will be shaped. While a vast amount of research has been conducted on how society at large feels about right-to-carry, little is known about how college students interpret and exercise the Second Amendment. This research will provide information regarding how the youth of this country perceives firearms. This research will provide policy makers with data on how college students recognize right-to-carry, and if their perceptions have a relationship with their university's location.

CONSTRUCTION OF MOLECULAR TOOLS FOR THE STUDY OF GENE AND NEURAL FUNCTION IN DECAPOD CRUSTACEANS

Presenter	Gahrs, Casey Graduate, Biological Sciences
Mentor	Prof. Wolfgang Stein
Co-Mentor	Prof. Andrés Vidal-Gadea
Authorship	Casey Gährs; Abigail Benson; Andrés Vidal-Gadea; Wolfgang Stein

Modulatory transmitter systems are major contributors to nervous system plasticity and behavioral flexibility. To understand the mechanisms of neuromodulation, we must characterize modulator origins, targets, molecular pathways, and physiological responses. This is challenging using existing model organisms due to lack of identified neurons, access to cellular and circuit dynamics, or molecular tools. We seek to overcome these limitations by establishing transgenic labeling of neuronal structures, including modulatory transmitters and their receptors, in decapod crustaceans with characterized modulatory systems and neuronal physiology.

We are using marbled crayfish - the first decapod crustaceans to have both genome and transcriptome sequenced. We have shown that offspring of this parthenogenetic species show little genetic variability, indicating a high probability for genetic manipulations to be carried to future generations. As a first step toward transgenesis, we utilized our genome and transcriptome to perform BLAST analyses against related species to identify candidate genes of interest. We first developed a positive transgenesis marker by fusing GFP with the ubiquitously-activated promoter for actin-1 (Pactin-1), as actin-1 is broadly expressed early in development. Co-injection of Pactin-1::GFP will facilitate determination of transgenesis in subsequent injections of GFP-fusion products of neuronal genes. The marbled crayfish actin-1 transcript consists of 1132 bases with no introns; it is 92% homologous to cytoplasmic-type-actin-1 from *Homarus americanus* and 97.6% homologous to actin-1 from *Penaeus monodon*. We are now microinjecting Pactin-1::GFP plasmids into stage-1 oocytes to create the first transgenic line of crayfish.

SEXUAL SELF-ESTEEM AND APPEARANCE ANXIETY AS PREDICTORS OF RISKY SEXUAL BEHAVIOR

Presenter	Garza, Alexis Undergraduate, Psychology
Mentor	Prof. Corinne Zimmerman
Co-Mentor	Prof. Marla Reese-Weber
Authorship	Alexis Garza

The purpose of this study was to examine how sexual self-esteem and appearance anxiety are related to risky sexual behavior. Participants from Illinois State University reported on sexual self-esteem, appearance anxiety, and sexual risk-taking behavior. It is hypothesized that young women who exhibit low sexual self-esteem are more likely to engage in risky sexual behavior. It is hypothesized that young women who score high on appearance anxiety are more likely to engage in risky sexual behavior.

EFFECTS OF GLOBAL-LOCAL PROCESSING ON RECOGNITION OF EMOTIONAL DISTRACTORS

Presenter	Givens, Chloe Undergraduate, Psychology
Mentor	Prof. Dawn McBride
Authorship	Chloe Givens

Emotions have been shown to affect global-local processing. Studies have shown links between happy faces and global attention as well as sad faces and local attention. (Srinivasan & Gupta, 2011) Given that previous studies have not yet focused on the links between angry faces and processing, the present study examines if angry faces are also linked to local processing. The current study will investigate the effects of global - local processing on the recognition of distractor faces with emotional expressions. Participants performed a digit discrimination task with digits at either the global level or the local level presented against a face (happy or angry) as the background. We also manipulated the delay between study and test for the faces. We expect the results to show that global processing associated with holistic scope of attention aids recognition of happy faces, and local processing associated with more detailed scope of attention aids recognition of angry faces. We also expect the local processing effect to diminish more quickly over delays, such that memory for angry faces should decline more quickly than memory for happy faces. These results will support a reciprocal relationship between emotional processing and global-local processing.

DIFFERENTIAL DIAGNOSIS OF AUDITORY PROCESSING DISORDER IN CHILDREN: A LITERATURE REVIEW

Presenter	Glennon, Jessica Graduate, Communication Sciences and Disorders
Mentor	Prof. Benjamin Kirby
Authorship	Jessica Glennon

Although there is no consensus on the definition of auditory processing disorder (APD), it is typically characterized by listening difficulties resulting from deficits in auditory perceptual processing of sounds in the central auditory nervous system. APD often co-occurs with other disabilities such as ADHD, dyslexia, and specific language impairment. Presenting symptoms can be very similar to these other disorder, complicating diagnosis. Due to the overlap of symptoms between APD and various other deficits, there are concerns that professionals in different fields are providing children with different labels for the same group of symptoms. Therefore, the aim of this literature review is to discuss the challenges in identifying APD and distinguishing it from other developmental disorder, especially in children. As part of the recommended clinical protocol in audiology, several test batteries are commonly used to diagnose APD through a combination of clinical observation, behavioral assessments with and without speech stimuli, electrophysiological assessments of brain activity in response to sound stimulation, and speech-language assessments. Although there is evidence supporting comorbidity between APD and other disorders, current test batteries alone do not have the specificity to distinguish APD from some other types of developmental delay. There is a need for the development of improved assessment techniques that are both sensitive to the presence of APD and at the same time do not result in false positive diagnoses of APD in children with other disorders. In the meantime, a multidisciplinary approach is emphasized for the assessment and intervention of APD in an attempt to reduce the risk of erroneous diagnosis of APD in children with other developmental disabilities.

AN ANALYSIS OF HIGHER EDUCATION RETENTION ACROSS ILLINOIS STATE UNIVERSITY ACADEMIC COLLEGES

Presenter	Goodman, Michael Undergraduate, Accounting
Mentor	Prof. Susan Chen

The last four years have been remarkable for Illinois State University regarding university enrollment. Three of the last four had record breaking numbers. According to the US Department of Education, ISU continues to be in the top 10% of year over year retention rates in public schools across the country. While the government and university perform studies on retention at the university level, there are not many studies that examine it on an academic college level.

This project will study the two largest cohorts of First Time in College (FTC) students at Illinois State University, Fall 2015 and 2016. I will examine year over year retention rates for those two cohorts at the university level and academic college level. I will also study those that leave the university and any relation between their academic college, gender, race, and high school and economic background.

INCREASING SOCIAL INTERACTIONS OF HIGH SCHOOL STUDENTS WITH DEVELOPMENTAL DISABILITIES

Presenter Greenaberg, Bailey
 Undergraduate, Special Education

Mentor Prof. Yun-Ching Chung

One of the evidence-based practices that focuses on the educational outcomes of students with disabilities is naturalistic strategies. Many studies of naturalistic strategies involved young students who received interventions from parents and educators. However, little is known about how naturalistic strategies can be implemented by peers of secondary school students with developmental disabilities (i.e., autism and/or intellectual disability). This intervention study evaluated the social communication outcomes of three high school students in the general education classrooms after peers received brief training delivered by a paraprofessional. We collected data using direct observations and post-intervention interviews. This presentation will focus on the results of the post-interviews with peers, paraprofessional, and teachers. Specifically, we will share the social importance of the goals, procedures, and outcomes of the project, as perceived by study participants. We will also discuss recommendations of creating natural supports for high school students with disabilities in inclusive settings and classrooms.

THE RELATIONSHIP BETWEEN GREEK LIFE AND DIVISION III COLLEGE ATHLETICS

Presenter Griffith, Jacob
 Graduate, Kinesiology & Recreation

Mentor Prof. Rebecca Achen

The Relationship Between Greek Life and Division III College Athletics researches how athletes at Division III balance both their sport and a fraternity. Both groups normally emphasize a "student first" approach and the importance of defining what a successful Greek-student-athlete looks like, so that the students have a clear understanding (Barnell and Kerr 2016). Students can respond to being pulled by multiple groups in one of two ways; they can embrace it and grow stronger from everything they experience, or they can wither from it and begin quitting groups (Barnell and Kerr 2016). Both play a key role in the overall student experience for most students at the school. My research is to look at the students who participate in both a sport and a fraternity to determine what advantages and challenges they face from doing both large groups.

Some of the research states that a highly involved person with not only manage but thrive in being in multiple groups as it allows the student to engage and disconnect for periods of time (Routon and Walker 2016). Previous research suggests that humans are a social being, and we can grow weary of monotonous routines (Tajfel 1979). Joining a social group, such as a fraternity, is a common way for students to break from their norm and become more actively involved in their campus (Richards 1999). It can be hypothesized that a fraternity is good for an athlete as it can help them be more involved on campus, get a break from their normal athletic routine, and socialize with people who do not have the same interests.

The research is limited to Division III as I am using convenience sampling to communicate with my participants. Participants will be identified through my own contacts over phone, email and Facebook. I will then ask my contacts to refer me to others who fit the characteristics I am looking for. I talked to Greek life coordinators at Division I schools and learned that the crossover from athletics to Greek life is so minimal that this research is a non-issue. Due to this the subjects will be pulled from smaller, Division III schools as there seems to be more involvement in both groups at this level.

EXTRINSIC LIFE GOALS' DELETERIOUS INFLUENCE ON MENTAL ILLNESS SELF-STIGMA

Presenter	Guzaldo, Joseph Undergraduate, Psychology
Mentor	Prof. Dan Lannin
Authorship	Joseph Guzaldo; Dan Lannin

The present research explored the relationship between extrinsic life goals and mental illness stigma. Two hundred fifteen undergraduates completed assessments of values, self-stigma, and demographics. Even after controlling for relevant covariates, prioritizing extrinsic values predicted greater mental illness self-stigma. Implications for practice and policy will be discussed.

DEBT AND GROWTH: IS THERE A MAGIC THRESHOLD FOR ADVANCED ECONOMIES?

Presenter	Habibi, Hamidreza Graduate, Economics
Mentor	Prof. Hassan Mohammadi
Authorship	Hamidreza Habibi

Is there a threshold in the level of government debt above which higher debt would exert a detrimental effect on growth? The answer to this question is of critical importance given the historically high levels of debt in advanced economies.

The literature on the interaction between growth and debt has been divided into two categories. First, one group of studies focus on the problem of endogeneity which is important due to the fact that the correlation between the debt and growth might be driven by low economic growth that leads to high level of debt (Reinhart et al.2012). Second, the vast majority of papers concentrated on finding a specific threshold in the level of government debt above which more debt would have a detrimental effect on growth.

Reinhart & Rogoff (2010) suggest a debt to GDP ratio of 90 percent. However, their analysis is not based on formal estimation. After 2010, several papers have focused on estimating the value of threshold using formal econometric methods and economic theories.

In this paper I utilize the threshold least squares regression procedure of Hansen (2010) to estimate the relationship between debt and growth for G7 countries during 1981-2016. This Procedure (1) determines the threshold value endogenously through a grid search, and (2) tests different models sequentially against one another using bootstrapping methods. The linear specification is tested against a two-regime model. If the null hypothesis of the linear model can be rejected against alternative hypothesis of the two-regime model, then the estimation can be carried out using the predetermined threshold variable. Control variables considered for this paper are inflation, trade openness, population growth and previous year's GDP which is consistent with majority of papers in the literature.

The main finding of the paper is that the threshold level of the long-run debt-to-GDP ratio is about 78 percent among advanced economies. Each percentage point surpassing this threshold will cost the respective economy a 0.00015 percentage point decline in economic growth. Although, this value is not economically large, it can be substantial when we consider that as a cumulative amount over time.

WORKING WITH YOUNG MEN

Presenter	Hamilton, Christopher Graduate, Social Work
Mentor	Prof. Kate Sheridan

Bloomington Junior High School recently started a small social-emotional skills group, designed to help teach 8th grade boys emotional regulation and problem solving skills. The goal of the group was to teach these young men strategies to navigate conflict with teachers and peers, and to give them skills to be successful in an academic environment. This mixed methods program evaluation aims to determine if Bloomington Junior High School's new skills group was effective in reducing the problem behaviors its participants demonstrated before being enrolled in the group. This was determined through tracking behavior referral data, along with compiling and analyzing the results of a focus group that gave students a chance to share their takeaways from the group.

ASSESSING THE EXPERIENCES OF WOMEN WHO HAVE SUFFERED INTIMATE PARTNER VIOLENCE LIVING IN SHELTERS

Presenter	Hammond, Queencilla Graduate, Criminal Justice Sciences
Mentor	Prof. Shelly Clevenge

Intimate partner violence, usually termed domestic violence takes various forms, including physical violence ranging from slaps, punches, and kicks to assaults with a weapon and homicide; and sexual violence takes forms such as forced sex, or forced participation in degrading sexual acts. These are frequently accompanied by emotionally abusive behaviors such as prohibiting a woman from seeing her family and friends, ongoing belittlement or humiliation, or intimidation; economic restrictions such as preventing a woman from working, or confiscating her earnings; and other controlling behaviors (Watts & Zimmerman, 2002).

Many shelters have undisclosed locations for security concerns and residents are a group of people whose voices are unheard. This research seeks to identify battered women's experiences from their own accounts as residents of shelters. Participants will be asked to discuss their experiences while staying at the shelter, the form(s) of support they receive from the shelter as well as the form(s) of support that has been most relevant to them. The findings from this proposed study could guide management of domestic violence shelters to put in place measures that will improve the services they offer clients and residents.

SANDWICH STYLE SUBSTRATES FOR SURFACE ENHANCED RAMAN SPECTROSCOPY

Presenter	Harms, John Graduate, Chemistry
Mentor	Prof. Jun-Hyun Kim
Authorship	John Harms; Jun-Hyun Kim

Surface-enhanced Raman spectroscopy (SERS) is an analytical technique in which the signal of a sample can be amplified via adsorption onto a nanoscale metal particle possessing a strong surface plasmon resonance (SPR). Four different types of metal nanoparticles (i.e., gold, silver, silver-gold core-shell, and anisotropic gold nanoparticles) possessing SPRs are prepared and loaded onto paper-based materials to examine their SERS signals. Among these nanoparticles, the anisotropic gold nanoparticles exhibit a high response due to the increases surface areas and the nature of SPR near the Raman excitation wavelength. Upon the addition of second layer of metal nanoparticles (i.e., sandwich), the SERS signals are significantly improved by introducing SPR coupling and creating hot-spots. As such, we have thoroughly examined Raman signal enhancements using the sixteen nanoparticle combinations to optimize the design of SERS substrates that can lower the limit of detection for various molecules.

DISCORD AND VIOLENCE: CONCEPTIONS OF 'PROPERTY' AND THE RIGHT TO LIFE IN THE FRENCH REVOLUTION

Presenter	Herman, Nate Undergraduate, History
Mentor	Prof. Anthony Crubaugh

The French Revolution was a confusing amalgamation of competing interests and philosophies that came together because the social and civic structure that had maintained the veneer of stability finally crumbled in 1789. In the early years of the Revolution, liberal nobles envisioned the creation of a constitutional monarchy with little social modification; moderate and radical republican Jacobins, the most influential being those in Paris, entertained various notions of wealth redistribution and property rights; utopians envisioned land redistribution and radical equality. As the Revolution 'devoured her children,' the dissenting voices were increasingly left of center and increasingly radicalized as the Revolution failed to deliver the 'right to life' (mitigation of destitution) that many had hoped that it would. An analysis of a few voices taking part in these debates, within the context of the course of the Revolution through 1793, seem to suggest that part of this failure of the state to satiate its people lies with political gridlock over property rights under the new social order, and indeed, over differing conceptions of property itself.

INFLUENCE OF INFLATABLE ANTI-FATIGUE MATS ON CENTER OF PRESSURE DISPLACEMENT DURING PROLONGED STANDING

Presenter Higinbotham, Sean
Graduate, Kinesiology & Recreation
Mentor Prof. Adam Jagodinsky
Authorship Sean Higinbotham; Adam Jagodinsky; John Fox; David Grieshaber

Introduction: Many workers are exposed to prolonged periods of standing, which has been linked to musculoskeletal pain, discomfort and other serious health conditions. Additionally, standing desks that do not promote regular bouts of movement may also lead to prolonged standing exposures and increase the risk for pain and discomfort. Traditional foam anti-fatigue mats have been shown to increase foot pressure displacement during prolonged standing and mitigate factors associated with pain and discomfort. However, the purported efficacy of novel inflatable anti-fatigue mats to promote foot pressure displacement has not been investigated.

Purpose: The aim of this study was to evaluate the effect of inflatable anti-fatigue mats on center of pressure (COP) displacement compared to foam mat and hard surface conditions during prolonged standing.

Methods: 18 healthy individuals (Ht: 1.77 ± 0.11 m, Wt: 79.41 ± 19.60 kg, Age: 20.5 ± 1.6 yrs) stood for one hour on one of three floor conditions: Inflatable mat (IM; WurffTM Board, 3psi), foam mat (FM; EVA foam, 16mm), and hard surface (HS; force platform). Participants were instructed to stand normally at a standing desk and perform office work tasks with their feet inside the dimensions of the force platform. COP data were collected (1000Hz) for one minute at 0, 15, 30, 45 and 60min. COP data were normalized to foot position, and root mean square COP displacement (RMS) and velocity (RMSv) in the medial-lateral (x) and anterior-posterior (y) directions were calculated as the dependent variables (DV). For each DV a mixed ANOVA was conducted to investigate the between group (condition) and within group (time) differences.

Results: A significant main effect of condition was observed for RMSy variable [$F(2, 15) = 8.24, p = .004, \text{partial } \eta^2 = .52$]. Post-hoc tests revealed that IM (2.35 ± 1.10) yielded significantly more RMSy than FM (1.13 ± 0.47) ($p = .016$) and HS (0.92 ± 0.32) ($p = .005$).

Conclusion: The results reveal that inflatable anti-fatigue mats induce greater COP displacement in the anterior-posterior direction compared to hard surfaces and traditional foam mats during one hour of standing. Further research is needed to investigate the relationship between COP displacement and pain/discomfort measures when an inflatable mat is utilized during prolonged standing.

HOW DO ILLINOIS VALLEY COMMUNITY HOSPITAL'S 30 DAY READMISSION RATES COMPARE TO STATE AND NATIONAL RATES BASED ON PATIENT DEMOGRAPHICS?

Presenter	Hoberg, Margaret Graduate, Social Work
Mentor	Prof. Kathryn Conley Wehrmann

The Affordable Care Act established the Hospital Readmission Reduction Program in 2012. Under this program, hospitals are fined if they have greater than expected risk-standardized 30 day readmission rates for 4 specific diseases: acute myocardial infarction, pneumonia, heart failure and chronic obstructive pulmonary disease. This study aims to investigate the factors and demographics among individuals readmitted to Illinois Valley Community Hospital within 30 days of discharge based on a review of patient files. The study sample is comprised of approximately 240 records of patients all of whom are over the age of 18. The purposive sample is selected from the case records of patients who were treated at the hospital from December 2015 to December 2017. This is a descriptive study using quantitative methodology to conduct a review of case records of patients that have had more than one hospital admission to IVCH within 30 days. Patient records will be unidentified via a spreadsheet that lists all patients readmitted to the hospital. Within the spreadsheet rows identify the various demographics which are being looked at. Data collection from the case files will continue until saturation is reached (i.e. when no new information of coming from the review). The goal of this study is twofold: 1) identify patterns in patient factors and demographics which may or may not involve their readmission to IVCH within 30 days of discharge and 2) see how these factors and demographics compare to state and national statistics.

THE DARK SIDE OF HUMAN NATURE

Presenter	Hoffmann, William Undergraduate, Philosophy
Mentor	Prof. Daniel Breyer

I am engaging in a topic on the dark side of human nature.

SAGGITAL AND FRONTAL KNEE ANGLES OF YOUTH THROUGHOUT JUMP MOTION.

Presenter	Holford, Chase Graduate, Kinesiology & Recreation
Mentor	Prof. Mike Torry
Authorship	Mike Torry; Adam Jagodinsky; Jeff Cowley; Steve McCaw

Adolescent and post-adolescent females experience injury to the anterior cruciate ligament (ACL) more frequently than do their male counterparts in similar sports. It has been observed that females tend to land with less knee flexion and greater knee valgus angles than their male peers. These landing patterns are associated to the non-contact ACL injury mechanism. The purpose of this study is to examine the knee kinematic landing patterns in youth in the frontal and sagittal planes to determine whether these same kinematic differences exist between pre-adolescent males and female.

