18th Annual University of Nebraska at Kearney

UNIVERSITY OF NEBRASKA UNK KEARNEY

Student Research Day

April 13, 2016

Program & Abstract Booklet

Schedule of Events

Wednesday, April 13, 2016

7:30 am to 9:00 am..... Students set up posters in Ponderosa Room of the Nebraskan Student Union

9:00 am to 11:00 am..... Poster Judging

12:00 pm to 1:15 pm..... Luncheon with Guest Speaker,

Dr. Michael Gruszczynski

1:30 pm to 3:30 pm..... Oral Presentations & Performances

3:30 pm..... Awards Ceremony & Reception

Guest Speaker

Dr. Michael Gruszczynski

Dr. Mike Gruszczynski is an Assistant Professor of Political Science at Austin Peay State University in Clarksville, TN. Mike is a 2007 graduate of UNK, where he received his Bachelors of Science degrees in Political Science and News-Editorial Journalism. Mike received his Master's Degree (2009) and Doctorate of Philosophy (2013) from the University of Nebraska-Lincoln, where he studied Political Psychology and research methodology.

His dissertation focused on the influence of emotional cues in the mass media on public attention to political issues. He has published research on the physiological basis of political attitudes and behavior, the effect of campaign controversies on information-seeking behavior, the interaction of elite ideological extremism and media coverage, and the evolution of issue framing in water policy controversies. He also has two coauthored book contracts that he should probably be spending more time on, one on applied research methods and the other on the impact of changes in the American mass media.

At Austin Peay, Mike teaches Methods of Research, Advanced Statistical Analysis, Political Communication, Political Psychology, Campaign Strategy & Management, and Survey Research and Polling Methodology classes, among others. Each of his classes, in some way, requires students to engage in empirical research, whether through the creation, administration, and analysis of a survey, the writing of an original statistical research paper, or through the conduct of a district/precinct analysis for a local campaign.

At UNK, Mike completed research on the effect of presidential approval ratings on the tone of media coverage under the guidance of Dr. Joan Blauwkamp in the Department of Political Science. He presented this research at the 2007 Student Research Day at UNK, the Great Plains Political Science Association meeting at Mankato State University in Mankato, MN, and the National Council on Undergraduate Research at the Dominican University of California in San Rafael, CA. Mike's research experience at UNK was highly transformative - he would likely not have attended graduate school, received his Ph.D, nor become an assistant professor had he not taken part in the Summer Student Research Program at UNK. He is forever indebted to those at UNK who set him on the path of empirical research, in particular Dr. Joan Blauwkamp and Dr. Peter Longo.

Table of Contents

Poster Abstracts.....1

Fine Arts & Humanities.....1

Behavioral & Social Sciences 4

Natural & Physical Sciences 18

Professional & Applied Studies 32

Graduate Studies 46

Performance Schedule 52

Performance Abstracts.....52

Oral Presentation Schedule.....54

Oral Presentation Abstracts 58

Graduate Studies Oral Presentation Abstract 73

Index by Poster Number 74

Index of Participants 75

Poster Abstracts

Fine Arts & Humanities

English

Poster 1 – Amanda Slater
Advisor: Dr. Marguerite Tassi
Title: *Love, Otto Frank: Understanding a Father's Editorial Judgments*

Since the publication of "Anne Frank: The Diary of a Young Girl" in the late 1940s, English teachers across the country have come to rely on the Frank family tale in their conversations with students about the Holocaust. Educators and youth today, just as prominently as in the past, find that the famous entries not only provide details regarding the historic event but also offer a timeless lesson of moral clarity, or the distinct recognition of enemies, victims, and heroes during the war. Despite the relative nature of this text, however, scholars have continually found fault in the work - stating that many biased edits were made under the guidance of Otto Frank prior to publication. These include, but are not limited to, the use of pseudonyms, the removal of criticisms of her mother, and the reworking of information surrounding Opekta Works, Otto's pectin- and spice-producing business. To a greater extent, opposers believed Anne's father was merely using her writing abilities to gain international credit and monetary reward. Through this literary analysis, the rationale for Otto's controversial judgments while editing the diary are examined for better understanding. It is reasoned that Otto wanted to preserve positive characterization of his recently deceased family members as well as produce a work of art that could resonate with adolescent boys and girls across the world. In many ways, Anne's father felt that he had not changed the true content of the diary, but rather, put it together in what he thought was the right way.

Music & Performing Arts

Poster 2 – So-Young Chun
Advisor: Dr. Sharon Campbell
Title: *Cinderella: The Madang Nori*

For Student Research Day, I will present a poster documenting the April 8th, 2016 performance of Cinderella: The Madang Nori and its rehearsal process. This performance combines Korean musical theatre form, Madang Nori, and English-language musical theatre form. As explained in my 2015 Student Research Day presentation, the meaning of Madang is yard and Nori is play or game. Therefore, Madang Nori is usually performed as an outdoor arena theatre.

For this reason, I decided to be present this play in the UNK Amphitheatre on April 8th. The story is based on the Western Cinderella fairy tale and its Korean counterpart Cong-gi Pat-gi. It incorporates Korean traditional percussion ensemble playing, Korean singing method (Pansori), Western and Korean dance style, and English-language musical theatre style singing. The cast of eight will perform the Madang Nori version of Cinderella with support from two costume and prop crew members as well as the UNK Korean Percussion Ensemble. Through this performance, audiences can enjoy the Korean traditional theatre form while guided by elements of English-language musical theatre. My poster will include information and photos from the creation rehearsal and production phases of my project.

Poster 3 – Alyssa Wetovick
Advisor: Dr. Sharon Campbell
Title: *Measuring Music's Role in Decreasing Anxiety in Dementia and Alzheimer's Patients*

Neta Spiro, author of Music and Dementia: Observing effects and searching for underlying theories, suggests that music therapy, like other creative arts therapies, relies relatively little on verbal processing, therefore offering a unique approach to accessing stored knowledge and memories that control certain behaviors. I propose that the presence of familiar music decreases the level of anxiety in patients who have been diagnosed with Alzheimer's disease and dementia. My hypothesis is that the presence of familiar music, which allows subjects to access knowledge and memories, will decrease visible signs and symptoms of anxiety. Eighteen subjects who have been diagnosed with mid to late stage Alzheimer's disease or dementia have been selected for participation in the study. Subjects are observed for their reactions to music related activities versus reactions to non-music related activities. Common music related activities that subjects are participating in include sing-a-longs, drum playing, and actively or passively listening to live and recorded music. Common non-music related activities that subjects are participating in include film watching, assembling puzzles, coloring, and folding laundry. Anxiety levels are measured using the Rating Anxiety in Dementia (RAID) scale, developed to accurately and reliably rate the level of anxiety in dementia patients. While signs and symptoms of anxiety manifest themselves in several areas, only the visible signs of anxiety are measured. Subjects are observed for being frightened and on edge, sensitive to noise, irritable, trembling, restless, and fatigued. After each session, subjects receive a numerical score that represents the severity of exhibited signs of anxiety. Following data collection, each subject's scores will be evaluated to determine if the presence of familiar music decreased the visible signs and symptoms of anxiety. The poster for Student Research Day 2016 will report on the methodology for the study; data collection will conclude after April 15th.

Poster 4 – Morgan Wipperling
Advisor: Dr. Sharon Campbell
Title: *Finding connections between music and language acquisition*

This experiment, Finding connections in music and language learning, conducted research on the vocabulary of toddlers (ages three to five) and how music might influence their vocabulary learning. This research was based on a similar study, conducted with children with autism. However, the child participants in this study had shown a normal development pattern of development. The children were shown an image corresponding to a target word. Then a nursery rhyme was read that corresponded to the image, and the child was asked to fill in the verbal blank based on the image. Once a day for three days, the children were shown videos, one group being shown a music video, a second shown a speech video of the same nursery rhymes. The videos used common nursery rhymes, and the same nursery rhymes were used in both videos. In these videos, there were a set of 30 "target words". For example, a video might say "She likes to run". The target word in this sentence is the word "run". This phrase was sang in the music video and spoken in the speech video. Then the children were given a post-test administered by two graduate speech language pathology students to measure improvements in vocabulary using these target words. The purpose of this research is to gain knowledge about how music could possibly improve language development in children. The thesis addresses if music therapy can potentially help children develop language faster or more accurately.