Thirty-two subjects (16 females and 16 males; aged 6 to 10 yrs) volunteered for participation in the study. They were asked to perform maximal jump and landing motions while being recorded for biomechanical analysis utilizing a 10-camera infrared system (200 Hz; all XYZ coordinates filtered at 20 Hz) and an imbedded force plate (1,000 Hz; filtered at 20 HZ). Values for knee flexion and valgus angles at touchdown and at maximal flexion were extracted from the data and compared between genders with an unpaired t-test: $\alpha \leq 0.05$. No statistically significant differences were observed in valgus ROM (males: $2.75 \pm 17.3^\circ$; females: $6.68 \pm 14.2^\circ$) [$p=0.32$] nor knee flexion ROM (males: $37.1 \pm 19.0^\circ$; females: $40.2 \pm 10.7^\circ$) [$p=0.42$]. Further, valgus angle at initial contact displayed no difference (males: $-4.81 \pm 7.83^\circ$; females: $-3.01 \pm 8.99^\circ$) [$p=0.40$]. However, it was found that knee flexion at initial contact was different (males: $16.1 \pm 10.5^\circ$; females: $20.7 \pm 8.10^\circ$) [$p=0.05$].

MODELING CLIMATE CHANGE IMPACTS ON WATER BALANCE COMPONENTS OF THE MACKINAW RIVER WATERSHED, CENTRAL ILLINOIS

Presenter	Honings, Joseph Graduate, Geography, Geology and the Environment
Mentor	Prof. Wondwosen Seyoum
Authorship	Wondwosen Seyoum

Understanding the response of water cycle dynamics to climate change and human activity is essential for best management of water resources. This study used the USDA Soil-Water Assessment Tool (SWAT) to measure and predict major water balance variables including stream discharge, potential aquifer recharge, and surface storage in a small-scale watershed (~2,930 km²) in Central Illinois. The watershed is predominantly tile-drained agricultural land, which controls the nutrient dynamics and hydrology. Two reservoirs, Evergreen Lake and Lake Bloomington, and the Mahomet Aquifer in the watershed are used for public water supply. The subject watershed has been very sensitive to recent droughts, such that an interim water supply plan has been developed for water management. To assess how the watershed and tile drainage are affected by future climate change, this study used high-resolution climate projection data (~12 km) in a calibrated and validated SWAT hydrologic model. Using General Circulation Models, four (4) representative concentration pathways (RCPs) developed by the IPCC Coupled Model Intercomparison Project Fifth Assessment Report (CMIP5) were used for prediction of precipitation and temperature for the watershed. Precipitation and temperature are predicted to increase by mid-century for all scenarios. Percentage of precipitation lost as ET decreases for all RCPs, with the exception of RCP 8.5, by 2050. Total aquifer recharge remains consistent temporally. An increase in surface runoff and tile flow is predicted for each RCP by 2050. Total water yield of the watershed increases with each scenario by mid-century. Results indicate continued nutrient loading of the surficial reservoirs that are used for public water supply and recreation. Nutrient management measures will need to remain in place and be enhanced.

THE EFFECTS OF SEX OFFENDER REGISTRATION ON YOUTH WITH SEXUALLY PROBLEMATIC BEHAVIORS

Presenter	Hook, Megan Graduate, Social Work
Mentor	Prof. Kate Sheridan
Authorship	Megan Hook

The purpose of this proposed qualitative study is to determine the effects of sex offender registration on youth with sexually problematic behaviors and their families, using interviews with parents or guardians of youth on the sex offender registry who have received services from ABC Counseling in Normal, Illinois, to measure the effects. Participants will be invited to a semi-structured interview, which will include twelve questions asking them to rate perceived impact on their child's registration on the sex offender registry on their child using Likert scale type questions and three open-ended questions examining perceived impact of their child's registration on the sex offender registry on their family. Interviews will last approximately fifteen minutes or less and will be analyzed to identify major themes.

SYNTHESIS AND CHARACTERIZATION OF RUTHENIUM COMPLEXES FOR USE IN THE TREATMENT OF ALZHEIMER'S DISEASE

Presenter	Huffman, Samantha Graduate, Chemistry
Mentor	Prof. Michael Webb

Alzheimer's disease (AD) is a neurodegenerative disorder that is characterized by the aggregation of the protein amyloid- β ($A\beta$). These aggregates, as well as soluble $A\beta$ oligomers, have been observed to bind to metals, making them a promising target for therapy. By modifying the ligands on a Ru metal center, new complexes can be tailored so that the Ru can bind to the $A\beta$ protein, thereby preventing its toxic behavior. In these studies, we have synthesized several Ru-complexes, each with minor changes made to the ligands, in order to probe the effect of each ligand on the observed activity of the complex. Once prepared, each compound undergoes structural determination using common spectroscopic methods such as nuclear magnetic resonance (1H NMR) spectroscopy and infrared (IR) spectroscopy, while elemental analysis (EA) confirms the purity. Further analysis of the interactions with $A\beta$ will be achieved by using electron paramagnetic resonance (EPR) spectroscopy and fluorescence. Future studies in the area will involve biological testing to determine the ability of each compound to be viable for use as a potential alternative in the treatment of Alzheimer's disease.

EFFECTIVENESS OF EXERCISE IN A NEMATODE MODEL OF DUCHENNE MUSCULAR DYSTROPHY: IMPROVEMENTS IN MOBILITY

Presenter	Hughes, Kiley Graduate, Biological Sciences
Mentor	Prof. Andrés Vidal-Gadea
Authorship	Kiley Hughes; Anjelica Rodriguez; Andrew Schuler; Yazmin Giliana; Baylee Paluzzi; Neha Gutta; Alex Kullman; Calis Lim; Lavanya Sathyamurthy; Sruthi Singar

Duchenne muscular dystrophy (DMD) is an x-linked degenerative disease that affects one out of every 3,500 males. This disease is produced by a mutation in the dystrophin gene that results in an absence of the dystrophin protein. The result is progressive muscle weakness, leading to loss of ambulation in late adolescence and premature death. Currently, there is no cure for DMD, and no well accepted exercise regime for DMD patients. Studies have suggested minimal improvement in strength following exercise, but the effect of type and duration of exercise has not been considered until now. Previously, we demonstrated that the *dys-1(eg33)* *C. elegans* mutant is the most faithful animal model for Duchenne muscular dystrophy. It models the disease genetically, behaviorally, and anatomically, without requiring the secondary (sensitizing) mutations common in other animal models of the disease. To determine the effects of exercise on muscle integrity we subjected *dys-1* animals to control, strength, or endurance exercise regimens of multiple durations. We find that while swimming did not increase longevity in dystrophic animals, it did temporarily improved their mobility. Our results represent the most complete assessment of exercise effect on dystrophic musculature to date, and demonstrate the complex interactions taking place between factors differentially affecting dystrophic musculature health, function, and longevity. Patients often face the daunting challenge of engaging in therapeutic treatments lacking experimental basis. It is our hope that our work will enable DMD patients and physicians to make more informed decisions regarding potential treatment approaches.

ABUNDANCE OF MICROPLASTICS IN FRESHWATER STREAMS OF RURAL AREAS

Presenter	Hurt, Raven Undergraduate, Biological Sciences
Mentor	Prof. Catherine O'Reilly
Authorship	Catherine O'Reilly; Ian Rusthoven

A relatively new type of pollutant called microplastics have emerged in freshwater streams that can cause damage to wildlife and the overall health of aquatic ecosystems. Microplastics are tiny pieces of plastic around 5mm or smaller that are showing up all over the world in aquatic and marine environments. These microplastics are being produced by a number of different sources; one being microbeads, which are miniscule pieces of polyethylene, used in cosmetics and exfoliating beauty products. While other sources come from larger pieces of plastic debris that have further broken down into smaller pieces over time, these small particles of plastic are passing through the filtration systems of wastewater treatment plants with ease and into the surrounding streams. With wastewater treatment plants being the gateway for microplastics into aquatic ecosystems, we will be testing for a significant difference in the concentrations of microplastics upstream from the plants versus downstream. Samples will be taken every week in the stream surrounding the Village of Morton's wastewater treatment plant, both upstream of the effluent and downstream of the effluent. The samples will then be taken to the laboratory and processed using standardized methods to dry out and digest the organic material from the original samples, leaving behind the microplastics to be sorted and counted. We predict that, because the filtration systems of most wastewater treatment plants are not well suited to stop microplastics, there will be a higher concentration downstream of the effluent than upstream of the effluent. We also predict that the microplastics found will contain more microfibers rather than microbeads due to the Microbead-Free Waters Act of 2015. Microplastics have been thought to be substantially more concentrated in highly populated areas like big cities, but evidence of microplastics now being present in rural areas suggests that these little particles are becoming a much larger problem.

COMPARATIVE STUDY OF BLACK CURRANT PRODUCTION IN RUSSIA AND ILLINOIS: BEST MANAGEMENT PRACTICES, ECONOMIC PROFITABILITY, AND MARKETING STRATEGIES

Presenter	Jolly, Andrew Undergraduate, Agriculture
Mentor	Prof. Iuliia Tetteh
Co-Mentor	Prof. David Kopsell
Authorship	Andrew Jolly; Iuliia Tetteh; David Kopsell

Black currant is a perennial, woody shrub that originated in Eastern Europe, and is still widely grown there today, but remains a rare and not commonly known berry in the United States. The purpose of this research is to evaluate the potential for black currant production in Illinois from agronomic and economic standpoints. Our research team will collaborate with a faculty and one undergraduate student from Russia on this project to evaluate and compare optimal production practices, the economic profitability and potential marketing strategies in the United States and Russia. From primary research (discussion with growers in Illinois), we anticipate to find out that marketing strategies may impose significant challenges for black currant producers in Illinois. The results of the study will be informative for current and future growers as they will draw upon the success of the black currant production and marketing in Russia.

ATHLETIC IDENTITY, INSTITUTIONAL SUPPORT SERVICES, AND TRANSITION: AN ANALYSIS OF STUDENT-ATHLETE PERCEPTIONS AND IMPLICATIONS

Presenter Kaczorowski, John
 Graduate, Kinesiology & Recreation

Mentor Prof. Rebecca Achen

Brewer, Van Raalte and Linder (1993) defined the term athletic identity as the degree to which a person identifies with the role of an athlete and seeks outside acknowledgement of that role. Those who have a high athletic identity tend to be those who have achieved elite levels within athletics. These elite athletes tend to base their self-worth and self-esteem on their ability, performance and the appreciation of their athletic talent, while gradually neglecting other aspects of psycho-social development (Cieslak II, 2004). These resulting deficits have been attributed to what is called identity foreclosure in the literature. Good, Brewer, Petitpas, Van Raalte and Mahar (1993) summarize this concept as “a construct used to describe people who have committed to an occupation or an ideology without first engaging in exploratory behavior” (p. 2). This can lead to a perceived lack of need to make decisions based on anything other than one’s primary identity. This issue was recently explored by Kulics, Kornspan and Kretovics (2015) whose findings were consistent with the supposition that high-stakes athletes take a short-term outlook rather than focusing on their post-sport careers.

This aversion to long-term and transitional planning can have tremendous behavioral and psycho-social consequences resulting from individuals’ inability to identify as anything other than an athlete. International table tennis player and sport psychology student, Emma Vickers, had this to say about life post-athletics, “many will struggle with adapting to a ‘regular life’ where they are no longer in the limelight and perhaps in their eyes, become forgotten members of society” (Vickers, 2013). This posit from a high-stakes athlete is consistent with expert researchers on this topic. As Murphy, Petitpas, Brewer and others (1996) noted, “Failure to formulate mature career plans may account for some of the difficulties athletes encounter when faced with disengagement from sport roles” (p. 244).

While no data have been collected yet, this study will utilize quantitative survey data to explore potential links between student-athlete perceptions of self, service offerings, service usage, and perceived preparedness for transition from college to career and life beyond elite athletics. It will also include interviews with student-athlete service coordinators for qualitative triangulation from an institutional perspective.

EXPANDED SCOPE OF OXIDOPYRYLIUM-ALKENE[5+2] CYCLOADDITION CONJUGATE ADDITION CASCADES (C3)

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

New medications are being discovered every year. A majority of these medications require reactions to synthesize them from cheap available intermediates and research toward new reactions allows for more efficient pathways. Caged ethers derived from oxidopyrylium-alkene [5+2] cycloaddition conjugate addition cascades (C3) sequences of acetoxy pyranone-alkenes provide novel scaffolds toward potentially biologically active structures. Starting with commercially available materials, four to nine steps allow access to a variety of desired acetoxy pyranone-alkene intermediates. Varying yields are observed in the [5+2] cycloaddition, this demonstrating scope and limitation.

EFFECT OF DIFFERENT NECK POSTURES ON SWALLOWING FOR A CHILD WITH CEREBRAL PALSY: A CASE STUDY

Presenter Leja, Justyna
 Undergraduate, Communication Sciences and Disorders

Mentor Prof. Taeok Park

Purpose: The purpose of this study was to observe effects of different postures on swallowing for a child with cerebral palsy.
Methods: Patient is a nine and half year-old male who was diagnosed with cerebral palsy (CP). The onset of dysphagia was present since birth. Primary nutrition is currently provided by a L-tube. Patient swallowed thin liquid via spoon with two different postures during videofluoroscopic swallowing examination (VFSE): 1) hyperextension of the neck and 2) upright posture. Signs of swallowing disorders were observed with VFSE.

Results: For swallowing with hyperextension of neck posture, there is no lip closure and the mouth is open, however there is no anterior loss of bolus. The patient holds the bolus posteriorly in the oral cavity. The nasal regurgitation was observed. There is movement of laryngeal closure, but the duration of laryngeal closure is short which results in aspiration without cough (silent aspiration). The upper esophageal sphincter (UES) does not open well. There is residue on the tongue, the base of the tongue, lateral sulci, and soft palate. For upright posture, the patient has normal lip and mouth closure. There is tongue movement resulting the bolus to move posteriorly during oral stage. The movement of epiglottis and laryngeal closure is present however, silent aspiration still occurs. The UES opens to allow the bolus to enter the esophagus. There is a minimal of residue on the tongue base, pharyngeal wall, and lateral sulci.

Conclusion: This study found that the upright posture improved swallowing in patient with cerebral palsy. The patient has normal lip closure and tongue movement that allows for better control of the bolus in the oral cavity. In addition, the improvement of laryngeal closure was observed to during pharyngeal swallow. The opening of the UES is improved in the upright posture. The differences between hyperextension and upright postures are significant in the role of feeding and swallowing.

EFFECT OF CLOCK CHECKS ON PM TASK PERFORMANCE

Presenter	Love, Kayla Undergraduate, Psychology
Mentor	Prof. Dawn McBride
Authorship	Kayla Love

Remembering to complete a future task is called prospective memory (Einstein & McDaniel, 2005). The current study compares different types of prospective memory tasks in a between-subject design. Both accuracy and cost are being measured. According to a study done by Strickland, Heathcote, Remington, and Loft (2017), event-based prospective tasks show better performance than time-based tasks. However, it has also been found that restricting access to clock checking does not decrease accuracy in time-based tasks (Huang, Loft, & Humphery, 2014). Thus, the current study compared time-based tasks where clock checking was restricted and when it was not restricted. Based on the results of past studies, I predict that prospective memory will be correlated to the number of clock checks made with better performance for the time-based task when clock checks are not restricted. I also hypothesize a greater cost to the concurrent tasks for the restricted time-based condition than the other task conditions.

HOW DO ACUTE CARE ROUNDS CONTRIBUTE TO PATIENT OUTCOMES?

Presenter	Lowery, Rachel Graduate, Social Work
Mentor	Prof. Kathryn Conley Wehrmann
Authorship	Rachel Lowery

Interdisciplinary rounds within the acute care setting increase communication between team members that increases coordination; however, it is unknown how these meetings contribute to the welfare of the patients from the perspective of meeting participants. The goal of rounds is to make patient transitions from the hospital to subsequent levels of care smoother as well as decrease the risk for readmission. These meetings attempt to bridge the gap between multiple disciplines within the hospital and utilize all specialized skill sets, critical thinking and teamwork to provide the most comprehensive and coordinated care possible to the patient.

Depending on the unit, rounds can look very different since a variety of disciplines or ancillary services are included based on what is needed for that particular setting. Literature shows the benefit of interdisciplinary rounds and how they can have positive effects on patient outcomes, length of stay (LOS), as well as hospital and interpersonal atmospheres. Rounds are becoming more prevalent; however, there are issues with participation that can determine the productivity of the meetings and ultimately the care and experience of the patient. Rounds have the potential to contribute to patient outcomes in a positive way and ways need to be found to ensure they occur.

The purpose of this study is to explore how rounds in an acute care setting contribute to patient outcomes from the perspective of the participants as well as identify what may contribute to the ineffectiveness. A purposive sample of 40 case managers at an area acute care hospital will be invited to complete an anonymous online survey regarding their perceptions on rounds.

COMMUNICATION IN LIVE SPORTS BROADCASTS: ATTRIBUTIONS OF TASK PERFORMANCE ERRORS

Presenter	Lynn, Benjamin Graduate, Communication
Mentor	Prof. Kevin Meyer

Attribution theory has been applied to a wide range of subjects, including organizational communication, interpersonal communication, performance evaluation, and perceptions of object movement. However, it has not been applied to live sports broadcasts. Utilizing participants from within the live broadcast sports community, a single study was conducted exploring perceptions of causal attributions communicated following a task performance error by a camera operator in a live sports broadcast. Causal attributions were measured with a Multidimensional Observer Attributions for Performance Scale developed by Rutherford, Harari, and Rudolph (2013). Scales were created to measure perceptions of importance, frequency, and future hiring recommendations. Practical and theoretical implications of the results are discussed.

COLD-INDUCIBLE RNA-BINDING PROTEIN AS A POTENTIAL REGULATOR OF GONADAL DEVELOPMENT IN THE RED-EARED SLIDER TURTLE

Presenter Marroquin-Flores, Rosario
Graduate, Biological Sciences

Mentor Prof. Rachel Bowden

Authorship Rosario Marroquin-Flores; Nathan Mortimer; Rachel Bowden

Vertebrate sex determination is a process whereby genes define the fate of bipotential gonads during embryonic development. Reptiles of many species exhibit temperature-dependent sex determination (TSD) in which thermal cues trigger gonadal differentiation during the thermosensitive period, approximately the middle third of development. In species with TSD, sexual development is governed by a network of genes that induce male or female gonadogenesis in an antagonistic fashion; early in the thermosensitive period, temperature-sensing molecules trigger these sex-specific networks. While the identity of the temperature sensitive genes is largely known, the temperature-sensing molecules have not yet been identified. Cold-inducible RNA-binding protein (Cirbp) is a heat-shock protein within a class of heterogeneous nuclear riboproteins that are activated by temperature. Cirbp has sexually dimorphic, temperature-dependent expression in some reptile species, and has been localized in the medullary cords of early-stage reptile embryos and in the seminiferous tubules of the testes and in the ovarian cortex of late-stage reptile embryos. It is upregulated at female-producing temperatures, concurrent with aromatase (Cyp19) and Forkhead box protein L2 (FoxL2), which have both been positively identified for their involvement in estrogen production in TSD species. As an RNA-binding protein localized to developing gonads, Cirbp may play a regulatory role in embryonic gonadogenesis by stabilizing bound pre-mRNA transcripts involved in sex-specific developmental networks. The red-eared slider turtle (*Trachemys scripta elegans*) exhibits TSD and is sensitive to female-producing temperatures of 31°C and male-producing temperatures of 26°C. Developmental profiles on morphology, recent genomic and transcriptomic advances, and nearly 15 years of data collection on *T. s. elegans* at our local field site have made it a valuable organism for research on temperature-responsive genes. With a combination of quantitative PCR and existing transcriptome data, we aim to measure Cirbp abundance at female- and male-producing temperatures in *T. s. elegans*. Our working hypothesis is that Cirbp functions in a dose-dependent fashion to regulate sex-specific differentiation and gonadal development. Using immunoprecipitation and RNA-seq, we further aim to identify transcript targets of Cirbp. We propose that Cirbp binds to transcripts involved in primary sex cord development in early-stage embryos and to those involved in gametogenesis in late-stage embryos. Our approach will introduce traditional biomedical procedures to a non-model organism to investigate the temperature responsiveness of regulatory networks controlling gonadal development in TSD species.

GRASTON TECHNIQUE PRESSURE CHANGES ON HAMSTRING RANGE OF MOTION

Presenter	Martz, Emily Graduate, Kinesiology & Recreation
Mentor	Prof. Justin Stanek
Authorship	Emily Martz; Justin Stanek; Noelle Selkow; Mallory Becker

Background: Instrument assisted soft tissue mobilization (IASTM) is able to be applied as a myofascial treatment using a specific set of instruments. In recent years it has grown in popularity with many companies developing their own application technique, such as the Graston technique. Currently, there is minimal evidence that changing the amount of pressure the instruments are applied makes a difference in treatment effectiveness. Methods: About 90 physically active participants will be recruited and assessed for hamstring tightness. Participants will have 70 degrees or less of single leg hip flexion at the beginning of treatment. Qualifying participants will be randomly allocated into three groups: firm pressure, light pressure, and control. The two pressure groups will be treated with GT 1 and GT 4 while the control group will receive hamstring stretching education. Pressure will be measured with the Motion Monitor Manual therapy product, which is attached to a computer. Firm pressure will be maintained between 25-35 N and light pressure will be less than 15 N and both treatments will last about 5 minutes. Once treatment is applied, a hamstring stretch will be applied, followed by three exercises in the lab with a focus on hamstring strength. Measurements will be taken 24 hours later. Results: Data analyzed will include the visual analogue scale (VAS) pain scores, range of motion, as well as demographic information. ROM will be analyzed with a repeated ANOVA, and the VAS scale will be analyzed with a Mann Whitney U test. Conclusion: Data will be collected over the course of the spring semester and will conclude in April.

"I'M NOT CRAZY I JUST NEED HELP": AN ASSESSMENT OF STUDENTS' MENTAL HEALTH NEEDS IN AN ALTERNATIVE EDUCATION SETTING

Presenter	McAllister, LaCrisha Graduate, Social Work
Mentor	Prof. Kate Sheridan
Authorship	LaCrisha Kate; McAllister Sheridan

As students are transitioned from traditional high schools to alternative education settings many resources are no longer readily available to them. This research is designed around the mental health needs of students at an alternative education program that does not have a full time social worker present. The needs of the students are assessed in an effort to learn how to best serve them at such a critical and vulnerable point in their education.

HOW CAN PROVIDERS USE WEB-BASED PLATFORMS TO INTERFACE WITH CLIENTS?

Presenter	McGuinness, Jillian Graduate, Social Work
Mentor	Prof. Kathryn Conley Wehrmann
Authorship	Jillian McGuinness

Telemedicine (TM) is one web-based platform that can bridge the gap and bring, specifically mental health services, direct to the user via smartphone or home computer. The ability for providers to interact with patients, regardless of the distance, is particularly appealing to those who live in rural America where services and providers may be scarce. Two studies estimate that between 17% and 49% of American's population lives in rural communities (Sahdev, 2016; Shealy, 2014). Rural living can also reflect an underserved population that is comprised of those who live in poverty, have a lower socioeconomic status and are ethnically diverse.

Providers can communicate through a secure video portal that gives real-time feedback to patients. In addition to video conferencing, there are multitudes of applications or "apps" for smartphones that allows patients to chart their moods, practice mindfulness, or learn cognitive behavioral therapy techniques to help in changing the way they think.

This exploratory study will look at the use of an app, called Daylio, which charts a patient's mood and activities daily. This app will be used as an adjunct therapy for patients to utilize between their weekly mental health therapy appointments. A purposive sampling will consist of 10 individuals with these specific diagnoses of anxiety and/or depression, which are best suited to use of the app. Qualitative questions collect the participants' opinion on the usefulness of the app.

After use of the app, each participant will take a 7-item survey that assesses how useful the app was in associating mood with activities/behaviors and if they were able to make positive changes based on that knowledge. The information collected from this research will inform providers on how apps can be utilized to support patients during their therapeutic process.

INFLUENCE OF INFLATABLE ANTI-FATIGUE MATS ON JOINT DISCOMFORT DURING PROLONGED STANDING

Presenter McGuire, Nathaniel
 Undergraduate, Kinesiology & Recreation
Mentor Prof. Adam Jagodinsky
Authorship Nathaniel McGuire; Adam Jagodinsky; Sean Higinbotham; David
 Grieshaber

INTRODUCTION: Many workers are exposed to prolonged periods of standing, which has been linked to musculoskeletal pain, discomfort and other serious health conditions. Additionally, standing desks that do not promote regular bouts of movement may also lead to prolonged standing exposures and increase the risk for pain and discomfort. Traditional foam anti-fatigue mats have been shown to mitigate factors associated with pain and discomfort. However, the specific relationship between inflatable standing mats and how they effect discomfort levels as opposed to traditional standing mats have not been previously explored.

PURPOSE: The aim of this study was to evaluate the effect of inflatable anti-fatigue mats on intra subject discomfort scores during prolonged standing compared to foam mat and hard surface conditions.

METHODS: 18 healthy individuals (Ht: 1.77 ± 0.11 m, Wt: 79.41 ± 19.60 kg, Age: 20.5 ± 1.6 yr) stood for one hour on one of three floor conditions: Inflatable mat (IM, 3psi), foam mat (FM; EVA foam, 16mm), and hard surface (HS; force platform). Participants were instructed to stand normally at a standing desk and perform office work tasks with their feet inside the dimensions of the force platform. Subjects were asked to complete a whole-body discomfort survey prior to the test then again after the test. This survey asked subjects to rate their level of discomfort on a scale of 0 (no pain) to 10 (greatest pain imaginable).prior to the test and then again after the test concludes. Scores were obtained for the extremities and trunk.

RESULTS: Results showed no significance in discomfort scores between mat conditions. However, across all conditions there was a significant pre-post mean discomfort difference in the Neck ($p=.005$), Hips ($p=.001$), Low Back ($p=.001$), Knees ($p=.001$), and Ankles ($p<.001$).

CONCLUSION: The results reveal that inflatable anti-fatigue mats plays no significant role in affecting discomfort amongst subjects as compared to a control or traditional anti-fatigue standing mats. However, pre-post differences in discomfort scores for several body regions were noted. Further research is needed to investigate the relationship between the biomechanical and physiological variables that attribute to the discomfort rating of the subjects during prolonged standing to better understand the efficacy of the mats.

A CASE STUDY OF FAMILY VALUES AND DECISIONS ON THE EARLY CHILDHOOD PROGRAM CHOSEN

Presenter	Mendoza, Abby Undergraduate, Teaching and Learning
Mentor	Prof. Miranda Lin

There are many different early childhood programs to choose from, and making that decision can be a daunting task for parents. Early childhood is a crucial time in a child's life, as they are constantly growing and developing through the experiences they are gaining. When making this decision, there are many factors to consider, including the convenience of child care, reliability, the quality of the program, and others. Along with this, parents must also consider the needs and values of the family unit. Some of these values include the educational aspect of the program, religious beliefs, and other reasons personal to the family. In my research, I conducted interviews with families who have a child of preschool age. Each family varies in the living area and the preschool/child care program the child is enrolled in. Along with these firsthand accounts from parents, I also found past studies on early childhood care programs, along with the factors other families have considered when making the choice for their own children. In my presentation, I will share the findings of the factors and family values that impact parents' choices for their child's education. Additionally, I will provide some implications for pre-service and in-service teachers in regard to classroom practices.

THE ASSOCIATION BETWEEN PARENTAL BELIEFS ABOUT SPORT SPECIALIZATION AND ATHLETE SPORT SPECIALIZATION CLASSIFICATION

Presenter Mercier, Henry
Graduate, Kinesiology & Recreation
Mentor Prof. Noelle Selkow
Authorship Henry Mercier; Noelle Selkow; Kelly Laurson

Context: Previous research has demonstrated a high prevalence of extrinsic pressures among single sport athletes. The influence of parental beliefs on a high school student athlete's decision to participate in a single sport has yet to be determined. **Objective:** To estimate a student athlete's level of sport specialization from parental sport specialization beliefs and to investigate independent relationships of potential factors influencing the decision to pursue a single sport. **Design:** Cross-sectional survey. **Setting:** High school athletics. **Participants:** Fifty-seven high school student athletes (25 females, 32 males; mean age 15.6 ± 1.6 years) selected onto freshmen, junior varsity, or varsity teams of soccer, volleyball, or basketball and their parents (34 females, 23 males; mean age 46.9 ± 5.2 years) of two large (mean 1,805 students) public suburban schools. **Intervention:** Modified versions of two surveys previously used in sport specialization research were distributed to student athletes and parents at the beginning of each sport's season. **Results:** Regression analyses demonstrated that student athlete sports specialization was not associated with parents' beliefs about specialization (level of agreement in sustaining an overuse injury: $\chi^2=0.68$, $df=2$, $p>0.71$ and whether early sports specialization is a problem: $\chi^2=5.51$, $df=2$, $p>0.06$). When a parent responded that early sport specialization was "a problem", the odds of a student athlete being classified as highly specialized was 3.1 times more likely than if a parent responded that early sport specialization was "not a problem". Conversely, when a parent responded "no opinion" about whether early sport specialization is a problem, the odds of a student athlete being classified as highly specialized was only 0.32 times more than if the parent responded early sports specialization is "a problem". Significant non-parametric correlations were found between sport specialization and the following parental beliefs about pursuing a single sport: improved development of skills ($r_s=0.393$, $p=0.01$), need to stay competitive with other children ($r_s=0.571$, $p=0.01$), better chance to receive a scholarship/contract ($r_s=0.354$, $p=0.01$), and better chance to make their varsity team ($r_s=0.546$, $p=0.01$). **Conclusion:** The analysis of the data did not support the hypothesis that parental beliefs were associated with student athlete sport specialization. Staying competitive with other children and better chance to make the varsity team appear to be perceived by parents as most influential in their adolescent's decision to pursue a single sport.

ATTACHMENT STYLES AND LIFE GOALS OF AT-RISK YOUTH

Presenter	Miller, Barbara Undergraduate, Psychology
Mentor	Prof. Dan Lannin
Co-Mentor	Prof. Leandra Parris
Authorship	Dan Lannin; Leandra Parris; Ani Yazedjian

The present research tested the effect of secure and fearful-avoidant attachment on prioritization of intrinsic life goals. Whereas intrinsic goals are indicative of intrinsic need satisfaction (e.g., personal growth, community engagement, relationships), extrinsic goals focus on attaining external rewards and praise by focusing on aspirations such as financial success, the "right" image, and fame (Kasser & Ryan, 1993). Securely attached individuals are autonomous and able to successfully form meaningful bonds, while those with fearful-avoidant attachment style desire to have relationships, but have a hard time bonding and trusting others (Connors, 2011). Support for the link between secure attachment and intrinsic life goals comes from predictions of self-determination theory (Ryan & Deci, 2000), which conceptualize life goals as attempts to meet underlying needs. Indeed, intrinsic motivation has been observed (e.g., more exploratory behaviors) in more securely attached infants (Bowlby, 1979), and intrinsic motivation can be quelled by the presence of uncaring teachers and adults (e.g., Ryan & Grolnick, 1986). Therefore, we hypothesized that secure attachment alone would predict greater prioritization of intrinsic life goals for at-risk youth.

PARENTING FOR SAFE AND CIVIL ONLINE BEHAVIOR

Presenter	Miller, Faith Undergraduate, Psychology
Mentor	Prof. Leandra Parris
Authorship	Leandra Parris; Jessica Foley

Parents of middle and high school students participated in focus groups to identify parents' motivation and current strategies for how to manage their child's technology, efforts to restrict technology usage, perceptions and experiences with cyberbullying, as well as their recommendations for how schools and parents could work together to reduce cyberbullying. The current study specifically examines the home-school relationship regarding cyberbullying and provides recommendations for school settings.

MILLENNIAL COLLEGE STUDENTS: WHAT MOVES THEM TO ACTION? MULTI-INSTITUTIONAL SURVEY OF AGRIBUSINESS STUDENTS.

Presenter	Miner, Michael Undergraduate, Agriculture
Mentor	Prof. Iuliia Tetteh
Co-Mentor	Prof. Aslihan Spaulding
Authorship	Iuliia Tetteh; Aslihan Spaulding; Yangxuan Liu

With approximately 40% of the global workforce in 2020 being made up of Millennials, engagement of this generation of college students is at the forefront of restructuring needed to accommodate this new culture of future leaders. Millennials (or Generation Y), are the demographic of individuals who reached adulthood around the turn of the 21st century. Millennials are looking at their career and futures as interconnected links that all affect their 'purpose' of life with "work-life integration" as their backbone or primary ideology. Millennials are defined as the most racially and ethnically diverse generation that has a unique set of attributes, preferences, and expectations. Millennials crave a strong work/life balance while placing a primary emphasis on their personal needs. These needs are attributed to the generations experiences imprinted by large influencing moments; global economic crises and the rapid growth and advancements of technology. With new experiences and an entirely new outlook on world and social perspectives, millennials are going to need different approaches in terms of educational platforms and educational techniques. This study helps us understand the millennial mindset and motivators that keep them engaged in the college classroom. Results from this study will help educators build and maintain the educational ecosystem which best suites millennials work habits and attitudes towards learning to enhance classroom engagement.

EXTENT AND DETERMINANTS OF FINANCIAL INCLUSION AMONG AGRICULTURE PRODUCERS IN GHANA

Presenter Mohammed, Fatima
 Graduate, Agriculture
Mentor Prof. Michael Barrowclough

Financial inclusion is defined as the process of ensuring the ease of access, availability, and usage of a formal financial system for all members of an economy (Sarma, 2008). In developing countries, agricultural producers are mostly excluded from financial services (IFC, 2015; Morvant-roux, 2008). The nature of agriculture operations makes access and usage of financial services essential, as it has the potential to impact agricultural productivity, food security and poverty reduction. Financial inclusion has been an issue of importance lately due to its impact on development by improving income equality and boosting economic growth.

Using the Ghana Living Standards Survey (GLSS6), this study seeks to measure the extent of financial inclusion of Ghanaian agriculture producers. In addition, determinants of financial inclusion among agriculture producers in Ghana will be measured.

The results of this study may assist policy makers to make decisions on ways to improve access to and use of financial services for agricultural producers. Consequently, this may improve the livelihood of farmers and contribute to Ghana's economic development.

IDENTIFYING STUDENTS AT-RISK FOR EMOTIONAL AND BEHAVIORAL DISORDERS

Presenter	Montalbano, Katie Graduate, Social Work
Mentor	Prof. Kathryn Conley Wehrmann
Authorship	Katie Montalbano

Even though less than 1% of students receive mental health supports, it is estimated that about 20% of students in schools could meet the diagnostic criteria for an emotional and behavioral disorder (Hartmann, Gresham, Byrd, 2017). School-age children with emotional and behavioral disorders (EBD) are at-risk for experiencing negative outcomes inside and outside of school, such as limited social skills, impaired interpersonal relations, and academic deficits. They are also at an increased risk for school dropout, which may ultimately lead to negative employment experiences. To help minimize the challenges for students with EBD, schools play the vital role of supporting students who show early warning signs of EBD by early detection and early intervention (Lane, Robertson, Lambert, Crnabori, & Bruhn, 2010). To help identify the students who show early warning signs of EBD, a universal screening tool is implemented for every student. The systematic screener identifies students who are at-risk for EBD and may need additional supports to succeed in school (Kalberg, Lane, & Menzies, 2010). An area school district uses a behavior screening measure as a tier 1 intervention for their Positive Behavioral Interventions and Supports (PBIS). This academic year, the school district switched from using the Systematic Screening for Behavioral Disorders (SSBD) to using the combined Student Risk Screening Scale/Student Internalizing Behavior Screener (SRSS/SIBS). On the SRSS/SIBS, teachers rate each of their students on a scale of 0-3 (0=never, 1=occasionally, 2=sometimes, 3=frequently) for seven items related to externalizing behaviors and seven items related to internalizing behaviors (Cook et al.,2011). The purpose of this study is to compare the internalizing and externalizing behaviors identified by the screeners at the two elementary schools and the two junior high schools. Furthermore, another purpose for the study is to compare the results of the behavior screener from last fall to the behavior screener from this fall to determine whether they are similar in terms of identifying students as at-risk for EBD. Lastly, given the correlation between social-emotional and behavioral struggles and other indicators of school performance (office referrals, attendance, suspensions, nurse visits), this study will compare the results of the SRSS/SIBS with these school factors. The results of this study will help the school district identify what behaviors are most prevalent in their schools, compare their new screener to their old screener, and inform staff about what types of support their students may need.

SPRAY SOLVENT DEPENDENCE OBSERVED DURING THE ANALYSIS OF SYNTHETIC CANNABINOIDS VIA PAPER SPRAY IONIZATION-MASS SPECTROMETRY

Presenter	Mukta, Shahnaz Graduate, Chemistry
Mentor	Prof. Christopher Mulligan
Authorship	Shahnaz Mukta; Chase Deberry; Sara Bell; Christopher Mulligan

Paper spray ionization (PSI), a newer ambient mass spectrometric ionization method, employs a paper substrate to allow the direct analysis of deposited or swabbed samples through simple addition of high voltage and an appropriate spray solvent. During PSI investigation, analyze ions are generated through an electrospray-like process directly from the paper substrate itself. To date, PSI-MS has been shown highly applicable to forensic evidence screening, particularly for drugs of abuse. While a majority of drug classes have been shown broadly robust to the spray solvent system employed for PSI analysis, recent research has shown that successful analysis of synthetic cannabinoid and related evidence is highly dependent on the solvent employed. In this presentation, a systematic study of spray solvent composition and its effect on broad synthetic cannabinoid screening will be discussed. For comparison, Δ^9 -THC and several synthetic cannabinoids of diverse classification were investigated. Solvent systems examined included variable ratios of methanol (MeOH), acetonitrile (ACN) and water and acidification via addition of dilute formic acid (0.1% v/v). For every solvent combination, each cannabinoid was analyzed via PSI-MS using a 2 μg deposited mass, and the maximum signal intensity was collected. Using the entire dataset, a heat map was produced that allows the visual inspection of relative performance of each spray solvent system in regards to obtained signal intensity, allowing a user to optimize their intended experiment. Authentic samples of synthetic marijuana evidence were analyzed through interactions with local law enforcement agencies to show similar solvent constraints for plant-based samples. Results obtained show that polarity and solubility of the target analyte can dramatically affect experimental results, and care must be taken in regards to establishing PSI-MS method protocols for synthetic cannabinoid/marijuana evidence.

METRICS FOR ANALYZING TOP OFFENSIVE LINEMAN IN THIS YEARS NFL DRAFT

Presenter	Neilson, Miles Undergraduate, Marketing
Mentor	Prof. Clint Warren

When fans debate who the Most Valuable Player of the National Football League (NFL) is they tend to focus on the quarterback position. On some occasions other offensive skill position players like running backs and wide receivers will make it into the conversation. However, offensive lineman are never brought into these conversations. Offensive line play is critical to the success of football teams. Often, offensive line play will be analyzed in terms of the entire unit rather than the individual lineman that make up the unit of players. While surface-level statistics such as rushing yards, sacks allowed, and tackles for loss allowed are descriptive of an offensive line units play, these statistics do little to provide an assessment of individual linemen. The purpose of this research is to develop a metric that will help organizations scout and track individual offensive line play. Using game film from various college football teams this study will collect and analyze individual offensive lineman actions during games. Dummy variables will be used to quantify successful and unsuccessful lineman activities on each play. Lineman will be attributed a 1 for a successful assignment as well as a 0 for an unsuccessful assignment. These variables will serve as dependent variables in a logistic regression model. Dependent variables in this study will include factors such as play type, play side, and opponent attributes. Upon the conclusion of game film analysis, data collection, and metric development via logistic regression, this study will provide initial results as to individual players strengths and weaknesses, what style of offenses they might fit best in, and lastly who is the most 'ready' for NFL competition. This project will represent one of the first attempts to rank offensive lineman using an unbiased analytical approach. This study's findings will be relevant to football coaches, general managers, and the wider sport analytics community.

STANDARDIZED COMMUNICATION DURING THE HOSPITAL DISCHARGE FOR PATIENTS WITH PRESSURE SKIN INJURY

Presenter	Novy, Teresa K. Graduate, Nursing
Mentor	Prof. Wendy M. Woith
Authorship	Teresa Novy; Wendy Woith

Introduction/An initial look at an identified gap in practice during transition of care showed 60% of wound care patients leaving Advocate BroMenn Medical Center for Advocate at Home did not have written wound care orders. Ineffective communication between the wound care nurse and the medical provider in the acute care setting regarding post-discharge wound care can delay the home care nurses' initiation of wound care treatments, negatively influence wound healing, and increase readmission rates.