Behavioral & Social Sciences

Economics

Poster 5 – Shelby Rowan
Advisor: Dr. Bree Dority O'Callaghan
Title: *Fluctuations in Teenage Birth Rates*

Teens in the U.S. are four times as likely to give birth than teens in Germany or Norway and ten times as likely as teens in Switzerland (Kearney and Levine, 2012). Even within the United States there are large fluctuations state to state. A teen in Mississippi is four times as likely to give birth than a teen in New Hampshire (Kearney and Levine, 2012). The economic impact of teenage births is largely studied by many reputable sources, such as the Center for Disease Control and Prevention, the Family and Youth Services Bureau, and the National Center for Children in Poverty. The economic prosperity of teens that give birth at these young ages may be affected later in life. In 2013, the United States Department of Agriculture estimated that the cost of raising a child in the U.S. adds up to $245,340 (USDA, 2013). This sizable sum could lead to lower than expected economic trajectory. Previous studies have examined birth rates inside and outside of the U.S. However, the economic factors leading to and following a teenage birth have not been thoroughly analyzed. The purpose of this study is to examine several factors associated with United States teenage birth rates and the coupled economic implications. A uniquely constructed cross-sectional dataset and regression analysis will be used. Because many variables will be examined, one year of data (2013) will analyze the state to state variances. In addition, factors associated with the annual fluctuations in national birth rates will be examined through similar means.

Geography & Earth Science

Poster 6 – Cale Eacker
Advisor: Dr. Jason Combs
Title: *National Parks: America's playgrounds*

Ever since their creation in the late 1800s and early 1900s, National Parks have been a tourist attraction in the United States. National Parks offer a cheap and affordable destination for family vacations and getaways to see some of America's most beautiful scenery. The number of parks, along with the number of tourists has grown over the years. In 2014, a record number of 292.8 million tourists visited National Parks in America. This project examines park location and attendance. Other factors considered are population of cities and states close to the parks, land area, popularity, and what the parks in question have to offer. To create a more manageable dataset, this project examines the top ten rated parks in America. Information obtained regarding these parks are represented as

graphs and charts and demonstrate a clear and distinct pattern of park location and popularity in the ranking of parks. Keywords: Attendance, National Parks, Popularity, Tourism.

Poster 7 – Ashley Larsen
Advisor: Dr. Jason Combs
Title: *The Atchafalaya Basin: Alligators, Snakes, and Swamps . . . oh my*

The American South is both a unique cultural and physiographic region in the United States. While common perceptions of the South hold constant, Louisiana in particular offers several unique experiences. The Pelican State is home to the world's largest river swamp, the Atchafalaya Basin, which abounds with bottomland hardwood swamps, bayous, and backwater lakes. The basin teems with exotic wildlife, most enchantingly the American alligator. These beasts have long been subject of fascination for many, etching their way into swamp culture. The mysteriousness of both the alligator and the swamp have proven to be quite enticing to adventurous travelers, as evidenced by the large number of tourist attractions centered on these topics. This study examines swamp culture in the Atchafalaya region, and especially its effect on the growth of Louisiana's tourism industry. Keywords: Alligator, Atchafalaya, Swamp, Tourism.

Poster 8 – Justice Mott
Advisor: Dr. Jason Combs
Title: *Post World War II Forced Migrations*

It has been said that winners write history books. So when looking back at the atrocities of World War II we often just see the gross crimes committed by Germany with their concentration camps and Japan with their brutal conquest of Korea and China. Often overlooked, is the roughly 21 million Eastern Europeans forcibly moved following the war, many on the same trains used in the Holocaust. After the war, the Soviet Union, United Kingdom, and the United States, set up a plan to redraw the borders of Eastern Europe. After the lines were redrawn, any person who did not fit in the proposed plan was rounded up and packed into cattle cars, with no provisions, and sent to the nearest border. Many concentration camps were kept open years after the war's end to house forced migrants. It is estimated that a half million Germans lost their lives during this time. This study examines what happened to these forced migrants and that wars are not one sided in regard to civilian atrocities. Keywords: Europe, Forced Migrations, World War II.

Poster 9 – Nicole Pauley
Advisor: Dr. Paul Burger
Title: *A GIScience Site Selection of a Retirement Community in the Salt Lake City, Utah, Metropolitan Area*

Resort Lifestyle Communities (RLC) hopes to identify a location in the Salt Lake City, Utah, metropolitan area for construction of a new upscale retirement community. An ideal location has sufficient consumer demand with the least amount of competition within the market area. GIScience provides the framework through which factors contributing to the new retirement community location are analyzed. US Census Bureau TIGER / Line files

provide the foundation for the spatial database including the following geographic layers: block groups, city, county, and state boundaries in addition to road networks. Socio-demographic variables at the block group level are acquired from ArcGIS Business Analyst. Competitor locations are provided by RLC. Once the block-group level demand and competitor locations and capacities are known, all remaining block groups within a city limit are considered as potential candidates. The location-allocation heuristics of Minimize Impedance (MI), Maximize Market Share (MMS) and Maximize Attendance (MA) are used in ArcGIS to determine an optimal location based upon how each balances supply and demand. The output locations are then analyzed in a subsequent study to estimate the profitability of each location. The results of both provide RLC the basis for acquiring properties with a suitable location for construction of a retirement community in the Salt Lake City metropolitan area. Keywords: Site Selection, GIScience, Retirement Community

Poster 10 – Fletcher Sheridan
Advisor: Dr. Paul Burger
Title: *If You Build it Will They Come: Using a GIScience Gravity Model to Estimate Retirement Community Demand in Salt Lake City, Utah*

Resort Lifestyle Communities (RLC) hopes to identify a location in the Salt Lake City, Utah, metropolitan area containing sufficient demand for a new upscale retirement community. Specifically, RLC wants to determine which neighborhood has sufficient demand with the least amount of competition for a new facility with sufficient market share to make it profitable. GIScience is used as the framework for the analysis of factors contributing to the location and viability of a retirement community. US Census Bureau TIGER / Line files provide the foundation for the spatial database including the following geographic layers: block groups, city, county, and state boundaries in addition to road networks. Socio-demographic variables at the block group level are acquired from ArcGIS Business Analyst. Competitor locations are provided by RLC. Given the proposed location of a new retirement community along with existing competitors, the goal is to determine how many retirees RLC can expect to choose their facility. The Huff Model in ArcGIS is a probabilistic gravity model used to predict consumer behavior by estimating the portion of demand (retirees) choosing a retirement community from among competing locations. Demand surrounding two sites selected from a related project through the location-allocation heuristics of Maximize Market Share (MMS) and Maximize Attendance (MA) are analyzed using the Huff Model. The results provide RLC the basis for acquiring properties with a suitable location for construction of a retirement community in the Salt Lake City metropolitan area. Keywords: Gravity Model, GIScience, Retirement Community

Poster 11 – Tanner Stark
Advisor: Dr. Jason Combs
Title: *The Geographical Extent and Influence of Modern Country Music*

Country music in the United States has evolved greatly in the last hundred years. What started as regional folk music turned into a distinctly southern identification of what became known as country music. This new southern style began to be associated with rural society and blue collar Americans. With this new definition of country, the music style spread throughout the South and the Midwest. Today, country music continues to evolve and the identification it carries remains the same. It may be possible, then, to determine distinct boundaries within the United States in which country music is particularly popular. Using country music charts and locations of popular country labels, defining hearths and a distinct vernacular region helps to show the influence and spread of modern country music in the United States. Keywords: Country Music, Midwest, South, Vernacular Region.

Poster 12 – Tanner Stark
Advisor: John T Bauer
Title: *An Historical GIS of 1889 Grand Island, Nebraska*

Using an 1889 city directory for Grand Island, Nebraska, I placed individual dwellings and businesses at specific addresses in a GIS system. The GIS was overlaid with a map of the city from 1889. The 1885 census records found on Ancestry.com allowed me to learn more about some families, such as their birthplace, age, ethnicity, and occupation. Data such as this can be tied to individual digitized points within the GIS. I assigned prominent business owners, along with their families and employees, to specific businesses in town. By locating businesses and residents throughout the city, I can glimpse into the past and see issues such as racial segregation, immigrant neighborhoods, and business and retail diversification. Despite the large amount of turnover in residents between 1885 and 1889, (due to the transiency of the times) prominent city residents and buildings remained. These features give a glimpse of what was important to the development of the city of Grand Island.

Poster 13 – Spencer Sydow
Advisor: Dr. Jason Combs
Title: *A Solution to the Oil Energy Crisis*

Experts have debated for decades the amount of oil that remains on Earth. Estimates are wide ranging, yet most predict that a few hundred years of oil reserves remain. This project examines alternative energy sources as we approach an energy break point with oil. One such alternative is geothermal, which depending on the season can both heat and cool homes. Another option is wind power, which has great potential in the United States. Our culture requires enormous amounts of energy, finding viable energy options is critical. This paper demonstrates that alternative energy sources are available and can be used to prolong the life of oil. Keywords: Alternative Energy, Geothermal, Oil, Wind Power.

Kinesiology & Sport Sciences

Poster 14 – Fredde Armajo
Advisor: Dr. Megan Adkins
Title: *The Effects of Physical Education in High School on Physical Activity in College*

The transition from high school to college can be a very complex process that is different for all individuals. The transitions, routines and habits that were established within the relatively structured environment of high school and home are disrupted along with the security, predictability, and sense of control (Bray & Born, 2004). This disruption added to the dimension of living away from home for the first time can all effect a person's inclination to participate in physical activity. Additional factors which may play into physical activity participation rates after High School could stem from injuries, motivation, and/or past experience and knowledge base received when participating in High School Physical Education, and/or sports. The purpose of this research project is to determine current physical activity levels of college students (freshman to senior) and influential factors affecting activity level, especially focusing on experience and the curriculum taught in High School Physical Education.

Poster 15 – Payton Buckmaster
Advisor: Dr. Young Do Kim
Title: *Innovation of rural community value: Dynamics of minor league sport team, event, and its facility as community assets*

In today's global economy challenges, rural communities face a much broader area of and long-standing concerns compared to urban communities. In particular, disappearing and shrinking demand of traditional resource-based industries and markets which leads to a decline in local job opportunities, and as a consequence, an increase in out-migration of unemployed workers and their families (Fullerton, 2015). For a great number of rural development institutions and their external stakeholders, these inevitable changes force them to reassess their economic, cultural and social assets and further develop and refine their communities. In this regard, the impact of the dynamics of minor league sport team, events, and its facility on our community are immense and diverse. Its influence is felt not only economically, but also as a powerful vehicle for enhancing community's welfare. In fact, there have been numerous studies focused predominantly upon the impacts of professional sport teams in the urban areas on economic and social benefits. However, very little attention has been paid to the impacts of minor leagues sport teams on community welfare, particularly located in rural areas. Therefore, the purpose of this study is to investigate the influence of a minor league sport team, events, and its facility as a community asset on community value innovation in a rural area. In this

presentation, three realms of community value created by the local minor league sport team can be identified and explained in depth: (1) individual career-oriented opportunities; (2) socially responsible initiatives; and (3) the provisions of sporting and non-sporting events. Central to this current study is the effort to better use and recognize the extensive community value innovation catalyzed by a local minor league sport team in the challenged rural areas.

Poster 16 – Nicki De Vries
Advisor: Dr. Megan Adkins
Title: *Exercise Motivation Project*

Participating in lifelong physical activity (PA) has been proven to reduce the risks for many chronic diseases, and improve one's overall fitness and health (Center for Disease Control and Prevention [CDC], 2014). However, despite research, most Americans in the United States are still not engaging in moderate to vigorous physical activity (MVPA) levels recommended to maintain health and physical fitness (Strand, Scantling, & Johnson, 1998; U.S. Department of Health and Human Services, 1996). Few studies have been completed on what motivates individuals to participate in PA, and none have included the effects of past injuries or secondary physical education (PE) on PA levels. The combination of different curriculums (Exercise Science, Physical Education, and Athletic Training) from the University of Nebraska Kearney's Kinesiology and Sport Sciences Department is what makes this study unique. This study will focus on determining the influencing factors (past injuries, secondary PE, motivation) on physical activity participation of college students who participate in intramural sports. A questionnaire will be distributed through Qualtrics to all intramural participants attending UNK related to PE, past injury, and motivation. Exercise motivation will be assessed using the Exercise Motivations Inventory 2 (EMI-2). The EMI-2 is consistent with the Self-Determination Theory and uses 14 subscales to assess reasons that one participates in physical activity (Kilpatrick et al., 2005). Physical activity will be assessed using the International Physical Activity Questionnaire (IPAQ). The IPAQ is identified as a good measure to assess self-reported physical activity (Maddison et all., 2007). Additional questions will be asked through demographic questions developed by the researcher.

Poster 17 – Claire Dull
Advisor: Dr. Kazuma Akehi
Title: *Influence of past and current medical conditions or injuries on current exercise motivation*

Previous researches have focused on the injuries/medical conditions and treatment motivation of collegiate and elite athletes. After the occurrence of injury, these athletes are driven by intrinsic and extrinsic motivational factors to perform rehabilitation and return to their athletic events. Athletes with more intrinsic motivation are more likely to return to their sport than those who have more extrinsic motivation. Additionally, autonomy and sport motivation are related to these athletes' motivation to complete rehabilitation and return to their sport, which is known as the planned

behavior theory. However, it is little known how these motivational factors influence other populations, such as non-traditional athletic populations. Therefore, the purpose of this study is to examine the impact of past or current injuries and medical conditions on the current exercise motivation and physical activity level of college intramural athletes. The current study will focus on how autonomy, competence, and relatedness impact exercise motivation. We will recruit 200 college intramural athletes to complete a survey regarding exercise motivation, history of injuries, and treatment motivation. The questionnaire is established based on the Self-Determination Theory and Planned Behavior Theory. The questionnaire utilizes the Likert-scale and numbers from 1-5, which corresponds to Not True for Me to Very True for Me. We hypothesized that college intramural athletes who are intrinsically motivated to participate in the current physical activity would had greater treatment motivation when recovering from past or current injuries because they would have a greater desire to return to their activities than those who are extrinsically motivated. We also hypothesized that greater autonomy, competence, and relatedness would increase rehabilitation outcomes and return to their physical activities.

Poster 18 – Elenna Leininger
Advisor: Dr. Matthew Bice
Title: *Exercise Motivation and Current Physical Activity Levels Among Intramural Participants at a Mid-sized Midwest University*

The purpose of this project is to determine the effects that past injuries, secondary physical education, and motivation have on the level of physical activity college intramural participants have. Research indicates that nearly half of college students will see a decrease in physical activity level after graduating high school; thirty-eight percent of college students participate in regular vigorous activity and 20% of them participate in regular moderate activity, while 65% of high school students report regular vigorous activity and 26% report regular moderate activity (Kilpatrick et al., 2007). Several studies have been done on what motivates college students to be physically active, but none of these have included any effects that past injury or secondary physical education have on their motivation and involvement in physical activity. This study uses the Self-Determination Theory, which examines intrinsic and extrinsic factors that contribute to one's motivation to partake in certain behaviors, including physical activity (Ryan and Deci, 2000). Our study sample will include any students that participate in 1 or more of the University of Nebraska Kearney's 25 intramural activities related to physical activity. Participants' physical activity motivation will be assessed using the Exercise Motivation Inventory (EMI-2) (Markland), and their physical activity levels will be assessed using the International Physical

Activity Questionnaire (IPAQ) (Maddison et al., 2007). Students involved in intramural sports have already chose to continue being physically active in college and this study can help to expose what has motivated their behavior; it may even offer insight into what would motivate non-intramural participants to partake in physical activity.