Objectives/Objectives are to a) shorten wound healing time b) decrease the time of initiation of recommended wound care treatment in the home setting, and c) reduce 30-day hospital readmission rates for wound care patients.

Methods/Our innovative change integrates the wound care order set and wound care discharge instructions in the electronic medical record (EMR), enabling enhanced communication between inpatient and outpatient providers for patients with pressure injuries discharged to home with home care follow-up. We are using a quasi-experimental design, with a prospective arm and a non-equivalent retrospective arm of 26 participants each. We will evaluate the effectiveness of the standardized electronic discharge communication tool, and compare number of days to initiation of wound care at home readmission rates between the two groups.

Results/This quality initiative is in progress. Data analysis includes Chi-square test and ANOVA.

Conclusion/This standardized intervention may demonstrate the role enhanced communication plays in wound healing. Through this transformation, the project has the potential to improve delivery of wound care in the home setting, expediting positive patient outcomes.

LICHEN GROWTH IN MATTHIESSEN STATE PARK AND STARVED ROCK STATE PARK

Presenter	Ohls, Kristen Undergraduate, Geography, Geology and the Environment
Mentor	Prof. Lisa Tranel

Lichen is a common organism that is found around the globe in various environments that grows on surfaces such as soil, roofs, gravestones, and most importantly exposed bedrock. It is an example of two organisms growing as one in a symbiotic relationship to survive. When properly documented on camera, the lichen growth can be seen growing away from any direct contact with water, and patches varying in size. To collect the data two locations, Matthiessen State Park and a canyon in Starved Rock State Park, were chosen and recorded. The canyon in Starved Rock was a nook that has a waterfall and river flowing through it in the spring, while Matthiessen was a canyon that had a river flowing through the bottom of it. Photos were taken of the canyon walls with tape measures and carvings as scales of size. Once the data were obtained, the information was taken back to the lab and analyzed using Photoshop using the lasso tool to section out the lichen patches from the rock face and the pixel counting tool to calculate the total area of the lichen present. After recording all the data, it was observed that lichen grew away from the waters surface in both canyons but not as much in direct sunlight.

EXPLORING MECHANISMS OF PERSONAL VALUES' INFLUENCE ON COLORBLIND RACIAL ATTITUDES

Presenter	Okamura, Kristina Undergraduate, Psychology
Mentor	Prof. Daniel Lannin
Co-Mentor	Prof. Brea Banks

The present study found that self-transcendent values predicted less colorblind racial attitudes, whereas conservation values predicted greater colorblind racial attitudes. Both effects were partially mediated by just world beliefs, suggesting that values motivated by social protection may encourage discounting of the discrimination and bias that persons of color experience.

INCLUSION OF STUDENTS WITH INTELLECTUAL AND DEVELOPMENTAL DISABILITIES IN POST-SECONDARY EDUCATION

Presenter	Okrzesik, Elizabeth Undergraduate, Special Education
Mentor	Prof. Yun-Ching Chung
Authorship	Elizabeth Okrzesik; Yun-Ching Chung

Post-secondary education offers valuable career preparation and life experience, for both adults with and without disabilities. Since the enactment of the Higher Education Opportunity Act in 2008, adults with intellectual and developmental disabilities (IDD) have received more opportunities to participate in post-secondary education, alongside with college students without IDD. However, despite the increases of post-secondary education access, there is a need to better include adults with IDD across college classrooms and campuses. We conducted a preliminary review to identify studies that targeted the experience and outcomes of college students with IDD. Our initial findings indicated that the inclusion of college students with IDD benefit all students, staff, and faculty. In this presentation, we will share our findings and provide recommendations for college and university administrators, faculty, and students who are interested in better supporting the inclusion of college students with IDD.

SMALL MOLECULE METAL ION CHELATORS FOR PARKINSON'S DISEASE THERAPY

Presenter	Oskard, Selena Undergraduate, Chemistry
Mentor	Prof. Michael Webb
Authorship	Selena Oskard; Michael Webb

Parkinson's disease (PD) is a common neurodegenerative disorder affecting nearly 1 million Americans. Currently, therapeutic options for PD merely treat the symptoms of the disease, while the underlying cause is not actively targeted. One of the hallmarks of PD are protein deposits comprised primarily of the protein α -synuclein (α -syn). Importantly, α -syn will bond to the redox-active metals, copper and iron, and the process accelerates its aggregation and promotes a toxic environment. These metals present a promising target for chelation therapy, as the removal of the metal ions from α -syn should promote the disruption of the problematic protein deposits. We are currently preparing several new small molecule metal ion chelators using the copper-catalyzed cycloaddition reaction between an azide and an alkyl forming a 1, 2, 3-triazole. Once synthesized, the compounds will be characterized by Nuclear Magnetic Resonance and Mass Spectrometry. Further analysis will be done to test affinity for metals, while biological assays will assess their ability to prevent α -syn associated toxicity. The results of this study will provide a potential new therapeutic strategy for Parkinson's disease that would target the underlying disease hallmark directly.

EXPERIMENTAL STUDIES OF SOCIAL MEDIA IN SPORT

Presenter Overmann, Austin
Graduate, Kinesiology & Recreation

Mentor Prof. Rebecca Achen

Researchers in sports marketing have suggested social media can be used to build relationships between teams and consumers, thus making social media an effective marketing tool. While engagement has been touted as the ultimate outcome of content posted on social media networks, very little is currently understood about what motivates engagement and why fans engage with sport teams on social media. Past research has solidified that relationship-building is an important aspect of social media marketing (Abeza, O'Reilly, & Reid, 2013; Williams & Chinn, 2010), and it makes sense to view social media marketing in sport with relationship marketing strategies in mind. Relationship marketing focuses on all marketing activities designed to build, maintain, and enhance customer relationships (Morgan & Hunt, 1994). This customer-focused strategy includes two-way communications, interactions, and added value, which are used to deepen relationships between organizations and customers (Grönroos, 2004). Given the business-to-consumer communication capabilities of social media, it is logical that the goal of marketing on social media should be to build relationships with customers. While researchers have suggested that social media can be used to build relationships with consumers, (Schultz & Peltier, 2013), marketers struggle to increase their social media engagement due to a lack of understanding of how individuals use social media and why they engage with specific posts more than others (Miller & Lammas, 2010). In past studies, researchers have used likes, comments, shares, retweets, favorites, reach, and other methods to measure consumer engagement on social media, however research has yet to examine why consumers choose to interact with specific content. While these studies are useful as an initial research base in this area, some researchers have suggested research be advanced through empirical analysis and more sophisticated methods when applied to sport (Abeza, O'Reilly, Sequin, and Nzindukiyimana, 2015; Filo, Lock, & Karg, 2015). This study aims to extend research on social media marketing in sport through mixed method research design by testing consumer reactions to different content and exploring why consumers interact with Facebook content using MANOVA and ANOVA analyses to determine the impact of each content type. Data presented at the University Research Symposium will include brief detailed descriptions of the study's findings based on nine content categories (team information, community outreach, organizational promotion, external commerce, player promotion, direct sales, product promotion, diversion, and interactivity).

REDUCING EMERGENCY DEPARTMENT VISITS AMONG CAATCH PARTICIPANTS

Presenter	Parker, Misty Graduate, Social Work
Mentor	Prof. Kate Sheridan

Emergency Departments (ED) across the United States provides primary care to a large population of individuals. Many cities have limited on health care access in certain areas their communities, causing health care disparities for rural areas. Social determinants, location, and health care coverage and other factors play an important role in the overuse of the ED by certain populations. Often times ED are used in nonemergency situations, which imposes a hardship on the department staff and funding which the department relies on. If the overuse persists the effects will show in the performance of the ED for people who have emergent health care needs. Communities are populated with undocumented, unemployed, people with unrefined healthcare knowledge, transportation barriers, and overall poverty issues stopping individuals from building a relationship with a primary care provider. Based on the McLean County Health Needs Assessment; Advocate Bromenn Medical Group, OSF St. Joseph and Community Health Care Clinic (CHCC) have paired together, to look at the major factors and create a program to reduce the frequent use of the ED by patients with impaired social determinants.

Advocate Bromenn Medical Center (ABM), OSF St. Joseph (OSF), and CHCC have joined forces to tackle the fragmentation in accessing proper healthcare for everyone. The grant-funded program is called, "CAATCH" Coordinating Appropriate Access to Coordinated Healthcare (CAATCH) main purpose is to reduce the overuse of the ED and assist with coordinating healthcare needs.

VALIDITY OF THE YOUTH ASSESSMENT AND SCREENING INSTRUMENT IN A RURAL JUVENILE POPULATION

Presenter	Patel, Hardi Undergraduate, Psychology
Mentor	Prof. Adena Meyers
Authorship	Hardi Patel; Danielle Gieschen; Allyson Rebhan; Heather Lacey

The Youth Assessment and Screening Instrument (YASI) (Orbis Partners, 2000) is a tool that is used to assess a juvenile's risks and protective factors in order to predict their likelihood of reoffending. Scores from this assessment have been used to inform the juvenile probation system about decision-making regarding juvenile sentencing. The interrater reliability of this instrument is as high as 85% in some studies; additionally the YASI scores have been found to be highly predictive of juvenile recidivism after an 18-month follow-up period (Jones, Robinson, Brown, & Frey 2016). However, there has been a lack of research that has focused on differentiating the trajectories in urban and suburban populations and little is known about the validity of the YASI with rural youth. This study will examine the association between YASI scores and recidivism among a sample of juvenile offenders from a rural Midwestern county to add to the knowledge base about predicting recidivism among juvenile offenders in rural areas.

SELF CARE PRACTICES AT A TRAUMA INFORMED CHILD WELFARE AGENCY

Presenter	Pete, Emily Undergraduate, Social Work
Mentor	Prof. Karen Flint Stipp

There is powerful evidence that secondary exposure to trauma creates "burn out" when not managed with self-care. Trauma includes traumatic events, early-life separation from a primary attachment figure, and even the contagion of client with significant trauma. The School of Social Work provides professional instruction on trauma and practicing self-care, but that does not always follow students into their agency work. This can result in a lack of knowledge and support for self care, for social work professionals who encounter trauma related to case management.

As social work agencies begin to acknowledge the impact of trauma on their employees, it should be discussed in relation to the practice of self care. It can feel selfish or counterintuitive for compassionate professionals to attune to their own needs of care, especially in the face of client trauma. However, self-care is not a luxury that is ancillary to professional assignments; rather, it makes being present empathic, empathic and effective a possibility. Self-care builds one's capacity to build relationships with clients who have experienced trauma.

Limited research exists on social workers' experiences with client trauma, with few articles and publications to date on the intersection of client trauma, stress and self-care. The goal of this qualitative study is to fill this gap by interviewing staff at The Center for Youth and Family Solutions, 603 N Center St in Bloomington, IL. Focusing on the perspectives of social service workers. This provides a clearer understanding of the realities and needs of professionals serving social work clients. The questions guiding this study are (1) What are some of the traumatic stressors that impact clients? (2) In what ways is trauma-informed care valuable to the clients you serve? (3) What are the effects to you of ongoing exposure to client stress? and (4) How do workers manage self care?

Participation in this study is open to staff at The Center for Youth and Family Solutions, 603 N Center St in Bloomington, IL. Researcher interviews of up to 9 staff members about the effects of client trauma on the worker, stress management, and self-care constitute the qualitative data for this study. Employee's answers are recorded electronically and transcribed and data are analyzed using constant comparative analysis.

THE EFFECT OF UPPER EXTREMITY SUBCUTANEOUS TISSUE THICKNESS ON INTRAMUSCULAR COOLING

Presenter Pioch, Rachel
Graduate, Kinesiology & Recreation
Mentor Prof. Noelle Selkow
Authorship Rachel Pioch; Noelle Selkow

Introduction: Cryotherapy, the therapeutic use of cold is the most common used modality in the management of acute musculoskeletal injuries. Cold has demonstrated the ability to reduce the metabolic rate of a tissue, which can help tissue survive a period of ischemia. An influence in the effectiveness of cryotherapy tissue cooling is adipose tissue thickness. Subcutaneous adipose tissue helps insulate the body from heat loss. Individuals have a variation in measurements of adipose tissue, which makes it hard to justify a standard clinical protocol for cryotherapy. Therefore, research is limited to verify the relationship between different subcutaneous adipose tissue depths and cooling.

Objective: To determine if cooling is similar across the deltoid, biceps brachii, and triceps of the upper extremity.

Design: Crossover design was used. The independent variables were adipose thickness measurements for thermocouple sites (triceps, deltoid, and biceps brachii). The 4 groups were arranged from adipose thickness of 0 to 5mm, 6 to 10mm, 11 to 15mm, and 16 to 20mm. Dependent variable was cooling duration in order to generate an IM temperature decrease near 7°C from baseline. Cooling duration groups were 10 (0-5mm), 25 (6-10mm), 40 (11-15mm), and 60 (16-20mm) minutes.

Setting: Athletic Training Laboratory

Participants: Thirty-one volunteers with upper extremity adipose thickness less than 20mm

Procedure: Subjects upper extremity adipose thicknesses were measured using diagnostic ultrasound in the individual's muscle belly (triceps, biceps brachii, and deltoid). The biceps brachii and deltoid were performed in session 1 and triceps the following week for session 2. A thermocouple was inserted to the appropriate tissue depth based from the ultrasound measurement. Next, a 750g crushed ice cold pack was secured around the thermocouple insertion. Intramuscular temperature was measured throughout the cooling duration. Temperature was immediately recorded post treatment, and 10, 20, 30 minutes after the cold pack had been removed.

Hypothesis: The researchers believe there will be a similar relationship between cooling time and the intramuscular temperature of the upper extremity muscles.

ANKYLOGLOSSIA ASSESSMENT AND TREATMENT: INVESTIGATING CONTROVERSIAL TOPICS IN THE MEDICAL COMMUNITY

Presenter Pivek, Elena
Undergraduate, Communication Sciences and Disorders

Mentor Prof. Jamie Smith

The purpose of this research was to examine the current literature on ankyloglossia assessment and treatment. Ankyloglossia is a congenital anomaly, more commonly referred to as a "tongue-tie". Infants, children, and adults can all be negatively impacted by the effects of ankyloglossia. Infants with ankyloglossia are at a higher risk of having difficulties while feeding. While feeding-related problems derived from ankyloglossia are a serious issue, there is no universal assessment strategy for evaluating the severity and creating a treatment plan for patients. Currently, there are multiple assessment tools and classifications that a variety of professionals use as guidelines for diagnosis. They include the Hazelbaker Assessment Tool for Lingual Frenulum Function (ATLFF), Coryllos classification, and Kotlow classification (Kendall-Tackett, 2017). These tools have been used to evaluate tongue mobility, anatomy, and function. The professionals who perform surgeries to alleviate ankyloglossia and the techniques used are widely varied; there is no clear, direct path to effective intervention. Surgical technique is also still an area of debate. While some professionals still use scalpels, newer research is showing that CO2 lasers and bipolar electro-cautery may be more effective (Gujrathi, 2016). There is a need in the medical community to determine how to accurately diagnose ankyloglossia, how to benefit patients through surgical intervention, and how to address the impact ankyloglossia can have on a patient and their family.

COSMETIC ANALYSIS USING MASS SPECTROMETRY

Presenter Poehls, Abigail
Undergraduate, Chemistry
Mentor Prof. Christopher Mulligan

Lipsticks and other cosmetics contain many compounds, many of which contain heavy metals, which in certain concentrations may cause harm to the body. The way these samples will be analyzed is with a mass spectrometer, an instrument that sorts ions of a sample into their mass to charge ratio. This can lead you to determine how much of something is in your sample. The lipstick will be analyzed for its heavy metal concentrations in effort to apply the cosmetic to either a forensics or environmental project.

More often than not cosmetics are washed down the drain, with the waste ending up in our water supplies or soils. The heavy metals in these products can then end up back in our water or food. By knowing the concentration of the heavy metals in the cosmetics, we can determine how much of that sample will end up in our water and soil. Cosmetics can wipe off of the body quite easily, leaving evidence at a crime scene. Having a catalogue of what is in a lipstick and at what concentration can help law enforcement officials more effectively match evidence to a victim or criminal.

The mass spectrometers used in the Mulligan lab are portable, thus making sample intake much easier and efficient since it can be done onsite. By testing these techniques on such an instrument, we can know if lipstick traces can be tested onsite.

DIFFERENCES IN SERIAL DTI BETWEEN 72 HOURS AND 2 WEEKS FOLLOWING SPORTS-RELATED CONCUSSION

Presenter	Pollalis, Sophia Graduate, Kinesiology & Recreation
Mentor	Prof. Mike Torry
Co-Mentor	Prof. Adam Jagodinsky
Authorship	Sophia Pollalis; Michael Torry; Wen Liu; Dzung Dinh; Michael Zagardo; Laurence Jiang; Cristin Rassi; Peggy Flannigan

INTRODUCTION: While clinical assessments may aide to identify a concussion, there is no conclusive diagnosis via these assessments alone. Moreover, the progression and recovery of SRC is difficult to quantify. This is because the pathophysiological development of the injury occurs at the cellular process level; clinical assessments may not be sensitive to, nor can they be identified through, standard structural imaging. DTI scalars such as fiber tractography, Fractional Anisotropy (FA), and Mean Diffusivity (MD) analyses have shown promise in identifying concussion as they can quantify axonal microstructure integrity via disturbances in Brownian water diffusion.

PURPOSE: The purpose of this study was to compare DTI scalars within regions of interest of FA and MD taken serially between acutely (<72 hrs.) concussed individuals with healthy controls.

METHODS: Male athletes (n=6) between the ages of 14 and 23 who presented with a sports-related concussion received a DTI scan studying specific regions of the brain to assess FA and MD within 72 hours of injury and at 2 weeks post-injury. **RESULTS:** A significant difference ($p < 0.05$) was observed in the right cingulum projecting to the hippocampus in the MD scan. No significant results were identified in the FA scan.

CONCLUSION: While whole brain analysis showed significant differences between scan 1 and scan 2, only one identified region was significantly different. Objectively measuring concussion recovery through FA and MD may be possible, but further research is needed.

EFFECTS OF TERRITORY QUALITY ON REPRODUCTIVE ALLOCATION IN FEMALE HOUSE WRENS

Presenter	Poorboy, Dylan Graduate, Biological Sciences
Mentor	Prof. Scott Sakaluk
Co-Mentor	Prof. Charles Thompson
Authorship	Keith Bowers; Scott Sakaluk; Charles Thompson

In territorial birds, both parental and territory quality vary and influence resource allocation to offspring. In our study population of house wrens (*Troglodytes aedon*), evidence of heterogeneity in territory quality and its temporal consistency and fitness consequences comes from the historic record of reproductive success at fixed-site nestboxes. To assess the potential effects of habitat heterogeneity independent of parental quality, we disrupted any covariation between parental quality and territory quality to test the hypothesis that territory quality influences female prenatal and postnatal reproductive allocation. Territories were categorized into low, intermediate, and high quality based on fledging success the previous six years. To disrupt covariation between territory quality and individual quality, nestbox entrance size was increased on high-quality territories and left small on poor-quality sites because house wrens prefer small over larger entrances to their nest sites. Eggs from nests on high- or low-quality territories were measured and cross-fostered with eggs on intermediate-quality territories, to disentangle prenatal and postnatal effects of variation in territory quality. We found a significant prenatal effect of territory quality on nestling provisioning: when reared on intermediate-quality territories, nestlings hatching from eggs produced on low-quality territories were provisioned at a higher rate than those hatching from eggs produced on high-quality territories. We propose that the increased provisioning was brought about by increased nestling begging mediated by a maternally derived compound, such as corticosterone, transferred to the eggs of stressed females in poor-quality habitat.

ASSESSING THE NEED FOR INTEGRATED CARE AT ILLINOIS STATE UNIVERSITY STUDENT HEALTH SERVICES

Presenter	Powell, Eric Graduate, Social Work
Mentor	Prof. Kate Sheridan
Authorship	Eric Powell

The purpose of the proposed mixed method study is to determine the need for integrated care at Illinois State University (ISU) Student Health Services (SHS), using record reviews and a survey to gather student's perceptions. The mixed method study will evaluate the need for integrated care through the lens of various integrated care models. Participants will consist of current undergraduate and graduate students enrolled at ISU. Participants will be invited to take an electronic survey, which will include 27 questions which will ask them about their perceptions of general and behavioral (i.e. mental) health services available to students on campus. The record review will consist of clinical reports denoting quantitative data collected in the 2017 academic year. The survey will take approximately ten minutes or less and will be examined for major themes.