Political Science

Poster 19 – Audrey Grant
Advisor: Dr. Charles Rowling
Title: *State Sovereignty: From Non-Intervention to the Responsibility to Protect*

The concept of state sovereignty has, historically, proven to be a point of contention regarding policy on intervention in the cases of the worst crimes against humanity, including genocide. The consensus on the appropriate response to genocide has undergone two major shifts: first, after WWII, and then again after a period of conflict in the 1990s. In 2001, the concept of the responsibility to protect was introduced, and then accepted by the UN in 2005. This paper examines the major shifts in consensus and the introduction of the Responsibility to Protect as a doctrine. Since its formal acceptance in 2005, though, has R2P been an effective solution to mass atrocities, or is it just another lofty ideal that the international community fails to implement in actual crises? In recent history, the conflicts in Libya and Syria can provide insight into this matter. Reframing humanitarian intervention as the Responsibility to Protect re-established an international consensus on the legitimate ends of the use of military power in situations of mass atrocities and genocide, but the 2011 Libyan intervention proved that this consensus is fragile. The consensus that underpinned Resolution 1973 was weakened by gaps in expectation and outcomes. The situation in Syria proved that despite a formally reached consensus regarding the appropriate steps to take in the event of mass atrocities, it can still be impossible for states to reach a consensus when the consensus on when a military intervention can be regarded as legitimate are so tenuous. Overall, these cases have proved a need for a set of legitimacy factors if the doctrine is to move forward effectively.

Poster 20 – Carson Messersmith
Advisor: Dr. Peter Longo
Title: *Political Implications of Drought: Kansas and Nebraska*

The use of natural resources has long been debated in both foreign and domestic regions of the world. This debate, though, has never been closer or more heated then for the residents of the Great Plains. It is the utilization of water in this region that has led to many different studies and perspectives Water is the lifeblood to all humans both directly and indirectly. It sustains life by providing one of the most necessary resources of the human body, and also by growing and aiding in the production of the food required to provide for an ever-growing world population. This has led to many individuals looking at current uses of water and the effect people are having on

this natural resource. The allocation of water has challenged policy makers and the general population throughout history. Since water is the lifeblood of human existence, it is highly important to develop fair and just water allocation schemes. The water fights between Nebraska and Kansas need resolution. This project will provide overview of the water resources in Nebraska and Kansas, review the allocations schemes and fights, analyze legal determinations, and offer possible ways in which the water fights can be mitigated.

Poster 21 – Patrick McCue
Advisor: Dr. Charles Rowling
Title: *Towards a clarification of the Israel Lobby hypothesis: Officials, media and the 2006 Israel-Lebanon War*

This study takes up and empirically examines some of the claims put forth by Mearsheimer and Walt (2006, 2007) about the manner and extent to which the Israel Lobby shapes U.S. political and news discourse on policy issues and developments in the Middle East. Specifically, we examine White House, military, congressional and news discourse surrounding the 2006 Israel-Lebanon War to assess: (a) the degree to which two frames' strategic rationale and moral rationale dominated official discourse about whether the U.S. should support Israel during the war; and (b) the extent to which news coverage reflected, or deviated from, the range of official discourse surrounding this issue. Our findings suggest that U.S. officials across both parties routinely offered strategic and moral rationales for supporting Israel. Nonetheless, the U.S. press was much more balanced in its coverage of the conflict, at times criticizing Israel's actions and questioning U.S. support for Israel, despite the overwhelmingly pro-Israel attitudes expressed among U.S. officials. These findings, we argue, challenge assumptions about the influence of the Israel Lobby in the U.S. press and, more broadly, provide insight into the process by which U.S. news coverage tends to align with or challenge the communications of government officials.

Poster 22 – Christopher Navrkal
Advisor: Dr. Diane Duffin
Title: *Hey That's Mine: How LGBT Opponents Used Policy Definition and the Political Spectacle to Stop the Houston Equal Rights Ordinance*

This research uses Murray Edelman's theory of political spectacle to analyze the outcome of the referendum to repeal the Houston Equal Rights Ordinance (HERO) in 2015. Murray argues that policy advocates and opponents advance their causes by rhetorically constructing leaders, enemies and problems. Collectively, these constructs make up what Edelman calls political spectacle. To assess the extent to which the HERO vote can be explained as political spectacle, I coded a set of communications from both national and Houston-based media outlets, according to whether the language used could reasonably be inferred to support or oppose HERO. For example, any reference to the ordinance as a bathroom bill was coded as opposition. In total, 55% of the messages coded supported HERO, 45% contained language

opposing it. Interestingly, the 45% of the messages opposing HERO came exclusively from Houston-based outlets. Messages supporting HEROwere more closely divided between national and local outlets. These findings suggest a vigorous debate at the local level, couched within a one-sided national discussion. More rigorous analysis of the language used in opposition to HERO revealed how political leaders were able to construct political spectacle to repeal the ordinance. By using ambiguous and fear-inducing language, opponents turned an equal rights ordinance into a problem, created unforeseen enemies within the LGBT community, and established themselves as leaders. These efforts ultimately turned a sizable majority of voters against the ordinance, leading to its repeal by a vote of 61-39%.

Poster 23 – Jackson Porter
Advisor: Dr. Peter Longo
Title: *School Consolidations: How does consolidation effect public opinion and social capital in communities?*

Since the beginning of modern school consolidations, experts and the general citizenry have debated the effects that the consolidation of schools have on communities. In both rural and urban communities, experts have analyzed the fiscal, social, and educational effects of these consolidations. In this paper I aim to analyze previous research about the various effects of school consolidations and focus on how these consolidations effect the connections of those in communities and the opinions of the people that make up the communities. I do this by analyzing specific examples both in rural Nebraska communities and throughout the United States and draw from previous research to see what specific effects are commonly detected in these examples.

Poster 24 – Jessa Schultis
Advisor: Dr. Peter Longo
Title: *Analysis of Human Trafficking*

Human Trafficking is a multi-billion dollar industry affecting millions of victims each year. It is defined broadly as the trade of humans, and encompasses many kinds of exploitations through coercion or manipulation. Though human trafficking is illegal, cases of human trafficking are increasing throughout the globe. It often, but not always, involves trafficking across borders, making human trafficking an important international political issue. Furthermore, the laws of each state can have an impact on instances of trafficking. The purpose of this research is to compile comprehensive study of human trafficking. First, it will examine human trafficking under the concept of human rights. Second, it will examine human trafficking as an international political issue. Third, it will analyze human trafficking within the context of federalism. It is desired that this research will summarize and consolidate previous research on human trafficking when moving forward on new human trafficking initiatives.