COMPLICATIONS NONTRADITIONAL STUDENTS AND ADULT LEARNERS FACE IN HIGHER EDUCATION

Presenter	Pucek, Pete Graduate, Communication
Mentor	Prof. John Baldwin

While nontraditional students and adult learners are a growing population within higher education campuses nationally, they do not receive the required support to offset some of the complications and age biases they face. Based on motivations theory and adult learning theory, the current interview study presents findings from 50 nontraditional students and adult learners at a large Midwestern University. Findings suggest that, in many cases, nontraditional students and adult learners face family difficulty or financial hardship related to higher education.

Motivations theory posits that there is an internal driving force within each individual to achieve a desired outcome. One of the assumptions of andragogy is, as one matures their motivation to learn increases. As there are minimal and often no support systems for nontraditional students and adult learners, their motivations must be stronger than the complications they face.

PAPILLAE FORMATION ON TRICHOME CELLS REQUIRES A PUTATIVE PECTATE LYASE GENE

Presenter	Rickerd, Trevor Graduate, Biological Sciences
Mentor	Prof. Viktor Kirik
Authorship	Trevor Rickerd; Christy Fornero; Carson Delgadillo; Viktor Kirik

Plant cell walls are used in dynamic ways to aid in a number of functions, such as mechanical support, cell shape, transport of solutes, and defense from pathogens. Specialized cell types can organize their cell walls in unique ways pertinent to their function. Trichomes, or plant hairs, develop relatively thick cell walls that develop small, round, opaque structures called papillae in late-stage cell wall development. Although the function of trichome papillae is not well established, the papillae have been observed to give trichome cells a birefringent quality, leading us to believe that the papillae may be involved in defending the young, growing seedling from harmful UV irradiation by dissipating light waves.

One project that we are developing in our lab focuses on the glassy hair 3 (glh3) mutation that results in a "glassy", transparent trichome phenotype, caused by the lack of developed papillae structures on the trichome's cell wall. We have found that a gene encoding a pectate lyase enzyme has a mutation in its coding region that is thought to affect the ability of the protein to perform its pectate hydrolysis activity. By comparing this mutant to other glassy trichome mutants, we have observed that the glh3 mutant produces a semi-dominant phenotype. We are testing a hypothesis that the nature of this mutation may allow the mutant version of the pectate lyase to behave in a dominant negative manner, preventing the wild-type pectate lyase from performing its hydrolytic function. We are developing further assays in order to characterize the nature of our mutant phenotype based on subcellular localization of our protein of interest, the ability to rescue the mutant phenotype, and analysis of the papillae via Scanning electron microscopy.

THE EFFECT OF A PECTORALIS MINOR RELEASE ON SCAPULAR POSTURE IN COLLEGIATE SWIMMERS

Presenter	Roman, Jonathan Graduate, Kinesiology & Recreation
Mentor	Prof. Noelle Selkow
Authorship	Jonathan Roman; Noelle Selkow

Introduction: Competitive swimming athletes are at risk for shoulder injury due to an excessive amount of shoulder revolutions that can cause the anterior shoulder musculature to hypertrophy. This muscular imbalance often leads to scapular dyskinesis, which is defined as abnormal movement patterns causing alteration of optimal scapular kinematics. The pectoralis minor specifically has been related to shoulder pain in swimmers and scapular dyskinesis due to its shortened muscle length.

Purpose: To investigate the effectiveness of a Positional Release Therapy (PRT) technique of the pectoralis minor on scapular posture in collegiate swimmers immediately and 24 hours post intervention.

Methods: The participants included members of the Illinois Wesleyan University Division III swimming team. Measurements include resting pectoralis minor muscle length, forward shoulder posture and scapular upward rotation. A standard cloth tape measurer is used to measure the resting pectoralis minor muscle length and to measure scapular positioning. A double square instrument is used to measure forward shoulder posture. The lateral slide test is used to assess scapular upward rotation. Measurements are collected a total of 3 times on each subject. Measurements occur prior to the PRT intervention, right after the intervention and again 24 hours post intervention.

Hypothesis: We believe that the PRT intervention will lengthen the pectoralis minor, decrease the forward scapular position and increase scapular upward rotation in a group of collegiate swimmers.

DESIGNING STIMULI-RESPONSIVE SIGNAL ENHANCING SUBSTRATES

Presenter	Saracino, Tara Undergraduate, Chemistry
Mentor	Prof. Jun-Hyun Kim
Authorship	Tara Saracino; Stephanie Swan; Karlee Burns; Wongi Jang; Jun-Hyun Kim

This study describes the preparation of multiple gold nanoparticles within a temperature-responsive poly(N-isopropylacrylamide) particle for use as reversible surface enhanced Raman spectroscopy (SERS) substrates. The formation of the polymer particles is completed by radical polymerization, followed by the integration of multiple gold nanoparticles within the polymer particles in situ. The structural and physical properties of these composites are thoroughly evaluated as a function of temperature. Unlike bare gold nanoparticle systems, our nanocomposites exhibit highly reversible structural changes upon heating and cooling that significantly control the responsiveness of SERS signals. As such, studying this type of materials can allow for developing a novel system that can turn on and off signals via external stimuli.

LIFE HISTORY INFLUENCES NUTRIENT DISTRIBUTION IN HEMIPARASITE LEAF LITTER FOLLOWING SENESCENCE IN THE FALL

Presenter	Scheidel, Anna Graduate, Biological Sciences
Mentor	Prof. Victoria Borowicz
Authorship	Anna Scheidel

Hemiparasites are green plants that tap into a neighboring plant's water-filled xylem to acquire minerals. Due to the constant pumping of water from the host plant's xylem and out of the hemiparasite's leaves, the hemiparasite accumulates micronutrients in biomass. As a group, hemiparasites include both annuals, plants that only live for a single growing season and then die, and longer-lived herbaceous perennials. Life history theory predicts that short-lived organisms such as annual plants should expend their resources in current reproduction, whereas long-lived organisms, such as perennials, should allocate more resources to storage for future growth and reproduction. Because annuals die in the fall, I predict (a) they will retain excess nutrients in their leaf litter rather than invest energy in storing them, (b) nutrient-processing bacteria will more rapidly release these nutrients locked up in the plant mass back into the soil, and (c) these nutrients will become readily available to nearby plants, promoting their growth. Because perennial hemiparasites need nutrients for the next year's growth I predict they will translocate nutrients to their roots come fall, and will therefore produce leaf litter that is lower in mineral content compared to annual hemiparasites.

I plan on testing the hypothesis that the life history of a hemiparasite will determine nutrient content of leaf litter and the amount of nutrients that return to the soil in a greenhouse experiment with four native perennial hemiparasites (*Pedicularis canadensis*, *Pedicularis lanceolata*, *Castilleja coccinea*, and *Castilleja sessiliflora*), and three annual hemiparasites (*Agalinis auriculata*, *Agalinis aspera*, and *Agalinis tenuifolia*), all paired with a suitable host plant. Half of the host-hemiparasite pairs will be randomly assigned to grow under low-nutrient conditions, and the remainder will be assigned high-nutrient conditions. After the growing season has completed, I will collect and dry the shoot mass and root mass and determine root: shoot ratios, and I will measure the nutrient content of each plant and its soil.

In the future, I will visit populations of these species in Midewin, Nachusa, and John English tallgrass prairies to see if predictions according to life history theory hold in the wild.

The goal of my research is to better understand the community ecology of hemiparasites and how their life histories affect the roles they play in Midwest prairies. Results of this study may inform conservation biologists working to restore or reconstruct prairies.

KNOWLEDGE AND ATTITUDES REGARDING SPIRITUALLY-SENSITIVE COUNSELING OF LGBTQ CLIENTS AMONG SOCIAL WORK STUDENTS

Presenter	Schottland, Jennifer Graduate, Social Work
Mentor	Prof. Kate Sheridan
Authorship	Jennifer Schottland

This purpose of this study is to examine knowledge and attitudes of undergraduate and graduate social work students regarding spiritually-sensitive counseling to LGBTQ clients. Research indicates the importance of professionals providing counseling to LGBTQ youth that is sensitive to the intersectionality of clients' spiritual identity and sexual identity. Research also shows the difficulties professionals have in discussing issues of spirituality and/or sexuality causing either or both aspects to often be ignored in treatment plans and counseling.

Participants are Illinois State University Masters of Social Work and Bachelors of Social Work students who are aged 18 years of age or older. Participants are invited to complete an electronic survey examining knowledge and attitudes about spiritually sensitive counseling of LGBTQ clients.

THE LABEL "GAMER" AND ITS EFFECT ON ROMANTIC ATTRACTION AND MATCHMAKING

Presenter	Schladenhauffen, Kamie Undergraduate, Sociology/Anthropology
Mentor	Prof. Susan Sprecher
Authorship	Kamie Schladenhauffen

Online matchmaking websites are a popular method of finding romantic dating partners, with 15% of American adults using online dating methods as of 2015 (Pew Research Center, 2016). These websites involve users creating a dating profile in which they describe themselves and what they want a potential date to know about them. Past research has questioned how manipulated elements in an online dating profile (such as the target's facial attractiveness and stated ambitions) generate attraction for the target in potential dating partners (Sritharan, Heilpern, Wilbur, & Gawronski, 2010) as well as how text and photos manipulated to depict introversion or extroversion in online Facebook profiles impact impression formation of those viewing the profile (Van Der Heide, D'Angelo, & Schumaker, 2012).

The study I have conducted extends this prior research of how impressions of and romantic interest toward a person in a hypothetical dating profile depend on a characteristic of the target person. I explore how people perceive someone who is a self-described "gamer" (someone who believes gaming is a big part of their life) versus someone who does not identify as a gamer. Past research shows that people who are described with particular labels may be rated less favorably or may be perceived to have certain traits, compared to others who do not self-describe with the same label (Breen & Karpinski, 2007). Thus, the purpose of this study is to examine whether individuals who identify as gamers will be seen as less attractive and have less positive traits associated with romantic matchmaking than individuals who do not identify as gamers. I will also examine whether attraction to a hypothetical gamer depends on the participants' own status as a self-identified "gamer".

A vignette study was distributed on my Facebook profile, as well as in a course taught at Illinois State University. Each participant received one of two dating profiles, randomly assigned. One profile contained traits associated with a "gamer"; the person said they played video games, could not live without several gaming consoles, and explicitly identified as a gamer. The Non-Gamer profile omitted these traits. The participant was also asked to assume the person whose profile they viewed was the gender they preferred for a romantic partner. Preliminary analyses indicated that those who were assigned to the Gamer profile scored lower on desire to get to know the other and attraction toward the other than those in the non-Gamer profile condition.

SCOPE AND LIMITATIONS OF [5+2] INTRAMOLECULAR CYCLOADDITIONS

Presenter	Shaw, Jessica Undergraduate, Chemistry
Mentor	Prof. T. Andrew Mitchell
Authorship	T. Andrew Mitchell

The goal of this research is to further develop oxidopyrylium-alkene [5+2] cycloadditions as a synthetic tool toward bridged polycyclic ethers that are common in diverse biologically active natural products. Previous literature reports of intramolecular oxidopyrylium-alkene [5+2] cycloadditions with α -silyloxyppyrones suggest a hypothesis of silyl transfer as the rate-determining step. Currently, various α -silyloxyppyrones are being utilized to investigate the nature of the silyl transfer in [5+2] cycloadditions. Various protecting groups and alkenes tethered to the α -silyloxyppyronone have provided mechanistic insights based on proposed electronic perturbations effecting conversion rates. As the electronic parameters of intramolecular variants are probed, this could provide insight toward more selective intermolecular [5+2] cycloadditions.

AN ANALYTICAL APPROACH TO UNDERSTANDING THE SUCCESS OF DEFENSIVE-MINDED NCAA VOLLEYBALL TEAMS

Presenter Siefken, Emily
 Graduate, Kinesiology & Recreation

Mentor Prof. Clint Warren

Legendary University of Alabama Football Coach Bear Bryant once said, "Offense wins games, defense wins championships." This long-standing adage of athletics will be taken into consideration to determine if the number of digs per set and blocks per set of all Division I Volleyball teams plays any role in their finish at the Conference and NCAA Championship level. This research seeks to determine if defensive-minded teams are more successful than the offensive-minded teams in collegiate volleyball. While the sport of volleyball includes extensive opportunities to collect on-court performance data, the use of an advanced analytical approach to analyzing volleyball data is a fairly new process. Researchers have spent their time on the human performance side of volleyball, which has trained our athletes better and given us better tools to aid in recovery of our student-athletes.

This research will look at the on-court performance side of NCAA Division I Volleyball data from the 2013, 2014, 2015, 2016, and 2017 seasons provided by the NCAA archives. These data will be utilized to determine the correlation among finishes in conference in the NCAA and Conference Championships and the number of digs and blocks per set. This study will take the digs per set and compare it to the Conference and NCAA championship finish and the blocks per set and do the same comparison. From there, those teams who won their Conference Championship or who were granted an at-large bid to the NCAA tournament will move into the next round of analysis. The study will once again look at digs and blocks per set to determine how many rounds they played in the NCAA Championships. It is hypothesized that the number of digs and blocks per set will play a significant role on the conference championship side of this analysis, but when it comes to the NCAA Championships, it is hypothesized that the offensive-minded teams will take over. Results of this study will benefit collegiate volleyball coaches and serve to advance the advanced study of on-court performance in the sport of volleyball.

COORDINATED INTAKE OUTREACH RESULTS

Presenter	Sloan-Gray, Amy Graduate, Social Work
Mentor	Prof. Kate Sheridan

This program evaluation aimed to describe the demographics and service needs of individuals referred for home visiting programs in McLean County. Sources of data included the Coordinated Intake Assessment Tool (CIAT) which is a form completed by the outreach worker employed at Children's Home and Aid in Bloomington, IL. This research utilized existing data only (the CIAT) and does not involve human subjects. The CIAT was redacted of individually identifiable information prior to the CO-PI gathering data. The CIAT is completed with adults with children (or who are soon-to-be-parents) because home visiting programs serve individuals who are pregnant or parenting.

The findings from this study will be shared with agencies in McLean County who operate home visiting programs to inform their understanding of who is being referred to home visiting programs in McLean County and the types of need experienced by individuals referred for home visiting services.

BUILDING A DOMINANT UNITED STATES RYDER CUP TEAM

Presenter	Sproles, Austin Graduate, Kinesiology & Recreation
Mentor	Prof. Clinton Warren

The Ryder Cup is one of the biggest events in professional golf. It is a contest played over multiple days between two teams, Europe and the United States. Teams are chosen based on a points system, in which the top eight automatically qualify for the team. The remaining four players for each team are chosen by the captain. The team event is a much different format than what a professional golfer is used to playing. While playing with a partner, it is important to complement each other to ensure the best chance at victory. The purpose of this project is to develop a plan based on statistics to choose the remaining four to complete the roster, along with developing how the lineups are chosen for each matchup. For the 2018 Ryder Cup, the points began during the 2017 season and will continue late into the 2018 season. This study will utilize the updated points standings, as well as the statistics from the entire 2017 season to develop these plans. Some specific areas that will be examined will be strokes gained, one-putt percentage, greens-in-regulation percentage, driving distance, scrambling percentage, approach proximity to the hole, and Ryder Cup experience. First, this study hypothesizes that the top eight players in the United States standings are very good in most of these categories. Second, this project seeks to identify the remaining four players that perform well in these areas, as well as potential partners that would complement each other.

CLINICAL INSIGHT IN SASS SCREENINGS DETERMINATION

Presenter	Stark, Torre Graduate, Social Work
Mentor	Prof. Kate Sheridan

Transitions is a crisis agency in Quincy IL responsible for conducting mental health assessments for individuals experiencing crisis (such as aggressive behavior, suicidal ideation, self-harming behaviors, etc). The assessments are managed through a program called SASS (Suicide Assessment and Support Services). The purpose of this study is to explore the perspectives of SASS workers regarding how they make decisions in determining whether or not an individual in crisis needs to be psychiatrically hospitalized or if they can remain safe with a safety plan and existing supports (community stabilization) until they can access community-based mental health or behavioral supports. Using an electronic survey administered to SASS workers at Transitions (adults aged 18 years of age or older), the proposed study aims to explore clinical insight. Participants will include staff of the SASS team at Transitions of Western IL. Findings will help staff recognize important risk and protective factors in determining whether a client in psychiatric crises are able to follow a safety plan, or need to be psychiatrically hospitalized.

RUGGEDNESS CHARACTERIZATION OF AN OPEN-AIR PAPER SPRAY IONIZATION SOURCE OPERATED UNDER FIELD CONDITIONS ON A PORTABLE MS SYSTEM

Presenter	Stelmack, Ashley Undergraduate, Chemistry
Mentor	Prof. Christopher Mulligan
Authorship	Ashley Stelmack; Shahnaz Muktah; William Fatigante; Christopher Mulligan

Ambient ionization methods, when equipped to portable mass spectrometric (MS) instrumentation, allow the rapid, on-site processing of field-generated samples. Such a coupling could allow field practitioners like law enforcement and environmental scientists the capability to quickly screening pertinent samples at their discretion. However, the performance of portable technologies could be affected by environmental conditions, particularly considering that many ambient ionization sources are open air in terms of design. In this work, the performance of a portable MS system featuring a homebuilt paper spray ionization (PSI) sources is determined across a wide range of environmental factors such as ambient temperature, relative humidity, and wind speed/direction.

REGULATING STRUCTURAL PROPERTY OF NANOSCALE POLYMER PARTICLES

Presenter	Swan, Stephanie Undergraduate, Chemistry
Mentor	Prof. Jun-Hyun Kim
Authorship	Stephanie Swan; Tara Saracino; Karlee Burns; Wongi Jang; Jun-Hyun Kim

We report two polymerization strategies to prepare nanoscale polymer particles that can precisely undergo structural changes for use as biomedical delivery systems. The first approach involves the radical polymerization to form biocompatible poly N-isopropylacrylamide nanoparticles which can exhibit reversible swelling and deswelling processes as a function of solution temperature. The second method utilizes ring-opening metathesis polymerization (ROMP) to form linear norbornene-based homopolymers which can be transformed into well-defined nanoscale structures by the selection of proper solvents. As such, we have thoroughly examined how to precisely regulate the structural features of these polymers using external stimuli.

LIFE SKILL ACQUISITION AMONG YOUTH IN CARE INVOLVED IN A COLLEGE PREPARATORY PROGRAM

Presenter	Tate, Mariaton Graduate, Social Work
Mentor	Prof. Kathryn Conley Wehrmann

Over 23,000 youth, 18-21 years of age are legally emancipated, or “age out” of the foster care system annually (National Foster Youth Institute, 2017). Youth who age out of foster care are more likely to lack the support and skills needed to live independently, when compared to youth who have not been in care (Courtney, Lee, & Perez, 2011a; Kaplan, Skolnik, & Turnbull, 2009; Williams, 2011). Existing literature emphasizes the importance of the development of skills related to daily functioning, also known as life skills, for youth transitioning to adulthood. The current study explored the extent to which **First Star Academy** at ISU, a college preparatory program, increases life skills among current youth in care. The study also explored the extent to which First Star Academy provides social support to current participants. The study analyzed existing life skills data collected during First Star’s Summer Academy held June 3-30, 2017. Personal narratives entitled, “What does First Star Mean to Me?” were also analyzed. Findings suggest that First Star Academy enhances participant’s self-awareness of their personal life skills, strengths, and talents. Further, the agency contributes to youth’s emotional connections and perceived social support.

DOES CLIENT PERCEIVED EFFECTIVENESS OF THERAPY AT A PRIVATE COUNSELING CLINIC INCREASE OVER TIME IN TREATMENT?

Presenter

Taufer, Brenna
Graduate, Social Work

Mentor

Prof. Kathryn Conley Wehrmann

The purpose of this study is to determine whether client perceived effectiveness of therapy services at a private counseling office increases over clients' time in treatment. Evaluation of perceived effectiveness will be based on client satisfaction feedback forms. The literature suggests that clients' ratings of satisfaction with and helpfulness of their counseling experiences provide valuable information about the real-world effectiveness of such interventions (Jackson, Allen, Essock, Felton, & Donahue, 2006). Many studies have shown a correlation between perceived effectiveness and whether clients are feeling respected, involved in their therapy, and helped by treatment, as well as whether clients would recommend services to others and whether clients would use services again. The client perceived effectiveness ratings will be compared over three different categories of time in treatment (2-5 visits, 6-10 visits, and 10+ visits) to see if effectiveness increases over time in treatment. Obtaining answers to the evaluation questions will aid this private counseling office in discovering where they can make improvements and modifications in their counseling services in order to better serve their clients.