Psychology

Poster 25 – Brianna Aden
Advisor: Dr. Megan Strain
Title: *All families seen as equal? Examining the perceptions of same-sex parenting.*

Prejudice against gay and lesbian individuals has been tolerated for many years, but with increased societal acceptance toward these groups, and the legalization of same-sex marriage, the expression of prejudice toward them might be changing. Specifically, over the course of history, as social groups have become more accepted, prejudice against them has become less accepted. As a result, the expression of prejudice toward such groups has gone from being traditional (i.e., overt, blatant), to being modern (i.e., covert, subtle) and less easily recognized. We investigated the potential for expression of modern prejudice against same sex couples in the context of parenting. Participants were presented with a vignette describing a child's behavior at school, and his or her parenting circumstances. We manipulated parent sexual orientation (gay, lesbian, or straight) and the child's behavior (pro- or anti-social) in a 3 x 2 design, examining perceptions of parenting as the dependent measure. After reading the vignette, participants were asked to complete a series of questions about their perceptions of the parents, and then complete the Modern Homonegativity Scale (MHS). We compared the perceptions of parenting across conditions, treating MHS as a covariate. Results demonstrated, contrary to expectations, there no significant difference across conditions. This suggests that the expression of prejudice against same sex couples was not evident within the context parenting.

Poster 26 – Jake Andreasen
Advisor: Dr. Evan Hill
Title: *Behavioral Assessment of Hearing in the Box Turtle*

The proposed research will study the evolutionary relationship of reptiles and birds when it comes to their ability to detect sounds at different frequencies. Birds in particular are able to hear at lower frequencies and it is unknown why. One approach is to investigate animals that are closest to the ancestor that split birds and reptiles into different clades, to identify where and why the evolutionary change took place. This project will develop a procedure for testing the common North American box turtle. Procedurally, the first goal is to train the box turtles to make a consistent response in order to obtain a reward. Next, a novel stimulus will be introduced and used to identify if it was detected. This stimulus can then be altered to assess the sensory limits of the box turtle's auditory system.

Poster 27 – Summer Borowiak
Advisor: Dr. Evan Hill
Title: *Developing a technique for testing the sensory abilities of the American alligator*

Currently very little is known about the hearing abilities of reptiles. It is speculated that reptile hearing abilities are similar to those of birds, due to a shared common ancestor between the

two groups. Physiological studies have confirmed this relationship. The American Alligator (*Alligator mississippiensis*) is a superb example of a vocal reptile. When male Alligators are trying to attract a female, it often roars or bellows that sends vibrations across the water. The young alligators make high-pitched noises from inside the egg before hatching, letting the mother know to uncover the eggs of the nesting materials. Females are also known to defend their offspring. The mother Alligator is especially protective during the first few months or years of her young's life, reacting to their distress calls. In a research experiment recording EEG potentials from the auditory system, it was found that Alligators responded to tones ranging from 100 - 8,000 Hz. The goal of the research is to develop a behavioral technique to systematically verify this range and sensitivity to auditory stimuli.

Poster 28 – Alex Hinrichsen
Advisor: Dr. William Wozniak
Title: *Factors in the Development of Sense of Place in College Students*

We wanted to test whether developing a greater sense of place at a college or university contributes to retention. Undergraduate students completed a questionnaire to determine if the participants' reluctance to stay on campus until graduation was dependent upon their reported place attachment, place identity, and place dependence. We suspect that those individuals with a higher connection to campus would subsequently be more likely to finish their academic career on that campus. We also hypothesize that those individuals who feel little connection to campus in terms of sense of place will be less likely to continue or have other reasons for continuing their education.

Poster 29 – Sarah Strawn
Advisor: Dr. Evan Hill
Title: *An investigation of the auditory abilities of two quail species*

In this study the hearing of both bobwhite and Japanese quails will be evaluated. The quails will be raised in captivity and trained to press a button until they hear a tone. This tone will be varied in frequency and intensity until an apparent hearing limit has been reached. It is hypothesized that there will be a close similarity between chicken and quail hearing. The animals will first be trained to press a button. This training will be based mostly on trial and error. One possible method of training would be to glue a piece of vegetable to the button to encourage pecking. After they reliably press the button to receive food, defined as a performance rate of 80% or greater, they'll then be trained to stop when they hear a sound. When a sound is heard by prey animals, such as quail, they instinctively stop to look for predators. This trained behavior will be used to determine when sounds can be heard. Very little testing has been done on quail hearing and none has been done to this extent. This data can be used for further information on quails and to compare with the hearing of other birds. There have already been some unpredictable differences in hearing for unknown reasons. An evaluation of quail hearing

could help to develop a hypothesis of why there are hearing differences.

Poster 30 – Shelby Study
Advisor: Dr. Megan Strain
Title: *More than Purity: Exploring Feminine Honor as a Complex Construct*

The purpose of our study is to examine unanswered questions relating to the idea of feminine honor. Honor is currently conceptualized as a socially desirable reputation that is maximized and maintained through behavior. Research done on feminine honor thus far has focused primarily on contexts pertaining to women's familial roles (e.g., Guerra, Gouveia, Araujo, Andrade, & Gaudencio, 2013), or their sexual purity (e.g., Cihangir, 2013). Nelsen, Lei, Martens, Miller and Saucier (2016) have done preliminary work that suggests that when asked to describe behaviors that would be prideful or shameful for women, participants respond with a range of categories that include purity and family, but extend further to include traits such as independence, strength, and success. Similarly, to begin examining feminine honor, we held focus groups to examine and identify participants' beliefs and attitudes toward feminine honor. After identifying categories from participants' responses, we created more specific statements that could be used to assess individuals' agreement with both traditional and modern aspects of feminine honor. The goals of our study were to 1) establish a reliable measure of feminine honor, while also conceptualizing it as an individual difference variable (rather than a cultural variable) and 2) determine whether there are other characteristics of feminine honor, beyond those of sexuality and traditional gender roles, that may be integral to perceptions of women's honor. We expect the results of our exploratory factor analysis to confirm the existence of these other characteristics. This study builds upon previous research by prioritizing feminine honor, contrary to previous work that has focused on masculine honor and family honor. More importantly, the information gathered will inform future studies that will allow us to better conceptualize and measure feminine honor as an individual difference construct.

Poster 31 – Zach Sutton
Advisor: Dr. Evan Hill
Title: *Behavioral evaluation of hearing in the African Spurred Tortoise*

It has been found that birds can hear at frequencies much lower than mammals can, for unknown reasons. One key component to understanding why birds have this ability is looking at the evolutionary history of the trait in a reptile species that preceded the evolution of birds, such as the African Spurred Tortoise (*Centrochelys sulcata*). As of right now, there is no evidence on what reptiles can hear and respond to behaviorally. Many experts in biology claim that reptiles cannot be trained to produce a behavioral response. However, this seems paradoxical, as reptiles must be able to learn because they adapt to their environment in nature as all other species do. Thus, the goal of this project is to construct a mechanism to teach the Sulcata to respond to sounds through a

series of rewards for making an observable response. This behavior can then be altered when a sound is played. Through this operant conditioning technique, the reptiles will create an association between sounds and receiving food. Over time the Sulcata will then be able to respond to sound as a stimulus which will change their behavior. Correspondingly, we can adjust the pitch of the sound to identify the range of frequencies the animal can detect. Depending on the Sulcata's hearing range, the point at which birds diverged from its evolutionary ancestors can then be determined.

Poster 32 – Alison VanSkiver
Co-Presenter – Megan Humlicek
Advisor: Dr. William Wozniak
Title: *Memory for Words Judged for Human Qualities*

Our study investigated whether anthropomorphized words would be recalled more often than unanthropomorphized words in a memory task. We also hypothesized that word category would have an effect on word recall. One hundred nine participants were recruited from a small mid-western university for our experiment and a within-subjects design was used. Participants were shown a PowerPoint presentation that asked questions pertaining to words. The various words fell into the categories of humans, animals, and machines. The questions either provided an anthropomorphized cue or an unanthropomorphized cue. Then participants were asked to recall the words from the presentation. The results of our experiment showed that anthropomorphized words were recalled more often than unanthropomorphized words and anthropomorphized humans and animals were recalled more often than anthropomorphized machines. Our study suggests that anthropomorphism and word category aid in memory tasks.