VITAMIN D STATUS AND MUSCULAR STRENGTH IN CHILDREN AND ADOLESCENTS: NHANES 2011-2012

Presenter	Thomas, Jaime Graduate, Family and Consumer Sciences
Mentor	Prof. Kelly Laurson
Co-Mentor	Prof. Jennifer Barnes
Authorship	Jaime Thomas; Kelly Laurson; Jennifer Barnes

Vitamin D is an essential vitamin that supports vital body structures, such as bones, teeth, muscles and cellular regulation including differentiation. However, vitamin D deficiencies are common and research suggests that a vitamin D deficiency may be associated with poor muscular strength. Adequate muscular strength is important because it is required for carrying out efficient and effective physical activity and activities of daily living as well as for reducing the risk of injury in individuals of all ages. However, there is a lack of research examining the potential link between vitamin D status and muscular strength, particularly in youth. Therefore, the purpose of this study is to explore the relationship between vitamin D status and muscular strength in a nationally-representative sample of children and adolescents using data from the National Health and Nutrition Examination Survey (NHANES), years 2011-2012. The sample will consist of approximately 5,000 subjects from the ages of 6 through 18. From the NHANES data, serum blood levels of vitamin D will be used to determine vitamin status and measures of hand grip strength will serve as a marker of overall muscular strength. Covariates will include age, sex, socioeconomic status, race/ethnicity, weight status, survey time, and age at menarche. It is hypothesized that the results will indicate a positive correlation between vitamin D status and hand grip strength, with youth that are vitamin D deficient having lower relative levels of muscular strength.

INITIATION AND DURATION OF LARYNGEAL CLOSURE BETWEEN RIGHT AND LEFT HEMISPHERE STROKE SURVIVORS

Presenter Thomas, Madelyn
 Undergraduate, Communication Sciences and Disorders

Mentor Prof. Taeok Park

Purpose: The purpose of this study was to examine initiation of laryngeal closure (ILC) and laryngeal closure duration (LCD) between right and left hemisphere stroke patients through analyzing videofluoroscopic swallowing exams (VFSEs). There were 30 patients included in the data with middle cerebral artery infarctions with 14 localized on the left hemisphere of the brain and 16 on the right.

Methods: Patients participated in two trials for each volume, in which they swallowed 2 mL thin liquid and 5 mL thin liquid. To calculate the initiation and duration of laryngeal closure, three points were documented on each patient: bolus passing the ramus of mandible, the first contact of the arytenoids and epiglottis, and the last moment of contact between the arytenoids and epiglottis. Statistical comparisons were completed using repeated measures analysis of variance (ANOVA), with significance level set at $p < 0.05$.

Result: Initiation of laryngeal closure was significantly different between the left and right hemisphere stroke patients ($F(1, 43) = 6.653, p = 0.013$) as well as between 2 and 5 mL volumes ($F(1, 43) = 7.103, p = 0.011$). The mean ILC of the left hemisphere stroke patients was .97 seconds and the mean ILC of the right hemisphere stroke patients was .53 seconds. Stroke patients with left hemisphere lesions initiated laryngeal closure more slowly than those with right hemisphere lesions. The ILC in the 2 mL thin was significantly longer than the 5 mL thin [$F(1,43) = 4.431, p = .022$]. The mean ILC of the 2 mL thin was .86 seconds and the mean ILC of the 5 mL thin was .62 seconds. In addition, there was no difference in laryngeal closure duration between the left and right hemisphere stroke patients ($F(1, 47) = 0.090, p = 0.766$). The mean LCD in the left hemisphere stroke patients was approximately .58 seconds and .56 second in the right hemisphere stroke patients.

Conclusion: Left hemisphere stroke patients had longer delayed initiation of laryngeal closure than those with right hemisphere lesions. This may imply that the left hemisphere is more involved with the initiation of laryngeal closure. Additionally, the finding of this study indicates that left hemisphere stroke patients had greater risk of penetration or aspiration than right hemisphere stroke patients due to delayed initiation of laryngeal closure. It is important for the clinician to consider hemisphere site of the lesion for evaluation of airway protection during swallowing.

THE INFLUENCE OF HEATWAVES ON BUMBLE BEE IMMUNITY AND PARASITE INFECTION

Presenter	Tobin, Kerrigan Graduate, Biological Sciences
Mentor	Prof. Benjamin Sadd
Authorship	Kerrigan Tobin; Madeline Hallahan; Benjamin Sadd

Ongoing human induced climate change is increasing the frequency and duration of heatwaves, a pattern that is predicted to continue. These events represent important stresses for organisms that are shifted from their physiological optima. Ectotherms living in temperate areas may be particularly susceptible to the effects of heatwaves, and heatwaves may interact with other threats from the environment, such as disease, to compromise population health. The thermal stress hypothesis suggests that thermal environments where maintenance of biological functions is energetically costly will reduce performance, and this will influence the ability of organisms to respond to the surrounding biotic environment. We tested the thermal stress hypothesis in relation to longevity, antibacterial immunity, and resistance to parasite infection in age-controlled adult bumble bees exposed to a simulated ecologically relevant heatwave versus bees experiencing a standard control thermal regime. Analyses of immunity and infection outcome are ongoing. However, survival data showed that heatwave treatment had a significant effect on subsequent survival, with decreased survival in heatwave-exposed individuals, which suggests that heatwaves can have important health related consequences for adult bumble bees. This work demonstrates how bumble bee health, and broadly pollinator health, can be impacted by the effects of climate change and will help guide predictions about the fate of our pollinators in the face of current threats to population stability.

TRUST-BASED RELATIONAL INTERVENTION (TBRI): A CLASS AND SUBSEQUENT HOME IMPLEMENTATION EVALUATION

Presenter	Torres, Ariel Graduate, Social Work
Mentor	Prof. Kate Sheridan

This exploratory, qualitative study examines participant perceptions of the effectiveness of the Trust-Based Relational Intervention (TBRI) parenting class. Participants will be self-reporting (via survey) their use of techniques taught in the TBRI parenting course for parents of children who have been adopted, are in foster care, or have other trauma histories. The goal of the study is to understand which concepts were most useful to parents, how the principles and techniques are implemented in the home after participation in the TBRI parenting class, and areas where parents still feel deficient or wish for more focused training. TBRI is an evidence based, trauma focused intervention and past research has shown changes in brain cortisol levels as well as family interaction/behavioral improvements for children whose caretakers use this intervention. The Baby Fold, the local agency which teaches this class and whose therapists are trained in this intervention, uses TBRI principles with parents. This study would look at exactly how the principles are used in the home and find out what else parents would like to learn as a step toward understanding how to better support parents in the future.

HOW PROFICIENT ARE ISU NON-SCIENCE MAJORS IN SCIENTIFIC LITERACY SKILLS PRIOR TO THEIR GENERAL EDUCATION SCIENCE COURSE?

Presenter	Turner, Ranija Undergraduate, Biological Sciences
Mentor	Prof. Rebekka Gougis

Scientific literacy is the ability to recognize and analyze the use of methods of inquiry that lead to scientific knowledge and the ability to organize, analyze, and interpret qualitative data and scientific information (Gormally, Brickman, & Lutz, 2012). Illinois State University's general education learning program outcomes include fostering intellectual and practical skills allowing students to: make informed judgements, analyze data, to examine research questions and test hypotheses, and report information effectively and responsibly (assessment.illinoisstate.edu/program/gened). These general education objectives align with the definition of scientific literacy. This research focuses on the proficiency of non-science majors' scientific literacy at the beginning of the general education science course. At the beginning of the course BSC 101: Fundamental Concepts of Biology, we administered the Test of Scientific Literacy Skills (TOSLS, Gormally et al., 2012) via Qualtrics. This presentation will identify areas of scientific literacy that are particularly unsatisfactory at the start of general education science courses.

MULTILAYERED CLOUD SECURITY MODEL USING MULTIFACTOR SESSION-LONG BIOMETRICS ACCESS CONTROL

Presenter	Venkatraman, Karthika Graduate, Information Technology
Mentor	Prof. Jihad Qaddour
Authorship	Karthika Venkatraman

Cloud computing has tremendously simplified the software industry by enabling companies to offer software, infrastructure and platforms as services with the advantages of maintenance, availability, provisioning time and scalability. As individuals and firms increasingly rely on cloud-based systems to process sensitive data and intellectual property, the security risks surrounding cloud technology have increased by proportion. This paper investigates the vulnerabilities surrounding single point authentication, replay attacks and predictability. Then proposed a multilayered security model using multifactor biometrics authentication for access control. Additional features in the proposed model are to use diverse biometric templates in a randomized way, use strong algorithms for replay protection, session-long authentication with fine-grained biometrics and template updation in database after every successful authentication. Furthermore, the proposed solution approaches security as an ongoing mechanism and extends authentication service to the entire session, as opposed to traditional approaches that offer authentication only at the beginning of a session.

AGREEMENT BETWEEN NON-EXERCISE ESTIMATED AND TREADMILL-ASSESSED CARDIORESPIRATORY FITNESS

Presenter	von Schaumburg, Lauren Graduate, Kinesiology & Recreation
Mentor	Prof. Kelly Laurson
Authorship	Lauren von Schaumburg; Kelly Laurson

Background: Cardiorespiratory fitness (CRF) is a critically important factor in regard to a host of cardiometabolic diseases. For instance, low CRF is associated with higher all-cause mortality and risk of coronary heart disease, hypertension, and type II diabetes. However, CRF is not routinely assessed by health care professionals in clinical settings due to difficulty of measurement. Non-exercise prediction equations of CRF have been proposed previously and may be a useful alternative for clinicians to use with their patients.

Purpose: To compare a non-exercise estimation of CRF to treadmill-assessed values of CRF with the goal of finding a feasible way for CRF to be used in clinical screening applications.

Methods: The sample will include approximately 3,000 men and women between the ages of 20 and 49 years from the National Health and Nutrition Examination Survey (NHANES), 1999-2004. Resting heart rate, waist circumference, body mass index, physical activity index, and smoking status will be used to estimate CRF via non-exercise prediction algorithms and compared to measured CRF via submaximal treadmill tests. Analyses will include direct comparisons of continuous CRF as well as agreement when categorizing subjects into low, moderate, and high groups based on CRF.

Conclusions: We hypothesize that the estimation equations will predict CRF values with modest accuracy. Additionally, we hypothesize that the non-exercise prediction equations will classify CRF values into different levels of fitness with good agreement. We believe this would be an important feature of the estimation equations due to the clinical relevance of proper fitness classification. Properly identifying patients with low fitness would provide a means for clinical intervention.

INVESTIGATING MULTICULTURALISM: DIVERSE MATERIALS IN THE CLASSROOM

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

James Banks' levels of integration of multicultural approach, is taken into consideration by many educators to create an inclusive learning environment and promote multiculturalism within the classroom. The theory consists of four approaches: the contribution approach, the additive approach, the transformation approach, and decision making and social action approach. Data of this qualitative study consisted of six teachers from various schools, backgrounds, and experiences about their personal view of diversity, strategies to incorporate diversity in the classroom, and the exposure of multicultural materials in their classrooms. In this presentation, I will talk about how Banks' theory applies to multicultural and diverse classroom materials and how it guided the study. I will also discuss specifically how the transformation approach can be applied within the classroom based on the interview responses. Further, I will compare and contrast various classroom environments that do and do not follow the transformation approach and the effect that has on the students based on the interview data. To conclude my presentation, I will address the implications of this presentation based on my analysis.

EXPLORING THE RELATIONSHIP BETWEEN COUNSELING EXPERIENCE AND SELF-TRANSCENDENCE VALUES

Presenter	Wicker, Isaac Graduate, Psychology
Mentor	Prof. Daniel Lannin
Authorship	Isaac Wicker; Daniel Lannin

A. Purpose Values are relevant to life goals and motivation, serving as standards or criteria by which individuals select and evaluate actions they take, people they interact with, and policies they endorse (Schwartz, 2012). Research suggests that values may be divided along two independent axes (Schwartz, 1992). The present study examines the first axis wherein values motivated by the pursuit of enhancing the wellness of others (the "self-transcendent values") oppose those focused on enhancing status and success (the "self-enhancement values"). Rogers (1964) notes that counseling may represent a value-laden activity despite counselors' efforts to validate and respect clients' own personal values (Murdock, Duan, & Nilsson, 2012). Because counseling may encourage the expression of self-transcendence values (e.g., accepting one's self and others) while discouraging self-enhancing values (e.g., recognition of one's success), we predict that previous counseling will be linked to greater prioritization of self-transcendent values.

B. Procedure A total of 215 undergraduates, (73% = women; Mean Age = 19.6; 36% had utilized counseling in the past) at a large Midwestern University were invited to complete a survey in person for credit in introductory psychology courses. Participants completed self-report measures of values and completed demographic information that included previous counseling history.

C. Results An adjusted self-transcendence value variable (Mean = 0.96, SD = 0.88, Range = -1.36 to 3.11) was calculated by subtracting participants' self-enhancement score from their self-transcendent score. Results of an ANOVA analysis indicate that previous counseling was a statistically significant predictor of adjusted self-transcendence, $F(1, 213) = 7.36, p = .007$. Those who had previously used counseling had self-transcendent scores that were 0.34 points higher than those who had not, 95% CI = [0.09, 0.58].

D. Conclusions The present study found that having previous counseling was a significant predictor of higher self-transcendent values scores. Counseling's emphasis on self-transcendent values over self-enhancing values (Rogers, 1964) may affect both counseling participation and outcomes. The self-transcendent emphasis in counseling may inherently attract individuals who prioritize self-transcendent values and deter those who do not. Additionally, the counseling process may change clients' values priorities, which could have long-term implications on value-related outcomes such as goal setting, motivation, and self- and other-evaluation.

PERSISTENCE OF BLACK STUDENTS ATTENDING PREDOMINANTLY WHITE INSTITUTIONS: WHERE MENTAL HEALTH RESOURCES ARE MISSING

Presenter	Williams, Kameron Graduate, Communication
Mentor	Prof. John Baldwin

Black college students face a particular battle during attending college at predominantly White institutions. Not only do they face the normal trials and tribulations of other college students, but they face hardships specific to their race. Because of this, it is important that Black students' mental health stay intact. However, Black students are not making use of their mental health resources on college campuses. This resource gone unused can affect how these students succeed during their collegiate careers. In this paper, I will investigate Black students' perceptions of mental health resources to figure out why they are going unused by this population. The findings, collected from one-on-one interviews with Black college students, revealed that university based mental health services are underutilized due to poor communication between mental health resources and Black student populations regarding clinic availability and location. Black students also expressed that accessibility, open communication, and representation would make a more valuable resource that they would be more inclined to use.

THE EFFECTS OF SHORT TERM MYOFASCIAL RELEASE ON HAMSTRING FLEXIBILITY

Presenter	Williams, Whitney Graduate, Kinesiology & Recreation
Mentor	Prof. Noelle Selkow
Authorship	Whitney Williams; Noelle Selkow

Context: Flexibility is important in both the prevention and the rehabilitation of musculoskeletal injuries. Muscle tightness is one of many reasons for reduced joint ROM. As a consequence, ROM abnormalities may create muscle imbalances, for example, decreased hamstring flexibility can lead to patients having low back pain. One technique for improving flexibility is known as self-myofascial release (SMR) utilizing a foam roller or dense ball. However, it is unknown if one of these techniques is better than the other.

Objective: To determine if SMR of the plantar surface of the foot in addition to the hamstring group is more effective in improving flexibility of the superficial back line when compared to either intervention alone. Design: Cross-over with counter balanced randomization. Setting: Athletic Training Facility.

Methods: All participants will sit with the heels/soles of their feet flat against the box, with knees fully extended, reaching forward as far as possible without breaking form and fingertips at the correct position on the magnetic slider for three trials. Participants are randomized to start one of the treatments and will complete all three interventions separated by 1 week from the previous treatment (SMR on the hamstrings using a foam roller, SMR on the plantar surface of the foot using a lacrosse ball, and a combination of the SMR on the hamstrings and plantar surface of the foot). Post-test sit and reach will be measured immediately after the treatment for all three interventions.

Hypotheses: The combination treatment of foam rolling the hamstring and rolling the bottom of the foot with a ball will have the greatest effect on sit and reach post-measurements.

IS THERE A NEED FOR A GRIEF GROUP AT PROJECT OZ?

Presenter	Wolters, Nicole Graduate, Social Work
Mentor	Prof. Kathryn Conley Wehrmann
Authorship	Nicole Wolters

Is There a Need for a Grief Group at Project Oz? Literature suggests that the inclusion of peers can be a great support to youth going through grief. This research project focuses on assessing the need for a grief group within the Youth Intervention Program at Project Oz. The Youth Intervention Program works with youth 10-17 years old and provides individual counseling. Caseworkers and administration have noticed that a number of youth in this program have indicated that they have lost a parent due to death or incarceration. The agency would like to determine whether there is an actual trend based on data. De-identified intake forms and safety screens will be analyzed to see if the youth indicated that they had lost a parent. This analysis will help the agency determine whether there is a need for additional services such as grief groups.

FEAR OF CRIME ON COLLEGE CAMPUS

Presenter	Worman, Timothy Graduate, Criminal Justice Sciences
Mentor	Prof. Cara Rabe-Hemp
Authorship	Timothy Worman

The purpose of the research is to consider the interwoven effects that disorder, environment, and fear have on college students in the hope that it leads to favorable policy initiatives. This study employed a mixed method research design. Data was gathered via an online survey that was emailed to the entire Illinois State University student body and by way of focus groups. The data was fully transcribed and the researcher established an appropriate coding scheme to interpret it. This information will likely lead to positive safety and security upgrades for the ISU community.

SYNTHESIS AND CHARACTERIZATION OF A SERIES OF VANADIUM(IV) COMPLEXES WITH KLÄUI LIGAND

Presenter	Wu, Xiao Graduate, Chemistry
Mentor	Prof. Craig McLauchlan
Authorship	Xiao Wu; Craig McLauchlan

η^5 -Cyclopentadienyltris-(dialkylphosphito- κ^1 P) cobaltate(III), (CpPRCo)- was first synthesized by Kläui, and it is often called the Kläui ligand. It has been recognized as a tridentate oxygen analogue of the well-used Tp-(Trispyrazolylborate) ligand. Owing to the ligand's high stability, π -donation capability and weak ligand field strength, organometallic complexes of (CpPRCo)- were found to be quite different from the conventional Tp-based analogs. We have been using (CpPRCo)- as a ligand to make complexes to model the catalytic activity of industrially-used vanadium phosphate oxidation catalysts. Dinuclear organophosphorus-bridged vanadyl complexes with Kläui ligand have been characterized as containing a VO₆ octahedral environment for the vanadium center. Our work of late has focused on synthesis and spectroscopic characterization of a series of organometallic complexes with Kläui Ligand (R=OBu); specifically we have generated a series of organo-phosph(on/in)ate-bridged dinuclear vanadium(IV) complexes with the butyloxy group, (CpPOBuCo)₂[μ -O₂-PR'R'']₂ (R', R'' = H, OH, Me, Ph, OPh, OPh-NO₂, CH₃, tBu). To explore the application of these vanadium-Kläui ligand complexes, the catalytic abilities will be investigated by employing 3,5-di-tert-butylcatechol to the corresponding quinone as a model reaction. Our latest results will be present here.

2018 Symposium

Morning Group Presentations

STUDENT-PROFESSOR COMMUNICATION AND STUDENT SATISFACTION

Group Leader	Bennett, Donna Undergraduate, Communication
Group Members	Kelly Murphy, Undergraduate, Communication; Sara Engstrom, Undergraduate, Communication
Mentor	Prof. Aimee Miller-Ott
Authorship	Kelly Murphy; Sara Engstrom; Donna Bennett

Previous research suggests that communication between college students and their professors greatly influences the learning experience. Typically, students who have more communication with professors report better relationships with them. In this study, we predicted that there would be a positive relationship between number of students' visits to professors' office hours and student satisfaction with the professor. We used non-random convenience sampling to locate 100 ISU students, all 18 years or older, who completed our survey. We directed students to select the first class they had during the week of the fall semester and answer questions about that particular course/professor. They reported the number of office hours they visited that professor during the fall semester and their relationship satisfaction with the instructor. Results indicated that number of office hours visited was positively correlated with students' satisfaction with their professors. We concluded that it is crucial for students to build relationships with professors outside of the classroom.