Natural & Physical Sciences

Biology

Poster 33 – Kathleen Bartunek
Co-Presenter – Elizabeth Huffman
Advisor: Dr. Paul Twigg
Title: *Could native NE algae be useful for biofuel production?*

Wild algae were isolated from a pond near Kearney, NE. Isolated algal colonies were grown in nitrogen containing medium and then transferred to medium lacking nitrogen. Samples were collected over a 10 day -N treatment and processed to measure lipid accumulation with Nile Red. Samples were also collected for DNA isolation to help identify the isolated algae by sequencing. Our data thus far will be presented.

Poster 34 – Becca Best
Advisor: Dr. Kim Carlson
Title: *Pathogenicity of Nora virus in germ-free Drosophila melanogaster*

The innate gut microbiota of Drosophila melanogaster acts as amediator in antiviral immunity mechanisms. Mammalian picornaviruses show diminished pathogenicity and beneficial effects in restoring gut homeostasis in the absence of innate flora and presence of picornaviruses, namely Norovirus. A similar virus, Nora virus, infects D. melanogaster populations and shows no pathogenic properties. Because of the conserved genome with humans and its ability to be easily manipulated, D. melanogaster was chosen as a model organism to observe the possible pathogenicity of Nora virus in the absence of innate gut microbiota. Germ-free flies were generated and divided into four treatment groups differing in Nora virus infection and microbe absence or reconstitution. Presence of Nora virus and microbes was confirmed using RT-PCR and 16S PCR, respectively. Longevity was measured and correlated with the possible pathogenicity of Nora virus. A shortened lifespan was observed in germ-free, Nora virus free D. melanogaster, and the virus showed to be beneficial in the longevity of germ-free, Nora virus positive D. melanogaster.

Poster 35 – Jordanna Glock
Advisor: Dr. Dawn Simon
Title: *Evolution of an rRNA Intron in the Lichen Teloschistes chrysophthalamus*

Introns have no known general function, yet are ubiquitous across eukaryotes. Despite this, their origin is not well understood. We are particularly interested in ribosomal RNA (rRNA) introns, because they have a recent origin. Specifically, we hypothesize that they arose from group I ribozymes, which are common in the same taxa. Here we focus on one position in the small subunit in the fungal genus Teloschistes. Previous work suggests that multiple types of introns exist at this position. The primary objective of this ongoing study is

to increase sampling and discover additional introns that represent intermediate steps in the transition from group I ribozyme to spliceosomal intron. In the course of this work, we found evidence for fungal heterogeneity within one sample collected in Nebraska. In addition, sequence and structural characteristics of the intron sequence generated in this study has characteristics of both spliceosomal introns and group I ribozymes, suggesting that it may be a transitional form.

Poster 36 – Luke Hamilton
Advisor: Dr. Letitia Reichart
Title: *Variation in Plasma Lipid Metabolites in Songbirds of South Central Nebraska*

In humans, measuring the levels of certain biochemicals in the blood can give us detailed insight regarding the processes going on inside the body; and the same is true in birds. One aspect of bird physiology that interests both conservationists and scientists is use of fat reserves; blood tests can be used to quantify that use. Specifically, measuring the blood levels of two biochemicals triglycerides and Î²-hydroxybutyrate has proven to be a useful tool. High concentrations of blood triglycerides indicate deposition of fats, and high concentrations of Î²-hydroxybutyrate indicate catabolism of fats. However, data obtained from these biochemical measures must be interpreted carefully, because previous studies have shown that an entire spectrum of variables including diet composition, time of day, and even amount time between when the bird is captured and when the blood sample is taken" can have a significant effect on the numbers that are produced. Moreover, even closely related bird species must usually be analyzed separately because previous studies have recorded differences between species in the same genus. Bearing these factors in mind, we collect blood samples from various species of wild songbirds at different locations in and near Kearney, NE. We measure levels of these two biochemicals in blood samples, and attempt to determine the causes of the variation observed. Once we have established a base of data for one species across the annual cycle, we hope to answer questions regarding how birds use food differently depending on whether they are migrating, breeding, or surviving the winter. Also, because birds tend to deposit fat in high-quality habitats and catabolize fat in low-quality habitats, our data will be useful for future studies that assess the habitat quality of passerine birds.

Poster 37 – Abby Hongsermeier
Advisor: Dr. Dawn Simon
Title: *Teaching Evolution: An Interactive LEGO® Simulation*

Evolution is a fundamental theory in biology. Yet, it has been shown that college students, regardless of chosen major, have an inadequate understanding of it. This is at least partially due to ineffective teaching at the high school level. High school biology teachers, whether due to poor understanding or contradicting beliefs, struggle to teach evolution in an effective manner. Fortunately, the use of interactive

activities may alleviate this problem. The objective of this project was to develop an exercise that could easily be used at either the high school or college introductory level to specifically address some common misconceptions. This activity was developed to be an easily accessible simulation that mimics the four major processes in evolution (natural selection, random genetic drift, mutation, and migration) using LEGO® organisms, as well as visually depicting descent with modification. Students use LEGOs® to build a hypothetical population, make predictions and then simulate the mechanisms of evolution. The frequency of a single trait (color) is measured over the course of several generations. This exercise was piloted in Biology I (spring semester) at the University of Nebraska-Kearney, revised and implemented in the fall semester. The exercise was assessed using nine questions administered prior to the exercise and immediately after. Results for the fall implementations showed the pretest and posttest gains for the 130 students was significant, with the pretest mean of 5.05 (SD = 1.22), increasing to 6.41 (SD =1.59) on the posttest, and representing a statistical difference using a paired sample test ($t=9.43$, $df=129$, $p < .0001$). Qualitative feedback collected during the pilot study showed that students enjoyed the activity and felt that it was particularly useful in understanding mutation and natural selection.

Poster 38 – Jordan Ingersoll
Advisor: Dr. Frank Kovacs
Title: *Cloning, Expression, and Characterization of 5-Aminolaevulinic Acid Dehydratase from Escherichia coli*

The tetrapyrrole biosynthetic pathway produces important biological products such as hemes, chlorophylls, siroheme, and cobalamin. After the initial production of 5-aminolaevuilinic acid (ALA) in the first step of the pathway, two ALA molecules are combined together by 5-aminolaevulinic acid dehydratase (ALAD) to produce porphobilinogen, a structural piece used to create the basic tetrapyrrole structure characteristic of the hemes and chlorophylls. Notably, much is still not understood about the enzymes that construct this pathway, including ALAD, which is responsible for several life threatening and poorly understood disorders. The purpose of this study is to clone, express and characterize the activity of ALAD in order to lay the foundation for future studies of this enzyme in our lab. This goal has been accomplished by amplifying the gene, hemB, and incorporating asymmetric cut sites through PCR of genomic DNA of E. coli. This product was digested and ligated into pET28a+ in frame with the N-terminal 6X-His tag. Clones were screened for the presence of the inserted gene and sequenced. ALAD was expressed in BL21 cells and purified via Ni-NTA chromatography. Enzyme assays have been performed on the His-tagged and non-His-tagged versions of the enzyme.

Poster 39 – Emma C. Keele
Advisor: Dr. Letitia Reichart
Title: *Measurement of Triglyceride and Beta-Hydroxybutyrate in Baltimore Orioles (Icterus galbula), a Migratory Songbird in South Central Nebraska*

Variation in lipid metabolism is linked to differences in resource use and innate genetic variation. South central Nebraska is an important migratory stopover site because birds use it for refueling along their migratory path. Acquiring lipids on stopover sites is especially important to allow birds to complete the remaining portion of their migration. In addition, birds able to maintain lipids throughout migration are more likely to breed successfully. Specifically, we developed an appropriate assay to detect lipid metabolites in blood plasma for species captured during spring migration. Lipid metabolism in each species is variable, thus baseline information must be collected for each species captured. For species captured, we collected blood samples within five minutes of capture from the brachial vein of migratory songbirds and then samples were stored on ice. Plasma was removed from the remaining blood components and then stored at -80°C until analysis. Here we report species captured and baseline levels for migratory songbirds captured during Spring 2014, 2015, and 2016. The specific lipid metabolites that I analyzed were triglycerides and beta-hydroxybutyrate. Differences in triglycerides indicate accumulation and catabolism of lipids. Results from my assays of triglycerides and beta-hydroxybutyrate will be used to formulate new testable hypotheses regarding lipid metabolism for migratory birds that use Nebraska as a migratory stopover site.