WHY DOES SCHOOL CLIMATE ENHANCE FORGIVENESS? HOPE AND EMOTION REGULATION

Group Leader	Boolman, Marissa Undergraduate, Psychology
Group Members	Taylor Frye, Undergraduate, Psychology
Mentor	Prof. Daniel Lannin
Authorship	Marissa Boolman; Taylor Frye; Daniel Lannin; Leandra Parris; Ani Yazedjian

The present research found that school climate predicts higher levels of forgiveness for at-risk youth, and that this is mediated by hope and emotion-regulation. This suggests that school climate is effective in influencing positive interpersonal tendencies such as forgiveness because a positive school climate increases hope and self-efficacy of emotion-regulation.

ANTICIPATING THE ADMISSIBILITY OF FORENSIC EVIDENCE SCREENED ON-SITE VIA AMBIENT SAMPLING, PORTABLE MASS SPECTROMETRY

Group Leader	Deberry, Chase Undergraduate, Chemistry
Group Members	Sara Bell, Undergraduate, Chemistry
Mentor	Prof. Christopher Mulligan
Authorship	Chase Deberry; Sara Bell; Angelica Traub; Christopher Mulligan

Ambient sampling, portable mass spectrometric (MS) systems have the potential to assist in crime scene investigation and law enforcement activities by providing rapid and discriminate chemical identification. But with any new method or technology that is utilized in legal proceedings, the burden of admissibility of both collected data and corresponding expert testimony is placed on the court. To compensate for the lack of scientific literacy judges may carry, established standards become extremely pertinent to establishing validity of new techniques and ensuring an individual's right to due process. In this work, the admissibility of this new MS technology is preemptively considered under the rigors set forth by the Daubert standard. The technology considered in the interdisciplinary work was paper spray ionization (PSI) employed on a field-portable, ruggedized mass spectrometer (MS), specifically the FLIR Systems AI-MS 1.2 cylindrical ion trap MS. Both instrumental data and pertinent review of scientific/legal literature was utilized to fulfill core requirements of the Daubert standard, such as the refutability of the method, level of peer review and acceptance in the scientific community, and established error rate. An overview of these findings will be presented.

CORRELATION BETWEEN PERSONALITY FACTORS AND MOTIVATIONAL ORIENTATIONS IN CIRCUS PERFORMERS

Group Leader	Diller, Karissa Graduate, Kinesiology & Recreation
Group Members	Lauren Johnson, Graduate, Kinesiology & Recreation
Mentor	Prof. Scott Pierce
Authorship	Karissa Diller; Lauren Johnson; Scott Pierce

Introduction: Personality is commonly examined using the Big Five characteristics, including extraversion, agreeableness, conscientiousness, neuroticism and openness. Across multiple domains, these characteristics have been found to influence individual behaviors and motivation. An individual's motivational orientation can be categorized as being task-focused (i.e., motivated by personal improvement) or ego-focused (i.e., motivated by outperforming another individual). With a focus on a unique athlete population, the purpose of this study is to examine the correlation between personality factors and motivational orientations in circus performers.

The purpose of this study is to examine the correlation between personality factors and motivational orientations in circus performers.

Methods: Approximately 80 male and female gamma phi circus performers at Illinois State University will be surveyed for this study. The personality characteristics will be assessed using the big-five inventory scale, while the basis behind each performer's motivation will be assessed using the task and ego orientation in sport questionnaire (TEOSQ). Demographics include age, years in circus, and gender. The surveys will be disseminated at a regularly scheduled troupe meeting during practice.

Results: Results will be analyzed post survey and will be presented at the symposium. We hypothesize that introverted people will have greater task orientation when compared to extroverted people. We hypothesize that older members of the Gamma Phi Circus will have increased tendencies towards openness to new experiences based upon the big-five personality scale. We also hypothesize that members in leadership positions would be more task oriented than members without leadership positions.

Conclusion: The information provided by this study should provide researchers and others interested in circus artists a better understanding on potential effects and relationships between goal orientation and personality components. Additional conclusions will be determined post survey.

ON THE SPECTRUM PROBLEM FOR THE ORIENTATIONS OF A 5-CYCLE

Group Leader	Dulowski, Jordan Undergraduate, Mathematics
Group Members	Maddie Kenney, Undergraduate, Mathematics; Kaitlyn Zale, Undergraduate, Mathematics
Mentor	Prof. Saad El-Zanati
Co-Mentor	Prof. Ryan Bunge

Graphs are mathematical means of exhibiting relationships between objects. The objects are denoted by points, called *nodes*, and each pair of related objects is joined by a line, called an *edge*. For example, friendships on social media can be represented by “friendship graphs”. People are denoted by nodes and two nodes are joined by an edge if the corresponding people are friends of Facebook. If the relationships are directional, the edges are directed to reflect this property. For example, if Person *A* “follows” Person *B* on Twitter, the edge between them (now called an *arc*) is oriented from node *A* to node *B*. If both *A* and *B* follow each other, the corresponding nodes are joined by arcs in both directions. The *complete symmetric digraph* of order n , denoted by K_n^* , is the directed graph on n nodes with the property that every pair of nodes is joined by an arc in each direction. A *5-cycle* is a graph with 5 nodes, say *A*, *B*, *C*, *D*, and *E*, such that *A* and *B* are related, and so are *B* and *C*, *C* and *D*, *D* and *E*, and *E* and *A*. An *orientation* of a 5-cycle is an assignment of a direction to each of the edges. A common problem in the study of graphs is the problem of deciding when a large graph can be partitioned (i.e., divided up) into pieces that all have the exact same structure as some smaller graph *G*. The *spectrum problem* for a given directed graph *G* is the problem of determining the values of n so that K_n^* can be partitioned into copies of *G*. This problem has been studied and settled for the orientations of a 3-cycle and those of a 4-cycle. We study it for the orientations of a 5-cycle.

SYNTHESIS AND PRELIMINARY AQUEOUS KINETIC STUDIES OF CARBINOLAMIDES DERIVED FROM KETONES

Group Leader	Epplin, Rachel Undergraduate, Chemistry
Group Members	Amy Heinold, Undergraduate, Chemistry
Mentor	Prof. Richard Nagorski
Authorship	Rachel Epplin; Amy L. Heinold; Michael Dalton; Richard W. Nagorski

The synthesis and preliminary aqueous kinetics of 3-phenyl-3-hydroxyisoindolin-1-one (1) and 1-benzamido-1-phenylethanol (2) which are carbinolamides derived from ketones. It is surprising to learn of the diverse roles that carbinolamide containing compounds have in a broad variety of venues. For example, an increasing number of compounds possessing this functionality have been discovered and are being developed that have interesting pharmaceutical applications. Carbinolamides have also been found to be intermediates in an array of biological venues with both positive and negative outcomes for the associated organism. An intriguing feature of the potential pharma compounds, isolated from natural sources, is the formation of carbinolamides from amide and ketone substrates. Synthetically, the majority of carbinolamides have been formed from aldehydes which are more electrophilic than ketones. However, this has not hindered nature from providing a variety of examples incorporating this very feature. Reported here are the results of synthetic studies directed to the synthesis of carbinolamides from ketone and amide starting materials. This was accomplished by the addition of Grignard reagents to a variety of imide derivatives leading to the compounds listed above. In addition, preliminary aqueous kinetics of these compounds have been initiated and those results will also be presented.

PARENTING FOR SAFE AND CIVIL ONLINE BEHAVIOR

Group Leader	Foley, Jessica Graduate, Psychology
Group Members	Faith Miller, Undergraduate, Psychology
Mentor	Prof. Leandra Parris
Authorship	Jessica Foley; Faith Miller; Leandra Parris

Parents of middle and high school students participated in focus groups to answer questions about their experiences with technology, efforts to restrict technology usage, perceptions and experiences with cyberbullying, and recommendations for how schools and parents could work together to reduce cyberbullying. This project will specifically examine interactions between parents and schools with regard to cyberbullying and provide recommendations for fostering home-school collaboration for reducing the occurrence of cyber aggression among youth.

ASSOCIATION BETWEEN PARENTAL INCARCERATION AND YOUTH RECIDIVISM

Group Leader	Geriets, Christina Graduate, Psychology
Group Members	Kristina Medema, Graduate, Psychology; Danielle Gieschen, Graduate, Psychology
Mentor	Prof. Adena Meyers
Authorship	Christina Geriets; Kristina Medema; Danielle Gieschen; Adena Meyers; Renee Tobin; Brenda Huber

The purpose of this study was to examine whether parental incarceration is associated with juvenile offenders' likelihood to reoffend. Analyses indicate that youths with parents or stepparents who were arrested or imprisoned reoffended on average 3.2 times, more than twice the rate of youths without parents in the system.

MENTAL HEALTH AND SUBSTANCE ABUSE TREATMENT FOR JUVENILE OFFENDERS

Group Leader	Gieschen, Danielle Graduate, Psychology
Group Members	Margaret Christie, Graduate, Psychology; Brian Klein, Graduate, Psychology; Allyson Rebhan, Graduate, Psychology; Christina Geriets, Graduate, School Psychology
Mentor	Prof. Adena Meyers
Authorship	Danielle Gieschen; Margaret Christie; Brian Klein; Allyson Rebhan; Christina Geriets; Renée Tobin; Adena Meyers; Brenda Huber

This study investigates how mental health and substance abuse services impacts the likelihood that rural youth will reoffend. Content includes discussion of mental health and substance abuse rates within the juvenile justice system, the intensive supervision program, study results, and implications for school psychologists. Participants will develop a better understanding of the role a school psychologist has working with youth involved in the judicial system through interventions, consultation, and coordination of care.

AWARENESS AND PREVENTION OF SEXUALLY TRANSMITTED DISEASES

Group Leader	Hinckley, Victoria Graduate, Nursing
Group Members	Margarita Perez, Graduate, Nursing
Mentor	Prof. Kim Schafer Astroth

Sexually transmitted diseases (STDs) are any diseases that are transmitted through sexual contact. According to the Center for Disease Control and Prevention (CDC, 2017), STDs are on the rise; there are approximately 20 million new STDs diagnosed yearly. Young women continue to be the most impacted, having almost half of the reported diagnosed infections in the 15 to 24 age group (CDC, 2017). STD rates in Peoria County have increased steadily throughout the last ten years, ranking in the top 5 counties of Illinois. For our project we focused on inner city Peoria. Zip codes 61603, 61604, and 61605, have been the most affected by this STD epidemic. Our overall goal was to provide people in this area with the proper education and awareness on STDs. We reached this group through a barber shop in the community. These barbers have contacts in the community that may not be in the traditional service catchment of public health education. Pender's Health Promotion Model was our guide for the development of our presentation. We presented our project to 6 barbers and 6 customers. Our goal was to empower them with awareness, education, and prevention measures. We provided a pre-test and post-test to the participants. We found that the scores were higher on the post-test than the pre-test. Pre-test scores had a mean of 75.3% and a range of 43-100%. Post-test scores had a mean of 97.7% and a range of 84-100%. The mean average increased by 22.4%. Providing education in a non-traditional setting breaks down a barrier and allows for more open conversation. By presenting at this barber shop, located in the heart of the epidemic, we were able to provide education to those who could serve as a role model. Non-traditional avenues will have the best outcomes in this population.

ATTENTIONAL BIAS TO FOOD WORDS IN RESTRAINED EATERS

Group Leader	Hodge, Brandon Graduate, Psychology
Group Members	Morgan VanCleave, Undergraduate, Psychology; Ariel Warner, Undergraduate, Psychology; Kaylee Hoebbel, Undergraduate, Psychology
Mentor	Prof. Suejung Han
Authorship	Brandon Hodge; Suejung Han; Morgan VanCleave; Ariel Warner; Kaylee Hoebbel; Korrie Cassata; Taylor Hedges; Mariah Mims

Purpose: Attentional bias has been examined as one of the cognitive vulnerability factors for various psychopathology such as disordered eating. They are important to examine as potential targets of interventions. Past research has demonstrated mixed findings on whether or not restrained eaters show cognitive biases (e.g., attentional sensitivity) toward words related to foods (Dobson & Dozois, 2004; Brooks et al., 2011; Francis, Stewart, & Hounsell, 1997). This study examined attentional bias to foods among restrained eaters using a computer based program, Mousetracker (Freeman & Ambady, 2010), that provided various indicators (i.e., reaction time [RTs], maximum deviations [MDs] and area under the curves [AUCs]) of attentional bias (vs. reaction time only in traditional attentional bias research). We also examined moderating roles of emotional eating (i.e., tendency to eat when feeling negative emotions) and external eating (i.e., tendency to be influenced by external cues for eating) as potential explanations for the mixed findings.

Procedure: Participants completed the Dutch Eating Behaviors Questionnaire including Restrained Eating (RE), Emotional Eating, and External Eating subscales (Van Strien et al., 1986), the Food Evaluations Questionnaire (for manipulation check; Knight and Boland, 1989), and a demographics form. They also completed a computer based Emotional Stroop task (Williams, Mathews, & MacLeod, 1996). The experiment consisted of a 2 (Eating Style: restrained, non-restrained) x 2 (Word Type: foods and non-foods control) mixed design. Out of 110 college student participants, 18 scored 1 SD higher than mean on RE (i.e., restrained eaters) and 20 scored 1SD lower than mean (i.e., non-restrained eaters).

Results: Three repeated measures ANOVA with RTs, MDs, and AUCs as dependent variables revealed marginally significant interaction effects between eating style and word type on MDs, Wilk's $\lambda = .90$, $F(1,36) = 4.08$, $p = .051$, and AUCs, Wilk's $\lambda = .92$, $F(1,36) = 2.96$, $p = .09$, suggesting restrained eaters showed higher attentional bias to food words than non-food words, whereas nonrestrained eaters did not show such a difference. When emotional eating was controlled as a covariate, the interaction effects became significant for MDs, Wilk's $\lambda = .85$, $F(1,35) = 6.39$, $p = .016$, and AUCs, Wilk's $\lambda = .89$, $F(1,35) = 4.36$, $p = .044$, suggesting the moderating role of emotional eating.

Conclusions: The preliminary results suggest potential attentional bias to food words among restrained eaters, particularly those with higher emotional eating tendency. Data collection is in progress and complete results will be presented at the conference.

ATTRITION IN MULTIPART RESEARCH STUDIES

Group Leader	Horton, Alexandra Graduate, Psychology
Group Members	Samantha Fillmore, Graduate, Psychology
Mentor	Prof. Karla Doepke
Authorship	Samantha Fillmore; Alexandra Horton; Karla Doepke

Attrition is a common problem for researchers conducting multi-part studies. Research on attrition has largely focused on variables that impact whether participants remain in educational setting or long-term research studies. However, little research has looked at variables that impact attrition rates for short term, multipart studies. This study looked at attrition rates in a short term (one week), two-part study. In this study, during the first session, participants were taught to use a specific instructional strategy (least-to-most prompting hierarchy) to teach a confederate how to do a puzzle. The session continued with the participant receiving feedback until they reached mastery. The sooner the participant reached mastery, the shorter the first session was. One-week later, participants were asked to come back for a maintenance check to see if they retained what they had learned about the teaching strategy. In this study we found that 62% of participants returned, while 38% did not return for the follow up portion of the study. Potential reasons that may have impacted participants' decisions to return or not return are discussed.

COMMUNITY SERVICE REQUIREMENTS AND RECIDIVISM AMONG JUVENILES

Group Leader	Klein, Brian Graduate, Psychology
Group Members	Kristina Medema, Graduate, Psychology; Allyson Rebhan, Graduate, Psychology; Margaret Christie, Graduate, School Psychology; Danielle Gieschen, Graduate, School Psychology
Mentor	Prof. Adena Meyers
Authorship	Brian Klein; Margaret Christie; Allyson Rebhan; Danielle Gieschen; Kristina Medema; Adena Meyers; Renee Tobin; Brenda Huber

This study investigates how completion of court-ordered community services influences the likelihood that youth involved in the juvenile justice system will recidivate. We found that youth who complete community service requirements are significantly less likely to reoffend. Content includes discussion of community service terms and school and community supports for youth involved in the juvenile justice system. Participants will develop an understanding of school psychologists' role in facilitating opportunities for community service and engagement.

ON CYCLE DECOMPOSITIONS OF UNIFORM HYPERGRAPHS

Group Leader	Koe, Kristin Undergraduate, Mathematics
Group Members	Lauren Haman, Undergraduate, Mathematics; Cody Hatzer, Undergraduate, Mathematics; Kayla Spornberger, Undergraduate, Mathematics
Mentor	Prof. Saad El-Zanati
Co-Mentor(s)	Prof. Ryan Bunge

Graphs are mathematical means of exhibiting relationships between objects. The objects are denoted by points, called *nodes*, and each pair of related objects is joined by a line, called an *edge*. For example, friendships on social media can be represented by “friendship graphs”. People are denoted by nodes and two nodes are joined by an edge if the corresponding people are friends of Facebook. A class of graphs of particular interest is the class of cycles. An *m-cycle* is a graph in one piece with m nodes where each node is joined to exactly two other nodes. Hypergraphs generalize the concept of a graph. In a *k-uniform hypergraph*, edges are represented by sets of k nodes rather than by pairs of nodes. The *complete k-uniform hypergraph* of order n , denoted by $K_n^{(k)}$, is the k -uniform hypergraph on n nodes with the property that every set of k nodes is joined by an edge. A common problem in the study of graphs is the problem of deciding when a large graph or hypergraph can be partitioned (i.e., divided up or decomposed) into pieces that all have the exact same structure as some smaller (hyper)graph. For various values of n , we investigate when certain classes of subgraphs of $K_n^{(3)}$ can be decomposed into 3-uniform hypergraphs that correspond to the concept of an *m-cycle*.

CONTENT OF DISPARAGING HUMOR: REACTIONS AND COPING RESPONSES

Group Leader	Muzzarelli, Gino Undergraduate, Psychology
Group Members	Lawrence Nisivaco, Undergraduate, Psychology; Anne Augustyn, Undergraduate, Psychology
Mentor	Prof. Kimberly Schneider
Authorship	Lawrence Nisivaco; Gino Muzzarelli; Anne Augustyn

Problem or major purpose: Disparaging humor, jokes that insult or devalue an individual or group of individuals, are often used to express prejudice (Mallett, Ford, & Woodzicka, 2016) and can negatively impact a targeted group and its members. We focus in this study on qualitative data from a larger dataset where participants were asked to recall a time when a social group they belonged to were either excluded or included (via random assignment to condition). We were particularly interested in participants' descriptions of the content of the exclusion incident in terms of the social category that was targeted as well as participants' emotional reactions to the incident. We examine potential differences in emotional reactions and coping responses based on the nature and content of the exclusion incident and compare emotional reactions of those who were targets of disparaging humor and those who felt included.

Procedure: Participants were 167 Amazon MTURK workers who completed an adapted recall task, in which participants recalled an autobiographical memory and wrote an essay (Wesselmann & Williams, 2017). In our version, participants either recalled the details of their previous afternoon (control condition), a time in which they heard someone tell a joke that disparaged a social group that they belonged to (disparaging condition) or a time when they felt included based on a social group that they belonged to (inclusion condition). For this study, we coded the content of the disparaging humor (exclusion) and inclusion incidents. We also coded both positive and negative emotions and participants' free recall of their coping responses in the disparaging humor incidents.

Results (to date): Thus far, we have begun coding data based on both category description of the content of the incident (gender, race/ethnicity, religion, sexual orientation, etc.), emotional reactions (both positive and negative), and coping responses to the incident. We have three raters and have finished initial coding with reliabilities and interrater correlations over .80. Next, we will examine differences via a series of t-tests and ANOVAs based on exclusion/inclusion participants' emotions and potential difference in coping responses based on the content of the disparaging humor incident.

Conclusions and implications: We anticipate that our data will provide preliminary support indicating the range of negative emotions that individuals experience when a social group to which they belong is the target of disparaging humor. We will also describe themes that emerged based on both emotional reactions and coping responses.

EXAMINATION OF THE VALIDITY OF SUBMAXIMAL EXERCISE TESTS TO ASSESS MAXIMAL OXYGEN UPTAKE

Group Leader	O'Donnell, Jason Undergraduate, Kinesiology & Recreation
Group Members	Austin Hasselbring, Graduate, Kinesiology & Recreation
Mentor	Prof. Kristen Lagally

There are a variety of methods for determining cardiovascular fitness, or $VO_2\max$, which is an important component of overall health. Submaximal assessments are quicker, less expensive, and less effortful for clients. However, they also tend to be less accurate than maximal tests. The purpose of this research study is to examine the accuracy of common submaximal exercise tests that predict $VO_2\max$ by comparing the results to those from a direct maximal measurement of $VO_2\max$. To do this, physically active adult subjects are asked to perform three submaximal tests (2 cycle ergometer and one bench step) and one maximal exercise test while oxygen consumption is measured to provide a criterion measure of cardiovascular fitness. Heart rate, blood pressure and ratings of perceived exertion are measured throughout each test. Tests are performed in a random order on separate days at approximately the same time of day. Maximal oxygen uptake ($VO_2\max$) is predicted from the submaximal tests and compared to the actual maximal oxygen uptake values recorded during the maximal test.

ADVANCING AUDIOLOGIC CARE THROUGH A COLLABORATIVE INTERDISCIPLINARY MODEL

Group Leader	Panzarella, Kristen Undergraduate, Communication Sciences and Disorders
Group Members	Melissa Wiedeman, Undergraduate, Communication Sciences and Disorders; Natalie Rothbauer, Graduate, Communication Sciences and Disorders
Mentor	Prof. Antony Joseph
Authorship	Kristen Panzarella; Melissa Wiedeman; Natalie Rothbauer; Antony Joseph

Audiology is an allied health specialty that is responsible for the evaluation and treatment of individuals with hearing loss, tinnitus, and balance problems in patients of all ages, including infants, children and adults. Frequently, audiologists care for patients who have been referred by other specialists, and occasionally refer patients to those specialists when indicated. Consultation with medical specialist is done, particularly for people with comorbidities or rare conditions. The National Academies of Practice (NAP) is headquartered in Lexington, Kentucky, and, since 1981, has been dedicated to the improvement of inter-professional healthcare through collaboration of its various disciplines. The NAP also functions as an advocate for health policies that serve the best interest of people and the population. The impetus of this project was to analyze the extent to which each of the 13 NAP specialties interact clinically or academically with Audiology.

HEAD ORIENTATION PREFERENCE AND SELF-TOUCH ACTIONS DURING EARLY INFANCY

Group Leader	Pattanakul, Duangporn Graduate, Psychology
Group Members	Kevin Gehm, Undergraduate, Psychology; Sarai Cortina, Undergraduate, Psychology; Danielle Swinford, Graduate, Psychology
Mentor	Prof. Julie Campbell
Authorship	Duangporn Pattanakul; Kevin Gehm; Sarai Cortina; Danielle Swinford; Julie Campbell

The asymmetrical tonic neck reflex (ATNR) occurs when an infant turns the head to the side when lying supine and is present at birth and disappears around 3 months of age. Michel (1979; 1981) found that infants have a side preference for the ATNR, called the head orientation preference (HOP), which is related to hand preference. Michel's theory of handedness concatenation states that behaviors earlier in development will influence later appearing behaviors. Thus, a lateralized HOP will influence a later appearing preference for hand preference.

Four infants were observed for supine head orientation preference (SHOP) and self-touch actions at 4-, 8-, and 12-week visits. All procedures from the three visits were video recorded for later analyses. SHOP procedure consisted of four 2-minute trials. For each trial, the infant's head was first held in a midline position for one minute and then released. Infant head orientation then was observed for one minute. For each trial, the videos were coded as right-turning or left-turning if the infant's head turned far enough to the right to cross the right nipple line. SHOP was determined using the formula $[R-L/(R+L)1/2]$, where R and L indicated the number of trials in which an infant showed right or left head-turning. Following the SHOP procedure, the infant was observed for arm and hand movements for ten minutes while sitting in a semi-upright position. Self-touch actions were coded according to the arm which performed the action, and consisted of six behaviors: arm movements, wrist movement, finger wiggles, self-touch (contact upper body and contact lower body, and object contact.

The descriptive results show that infants perform more actions with the right arm and hand than with the left arm and hand. Also, gross motor movements of the arm were the most frequently performed action, with finger movements also being performed frequently. Wrist movements and body and object contacts occurred infrequently.

These observational findings support Michel's (1983) cascade theory of hand preference development, which states that early asymmetries in motor development can influence later appearing lateralized behaviors, via self-generated experiences. According to this theory, the higher frequency of right hand and arm actions observed in this sample will lead to a right bias in hand preference, which is observed in our society. These early lateralized skills should then, expand into hand-use preferences across a variety of manual skills.

DOES UNIMANUAL HAND PREFERENCE PREDICT RDBM HAND PREFERENCE DURING INFANCY?

Group Leader	Pattanakul, Duangporn Graduate, Psychology
Group Members	Rachel Flores, Undergraduate, Psychology; Leanne Mordan, Undergraduate, Psychology; Wyatt Zakosek, Undergraduate, Psychology
Mentor	Prof. Julie Campbell
Authorship	Duangporn Pattanakul; Rachel Flores; Leanne Mordan; Wyatt Zakosek; Julie Campbell

Research demonstrates that unimanual manipulation appears before the onset of role-differentiated bimanual manipulations (RDBM; Nelson, Campbell, & Michel, 2013). RDBM appears around 9 months (Babik & Michel, 2016a). Hand preference in one manual skill concatenates into the next manual skill developed (Hinojosa, Sheu, & Michel, 2003). Nelson et al. (2013) found that infant hand preference for acquiring objects is related to hand preference for RDBM during toddlerhood. In the current study, we examine the development of hand preference of unimanual manipulation and the development of RDBMs during infancy by observing the hand preference of both behaviors across 9- to 14-month age period.

Thirty infants were observed during a play situation in which a researcher presented objects to an infant while seated at a table. During the unimanual manipulation portion, 17 pairs of identical objects were placed in the infant's hands in monthly sessions. During the RDBM manipulations task, 32 objects were placed on the table within reaching distance of the infant. RDBM actions were coded when infants used one hand to stabilize an object and the other hand to manipulate them. The hand that has an active manipulating role on an object was coded as the preferred hand. No RDBM action was coded if infants did not engage in playing with an object or used only one hand to manipulate an object. Video recordings were analyzed for the number of unimanual and RDBMs that the infant performed during each monthly session. Ten infants with a left-hand preference, right-hand preference, no hand preference for unimanual manipulations were examined. Hierarchical linear modeling was used to create trajectories of each of the behaviors across the 9 to 14-month 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, across 9 to 14 months, the no hand preference and right hand preference groups for unimanual show an increase in right RDBM performance, whereas the left hand preference group shows a decrease in right RDBM performance.

Babik, Michel, Sheu, and Campbell (2014) showed that infants decreased the amount of right hand acquisitions around 9-10 months. Our study supports the theory that skill for acquisition concatenates into RDBM skills because infants with a right hand preference for unimanual increase in their preference for RDBM.

THE RELATIONSHIP BETWEEN STRESS AND HEART RATE VARIABILITY

Group Leader	Pilli, Nicholas Undergraduate, Kinesiology & Recreation
Group Members	Daniel Boice, Undergraduate, Kinesiology & Recreation
Mentor	Prof. Karen Dennis
Co-Mentor(s)	Prof. Alex Wolfe
Authorship	Karen Dennis; Alex Wolfe; Nick Pilli; Daniel Boice

Heart rate variability (HRV) is the variation between each consecutive heartbeat. With a high HRV comes a reduction in the risk of developing cardiovascular diseases and mortality. Previous research has shown a positive relationship between physical activity (PA) and HRV with that relationship strengthening as the intensity of PA went up. However, research has been limited on the effects stress has on HRV. Purpose: The purpose of the current study is to analyze the relationship between stress and HRV. Methods: 10 Exercise Science Students (19-25 yr.) from Illinois State University volunteered for this study. All subjects signed an informed consent, provided medical history, answered the Trait Anxiety Inventory (stress) survey, and completed anthropometric measures including height and weight, which was then used to calculate body mass index. Subjects were then fitted for a BodyMedia SenseWear Armband to assess physical activity and sleep efficiency for the duration of one week (7 days). Upon returning this device, each subject was connected to a 12-lead EKG were CardioSoft software was used to assess HRV. Results Pending.

SHYNESS IN COLLEGE STUDENTS: CHANGES OVER TIME AND OTHER CORRELATES

Group Leader	Ricker, Samantha Undergraduate, Psychology
Group Members	Paige Ridgeway, Undergraduate, Sociology/Anthropology; Angelica Eichele, Undergraduate, Communication; Laine Perry, Undergraduate, Sociology/Anthropology; Tyler Zimansky, Undergraduate, Sociology/Anthropology
Mentor	Prof. Susan Sprecher
Authorship	Samantha Ricker; Paige Ridgeway; Angelica Eichele; Laine Perry; Tyler Zimansky

Shyness, defined as feeling uncomfortable or awkward interacting with others, is a common experience. Shyness can have negative consequences for people, including contributing to loneliness, depression, and negative self-image (Henderson et al., 2014). Some research suggests that shyness has increased among college students and possibly in the general population (Henderson et al., 2014).

Most of the research on changes in shyness, however, was conducted comparing students from earlier decades. Research has not compared shyness levels of students from the 2000s and 2010s, during which the smartphone became widespread in use. The recent generation has been described as the connected generation (Pew Research Center, 2010), but whether this increase in electronic communication has contributed to an increase in shyness, social anxiety, and other social phobias is not known. However, there have been many studies that compare different cohorts of young adults on other psychological phenomena over the decades of the 1990s, 2000s, and sometimes the start of the 2010s. These studies generally used meta-analysis to compare different samples, collected at different times (and most often in different settings). For example, this research found that depressive symptoms and insecure attachment styles have increased in recent decades among young adults (Konrath et al., 2014).

Our study will be able to fill a gap in the shyness literature by looking at how college students' responses to a self-report measure of shyness have changed over almost three decades, with the data collection setting remaining constant. Dr. Sprecher has survey data she has collected over many years at ISU, and included in the instrument is a self-description item of shyness. As a team, we will analyze the data from over 8,000 college students (1990-2018) to see whether there have been changes in self-reported shyness over this period. We will also look at how shyness varies with other background characteristics, including gender, age, year in school, race, social class, and rural vs urban background. Very little past research has considered demographic correlates of shyness.

In a preliminary analysis, we found that 75% of our college participants reported at least some shyness. Many other analyses will be conducted, and will be presented in our poster. We will also discuss the limitations of our study, including that it was only a one-item measure of shyness and the wording of the item changed slightly in a recent version of the survey.

PATIENT SAFETY IN COOK COUNTY

Group Leader	Sablan, Tanisha Undergraduate, Health Sciences
Group Members	Aleah Bradley, Undergraduate, Health Sciences
Mentor	Prof. Jennifer Peterson

Patient safety is a critical aspect of a hospital's quality performance. However, patient safety information is not the easiest to access when it comes to the average patient. Patient safety information should be more transparent to inform the public of how well hospitals take care of their patients. Making information such as hospital acquired infection rates or patient falls more accessible can drive hospitals to improve the quality of care they provide to their patients because hospital who do not perform as well will lose business. This qualitative research was conducted to illustrate how 12 hospitals in the North, East, South, and West sides of Cook County, Illinois, compared to one another in regards to patient safety. Using the Leapfrog Hospital Safety Grade, hospitals were analyzed on process, structural, and outcome measures. Measures such as hospital acquired infections, occurrence of surgical problems, practices to prevent errors, safety problems, and hospital staff performance were used to compose the Leapfrog Hospital Safety Grade. In this study, the hospitals analyzed received safety grades that ranged from A through F. When comparing hospitals, a benchmark score was established, which was composed of performance measures from the Centers for Medicare & Medicaid Services (CMS), the Leapfrog Hospital Survey, the Agency for Healthcare Research and Quality (AHRQ), the Centers for Disease Control and Prevention (CDC), and the American Hospital Association's Annual Survey and Health Information Technology Supplement. These scores were then converted to the previously mentioned alphabetic grades. Further examination revealed that hospitals studied in the south of Cook County received lower safety grades, process, structural, and outcome measures. This prompted researchers to question and analyze the reasons that some hospitals performed better than others within the same county. Further investigation was conducted to determine whether or not the community's average income had an effect on proper healthcare practices. Upon analyzing the results, it was concluded that the average income within a community had no association with a hospital's patient safety performance.

INVESTIGATING SCHOOL CLIMATE, SCHOOL COMMITMENT, AND WELL-BEING AMONG COLLEGE STUDENTS

Group Leader	Samolinski , Keegan Undergraduate, Psychology
Group Members	Alyse Pechtold, Undergraduate, Psychology
Mentor	Prof. Eric Wesselmann
Co-Mentor(s)	Prof. Leandra Parris
Authorship	Keegan Samolinski; Alyse Pechtold

School psychologists have studied the school-based climate factors that predict students' psychological and academic well-being in primary and secondary education settings. Psychologists have spent less time studying these issues among college and university students. We provide exploratory research investigating potential relations between measures of school climate (adapted for the college/university setting) and other related social and personality variables. Specifically, we are collecting survey data (current N=40) in which we have college students complete a variety of measures. We are assessing three different categories of variables. First, we are assessing participants' perceptions of the ISU climate for students (e.g., student safety, peer support, faculty/staff support), as well as general negative social experiences - specifically bullying and social ostracism. We also are assessing measures of general psychological well-being (e.g., belonging, self-esteem) and feelings of commitment to ISU. Finally, we are assessing two personality measures to use as control variables - introversion and solitude-seeking tendencies.

We expect to find relations between our variables such that both general negative social experiences and perceived school climate should predict students' psychological well-being and their general commitment to ISU. We will investigate the degree to which the school climate measure relates uniquely to students' well-being above and beyond their general negative social experiences. These data will provide a first step in understanding the social psychological and institutional factors that influence college students' general sense of well-being and their general feelings of commitment to the university.

TRANSITIONS OUT OF EARLY INTERVENTION: A QUALITATIVE STUDY

Group Leader	Smith, Megan Undergraduate, Communication Sciences and Disorders
Group Members	Kylsea Cox, Undergraduate, Communication Sciences and Disorders
Mentor	Prof. Jamie Smith
Authorship	Megan Smith; Kylsea Cox;

The objective of this research project was to examine families' experiences with early intervention (EI) and the transitions out of EI into early childhood education. This study was completed through the use of semi-structured interviews with parents of children in early intervention. The data from these interviews was analyzed via interpretative phenomenological analysis. After analyzing the data, it was clear that parents elaborated on the following themes: what makes an effective provider, the most difficult aspects as a parent, and the most beneficial support systems. Additionally, follow-up interviews revealed children's experiences with early childhood programs after exiting early intervention. Research on this topic has the potential to offer insight to speech-language pathologists, interventionists, and other families who are under similar circumstances. Learning about current experiences provides the opportunity to enhance the transition process and improve outcomes for each family and their child.

GENDERQUEER AND ONLINE DATING

Presenter	Stewart, Brandon Undergraduate, Sociology/Anthropology
Group Members	Kamie Schladenhauffen, Undergraduate, Sociology/Anthropology
Mentor	Prof. Susan Sprecher
Authorship	Brandon Stewart, Kamie Schladenhauffen

In this study we will examine whether people express more prejudice and discrimination toward potential romantic partners who identify as genderqueer than potential romantic partners who do not identify as genderqueer. Previous research has shown that early stages of mate selection are influenced by a number of factors, including the potential partner's race, income, education, religion, (Lewis 2016), age (Conway et al., 2015), and many other characteristics including physical attractiveness (Eastwick & Finkel, 2012). However, there is no research on genderqueer identities and early stages of mate selection. Queer identified people oftentimes get lumped in with LGBT+ communities and previous research has shown that people who identify as LGBT+ experience discrimination as a result of their identities (Wright & Wegner 2012). It is currently unknown if there are connections specifically between genderqueer identities and discrimination when it comes to early mate selection. We will use a vignette survey design and will distribute a survey with one of three versions of a vignette online via Facebook. All three vignettes display a dating profile that hypothetically meets all of the participant's mate preferences, the only difference between the three vignettes is the potential partner identifying as genderqueer, identifying as genderqueer but not labeling it, or not identifying as genderqueer. Participants will then be asked to provide several judgements of the hypothetical partner, including how likely they are to want to meet the person, think about them sexually, and have a long-term or short-term relationship with the person. Participants will then rate different categories of perceived relationship satisfaction such as communication, intimacy, and attraction.

SYNTHESIS AND CHARACTERIZATION OF RUTHENIUM-BASED ALZHEIMER'S DISEASE THERAPEUTICS

Group Leader	Wall, Brendan Undergraduate, Chemistry
Group Members	Samuel Fisher, Undergraduate, Chemistry; Mark Will, Undergraduate, Chemistry
Mentor	Prof. Michael Webb
Authorship	Brendan Wall; Mark Will; Samuel Fisher; Michael Webb

Amyloid-beta ($A\beta$) protein aggregation has proven toxicity in the human brain and is characteristic of Alzheimer's disease, the most common neurodegenerative disease. $A\beta$ proteins have been observed to bind metal-based complexes, and notable research surrounding different ruthenium metal complexes have shown promise as potential Alzheimer's disease therapeutics. However, further evaluation is necessary to determine what properties of the ruthenium-compounds are most important and effective in preventing $A\beta$ toxicity. By coordinating simple ligands and incorporating small incremental changes, we are able to test properties relating to the activity and effectiveness of the structures. Once prepared, the complexes were characterized using various spectroscopic techniques including nuclear magnetic resonance (NMR), infrared spectroscopy (IR), and x-ray crystallography. Following successful characterization, the compounds will be studied under biological conditions for stability and their capacity for limiting the toxicity of $A\beta$. The results of the study will expand options for potential pharmaceutical applications and alternative therapeutic strategies for Alzheimer's disease.

HEARING LOSS PREVENTION (HLP) COMPONENT: SOUND SURVEILLANCE FOR SCHOOL OF MUSIC

Group Leader	Waller, Emily Undergraduate, Communication Sciences and Disorders
Group Members	Hannah Mahon, Graduate, Communication Sciences and Disorders; Heather Maze, Graduate, Communication Sciences and Disorders
Mentor	Prof. Antony Joseph
Authorship	Emily Waller; Heather Maze; Hannah Mahon; Antony Joseph

The primary aim of this project was to determine if the Illinois State University (ISU) School of Music (SOM) students and faculty were at risk for over-exposure to hazardous sound intensities. Excessive sound exposure can cause permanent injury to the human auditory system, which is diagnostically classified as noise-induced hearing loss and tinnitus by audiologists. To verify risk-exposure status, dosimeters and area sound-level meters were used to sample a variety of accessible musician-training environments. Data obtained from our measurement instruments were used to generate sound maps and common noise metrics, such as A-weighted decibel levels (dBA), time-weighted average (TWA), and peak sound pressure levels (dBpSPL). During group performances, our measurements indicated that faculty musicians may be exposed to sound levels in excess of 85dBA (the damage-risk criterion level used by most world authorities), and, at times, students and faculty were exposed to SPLs over 90dBA. These outcomes were plotted and interpreted to determine if a formal hearing conservation program should be administered for the ISU-SOM, specifically for hearing loss prevention purposes.

GAPS IN THE GERIATRIC HEARING HEALTH CARE OF RESIDENTIAL COMMUNITIES

Group Leader	Wiedeman, Melissa Undergraduate, Communication Sciences and Disorders
Group Members	Kristen Panzarella, Undergraduate, Communication Sciences and Disorders; Natalie Rothbauer, Graduate, Communication Sciences and Disorders
Mentor	Prof. Antony Joseph
Authorship	Melissa Wiedeman; Kristen Panzarella; Natalie Rothbauer; Antony Joseph

Hearing loss is one of the most prevalent health problems identified in older citizens. In geriatric-residential care communities, the needs of hearing-impaired patients are commonly prioritized lower than protocols for patient hygiene, individualized medical treatments, and public health or general medicine care. It is important for family members to inquire about, and understand, the priorities and procedures of the residential facility nursing care professionals who care for their loved ones. Whenever a family-member has significantly-impaired hearing, it is imperative to reconcile this with the care facility, properly and frequently screen their hearing and hearing aids, and establish an auditory diagnostic-treatment plan when indicated. The aim of this research is to identify the areas where controlled investigations are not supportive of geriatric hearing health in communities of senior residents. If adequate auditory care cannot be ascertained, families may need to find a facility that places a higher priority on the hearing health care needs of its residents.