Poster 40 – Olubusola Oladeji
Advisor: Dr. Letitia Reichart
Title: *Measurement of Corticosterone in Migratory Birds Compared to Non-migratory Birds in South Central Nebraska*

The roles of baseline corticosterone, CORT, are still unclear in many birds. However, studies have shown that there is an increase of CORT in migratory bird species. Measurement of CORT levels can give insight on an animal wellbeing as well as animal stress levels, which can affect conservation issues. CORT levels provide information on how stressors can affect animal survival and how stress related events may have consequences to fitness. Measurement of CORT allows us to identify differences between normal CORT levels and elevated CORT levels. CORT is a glucocorticoid, which is a hormone secreted in all vertebrates by the Hypothalamic Pituitary Adrenal Axis (HPA Axis). It can sometimes serve as a flight or fight response and other numerous functions of survival. Glucocorticoids further promote homeostasis of metabolic activity and may elicit effects on feeding and locomotion. During migration, maintaining nutrients stores during long distance flights. Because the migratory stages of refueling and flight are characterized by distinct behaviours and physiology, the determination of CORT levels during each migratory stage will help identify potential processes in which CORT is involved. We will measure baseline

CORT in migratory birds from blood, faecal and feather samples collected. We expect that the level of CORT will be higher in migratory birds than non-migratory birds.

Poster 41 – Alexis Page
Advisor: Dr. Kimberly Carlson
Title: *Characterization of a possible IRES site in the Nora virus genome*

Nora virus is a picorna-like virus that has four open reading frames (ORFs), which is in contrast to the more common one long ORF found in most members of this group. The coding potentials of the ORFs are reasonably well characterized. ORF3 and 4 are known to code for the capsid proteins and ORF1 codes for an RNAi inhibitor. Between ORF3 and ORF4 there are 85 nucleotides of non-coding RNA, which may act as an internal ribosome entry site (IRES) for the translation of ORF4. However, this region is not obviously related to any known IRES sequences. To test this hypothesis, we designed multiple RT-PCR primers that flank ORF3 and ORF4, and the IRES region. The results suggest that subgenomic RNAs are not being produced, but studies are underway to further characterize this region. GFP constructs designed to test the IRES potential of the non-coding region between ORF3 and ORF4 are currently being evaluated.

Poster 42 – Emily Plock
Advisor: Dr. Letitia Reichart
Title: *Baseline Creatine Kinase Levels for House Sparrows, Passer domesticus, in South Central Nebraska*

Muscle damage in passerine birds, specifically house sparrows (Passer domesticus), can be caused by stressful events during different life history stages. The increased energetic and physical demands during the wintering season could cause muscle damage in the house sparrow. Temperatures in south central Nebraska fluctuate both above and below freezing for extended periods of time throughout the winter. During colder episodes, house sparrows may have elevated levels of creatine kinase (CK) due to increased shivering behavior to maintain body temperature. Elevated concentrations of the muscle enzyme CK is measurable in blood plasma and indicates the presence of muscle damage. In the field, blood samples will be collected from the brachial vein of captured house sparrows. A standard spectrophotometric assay kit will be used to establish a baseline level of CK by measuring blood plasma levels of CK. These levels can be directly related to the amount of muscle damage acquired during stressful events, where CK levels are predicted to be high in plasma for birds that have more muscle damage. Measurements of plasma metabolites, such as CK, can be used to determine the quality of habitats and the ability of the bird to recover at stopover sites. Lastly, results can be used to preserve biodiversity in bird species and in the maintenance of habitats, which can often

decrease with the increase of human activity.

Poster 43 – Joshua Wiese
Advisor: Dr. Bryan Drew
Title: *Molecular Phylogeny and Biogeographical History of Subtribe Nepetinae (Lamiaceae): An Examination of the East Asian and North American Disjunction within the Genus Agastache*

Agastache is a 22-taxa genus of aromatic flowering plants within the family Lamiaceae (subfamily Nepetoideae, tribe Mentheae, subtribe Nepetinae). The genus is important in the horticultural trade, commonly known as giant hyssop. Agastache is currently taxonomically divided into two sections, Brittonastrum and Chiastandra, based on geographic occurrence and staminal conformation, defined by Lint and Epling, 1945. Twenty-one species of Agastache are found across North America, while a lone species, A. rugosa, is endemic to eastern Asia. This study employs internal and external transcribed spacers (ITS and ETS, respectively) and pentatricopeptide repeat (PPR) nuclear DNA regions to analyze relationships within the Nepetinae subtribe, examines the geographic distribution of ancestral lineages with special emphasis on the Agastache disjunction. There is convincing support for the divisions between the two sections with PP>0.90 for nodes grouping sampled taxa for each section. This study did not find that A. rugosa is grouped in section Chiastandra, but rather is a first divergent species and shares common ancestry with both sections with a Eurasian/North American distribution, coinciding with a circumboreal flora around 3mya. Ancestral node for the whole Nepetinae subtribe appears to have Eurasian origins, based on rooting to Agastache to outgroups within the Nepetinae. The results of this study supports the Acto-tertiary distribution and the hypotheses of a circumboreal flora prior to the Pliocene and floral response to cooling trends during the mid-late Miocene.

Chemistry

Poster 44 – Evan Augustyn
Advisor: Dr. Allen Thomas
Title: *Synthesis and Activity of Amino Acid Bioisosteres as LAT-1 Substrates*

The carboxylic acid bioisosteres hydroxamic acid, tetrazole, squaramide and acylsulfonamide, of the amino acids tyrosine and phenylalanine were synthesized for use as LAT-1 substrates. LAT-1 is a transporter protein located in the blood-brain barrier that offers the potential to deliver drugs to the brain for Alzheimer's disease and other brain disorders. The blood-brain barrier (BBB) is the brain's major defense system for excluding potentially harmful substances; however, nutrients such as amino acids are able to enter the brain via LAT-1 transport. It has previously been shown that LAT-1 can be used for drug delivery by attaching amino acids to drug molecules (pro-drug approach). Amino acid bioisosteres may afford pro-drugs with better pharmacokinetics than those derived from natural amino acids, allowing for higher brain levels of drug. We synthesized these bioisosteres using

standard amino acid protecting groups, substitution on the carboxylic acid, and deprotection to reach the desired products. Compounds were tested for their ability to bind to the LAT-1 protein using a cis-inhibition assay. Active compounds were subsequently tested for substrate activity using a trans-stimulation assay. Hydroxamic acids were the only bioisosteres to show significant trans-stimulation indicating that they were substrates for LAT-1. This was a surprising result given the fact that the pKa values for these bioisosteres had no correlation with activity.

Poster 45 – Jessica Blum
Advisor: Dr. Chris Exstrom
Title: *Immobilization of gold nanoparticles in a meso-fluidic device*

In work toward the development of a gold nanoparticle meso-fluidic biosensor device, we report progress in the immobilization of gold nanoparticles within polydimethylsiloxane (PDMS) meso-fluidic channels. The channels were loaded with poly(diallyldimethylammonium) chloride (PDDA) and then with a solution of spherical gold nanoparticles, which were prepared by the reduction of HAuCl4 with citrate. Coating of the immobilized gold nanoparticles with the biolinker Protein A was achieved as indicated by visual color change. The incubation time and concentrations of the PDDA, gold nanoparticles, and protein A were varied to find optimal conditions.

Poster 46 – Mallory Breemes
Advisor: Dr. Chris Exstrom
Title: *Determination of the Illumination Profile for the Blue Light Transilluminator Device Structure*

In work toward developing a gold nanoparticle-based biosensor device, we are investigating the extent to which fluorescence intensity may be able to quantify the concentration of virus particles within the device. Mapping of the illumination profile for the light source, a blue light transilluminator, is critical in this process. Chlorinated polyethylene (CPE) coverslips were printed with an Ultimaker 3D printer and placed in various spots on the transilluminator. The fluorescence intensity of the CPE coverslips was more uniform than Rhodamine B dye, which was sandwiched between a coverslip and slide and then sealed with wax. After imaging these coverslips in a variety of locations and orientations, ImageJ was used to create an average integrated intensity for each spot. It was found that the blue light transilluminator is the brighter on the one side and intensity decreases toward the other side. Details of this intensity mapping and its implications on analyte detection and quantification will be discussed.

Poster 47 – Melissa Davison
Advisor: Dr. Amanda Glass
Title: *Understanding the role of Oxygen in the stability of a putative nickel binding site in a nickel Metallochaperone*

At least one-third of proteins characterized to date require a metal ion

cofactor for activity or structural stability. In some cases, metallochaperones are required; metallochaperones are proteins that sequester a specific metal ion from the cellular milieu, protect it from reactivity with other cellular components, and mediate metal ion binding or insertion into the protein. The E. coli protein SlyD is such a metallochaperone, responsible for nickel ion insertion into nickel-iron hydrogenase (an enzyme responsible for cellular redox cycling) in the bacterium. This research project involves characterizing a metal-peptide complex from the metal binding domain (MBD) of the nickel metallochaperone SlyD. Purchased peptide segments of the metal binding domain were characterized using UV-Vis spectroscopy. These electronic absorption spectra will be used to help determine the likely structure of the complex. Our data will likely support and/or enhance current understand the binding ratio and stoichiometry in the whole protein. One of the major objectives of this project is to compare the stability of the peptide's metal binding domain produced in aerobic and anaerobic environments. Aerobic environments subject proteins to oxidation reactions. Oxidation of amino acids within a protein can alter its structure, and therefore its function, in this case its ability to bind to nickel. Production of, and experimentation on, the peptide-metal complex took place in an anaerobic glove box, to generate an unoxidized product. Results of these studies were compared to previous domain characterization that did experience oxidation, from both literature data and previous projects in this lab, which obtained spectroscopy data that indicated oxidation. The results of this work contribute knowledge about the transport of metal ions in biological systems.

Poster 48 – Jocelyn Dolphin
Co-Presenters – Matt Moore and April Maschmann
Advisor: Dr. Kristy Kounovsky-Shafer
Title: *Development of 3D Printed Devices to Extract DNA Molecules*

The high-throughput analysis of individual DNA molecules is altering the pace and scope of biomedical investigation. Personal genomics will require large ensembles of individual genomes to develop a database of genomic variations. Within the human genome, more base pairs are altered as a result of structural variation than point mutations (1). In order to ascertain larger variations or large complex variations in human cancer genome, longer molecules (average molecule size > 700 kb) are necessary. In this regard, the Optical Mapping System (2) and Nanocoding (3,4) were developed as a single molecule platform for construction of physical maps that span entire genomes. However, even these platforms which assemble restriction maps of individual DNA molecules (average molecules size ~500 kb for Optical Mapping, or Nanocoding) and it is difficult to span across large (>400 kb) complex genomic regions. The main goal of our research is to develop devices to elute DNA molecules from a gel matrix "prevents shearing of DNA molecules during cell lysis and buer exchanges" and concentrate extremely long DNA molecules (>700 kb). Therefore, we are

leveraging 3D printing to fabricate mesofluidic devices to elute lambda DNA molecules from a gel matrix using an electric eld. For these devices, the dimensions of the devices are varied in the width of the channel; whereas, the height and length of the device remains constant. In order to ascertain the device that elutes the highest concentration of lambda DNA, we are using a multi-prong approach: measuring the uorescence intensity of the YOYO-1 stained DNA molecules that are eluted into the solution, as well as the uorescence intensity of the YOYO-1 stained DNA molecules that are within the gel matrix during the experiment, and measuring the concentration of DNA that remains in the gel matrix after the conclusion of the experiment using gel electrophoresis. Finally, the device that elutes the most DNA will be used in subsequent experiments, where other features of the device will be modified to improve the elution of DNA.

Poster 49 – Josh Edgar
Co-Presenter – CJ Curry
Advisor: Dr. Chris Exstrom
Title: *Optimization of synthesis and annealing for a solvothermally prepared nanocrystalline precursor in forming nanocrystalline WSe2*

WSe2 is an earth-abundant semiconductor of interest for application as a photovoltaic absorber due to its high absorption coefficient, phase stability, and a direct bandgap of 1.2-1.5 eV that matches well for optimum absorption by photovoltaic cells. The solvothermal preparation method eliminates the need for expensive high vacuum fabrication. We report optimized synthetic approaches including solvent, time, and temperature conditions along with annealing parameters in the formation of phase-pure WSe2 thin-films. Characterization of the materials using Raman Spectroscopy and x-ray diffraction (XRD) were obtained throughout the process from post-synthesis precursors to crystalline WSe2 showing the gradual appearance of the material. Assignment of Raman peaks in the range from 135 cm-1 to 391 cm-1 along with XRD spectra show a highly crystalline product with a dominant (002) facial orientation. The optically measured bandgap falls within the expected range for the material. The new synthesis approach and annealing parameters greatly reduce unreacted precursor and excess selenium as compared to our previous reports.

Poster 50 – Karissa Finke
Advisor: Dr. Allen Thomas
Title: *Substituted Amino Acids as LAT-1 Substrates For Use in Drug Delivery*

Overcoming the blood-brain barrier (BBB) is a major challenge for treating brain diseases such as Alzheimer's. Yet, many nutrient molecules (e.g. amino acids, vitamins, saccharides) are readily transported across the BBB. The transporter protein Larger-neutral Amino Acid Transporter 1 (LAT-1) is responsible for transporting amino acids such as tyrosine and phenylalanine as well as thyroid hormones. Our goal is to use LAT-1 as a delivery mechanism for pro-drugs with brain levels superior to parent drug that are synthesized from molecules with

improved LAT-1 activity relative to the native amino acids. To date, the structure-activity relationship (SAR) for what makes a compound a LAT-1 substrate has received only a cursory exploration. To be useful for drug delivery, a better understanding of this SAR is required. The amino acids tyrosine and phenylalanine, known LAT-1 substrates, were substituted at the meta position of the aromatic ring. The meta position is preferred because it has been shown to provide greater brain uptake relative to substitution at the para position. We hypothesized that substitution at the meta position with hydrophobic groups would improve the binding of amino acid analogs to LAT-1, resulting in greater substrate activity. To test this, we synthesized a series of amino acids with substitution by halogen, alkyl, and aryl groups and then assessed compounds using cis-inhibition and trans-stimulation assays with Human Embryonic Kidney cells engineered to over express LAT-1 (HEK-LAT1). Substituted amino acids were tested alongside parent phenylalanine or tyrosine and the non-substrate arginine. From these tests, it was determined that meta-substituted analogs with small alkyl groups or halogens were viable substrates for the LAT-1 protein. Contrary to our hypothesis, larger alkyl groups had diminished substrate activity and were found to be inhibitors for LAT-1. The synthesis of these meta-substituted amino acid analogs will be presented along with their LAT-1 activity.

Poster 51 – Rachel Flaugh
Advisor: Dr. Kristy Kounovsky-Shafer
Title: *Determination of electroosmotic and electrophoretic forces in a gel matrix in different ionic strength conditions*

Nanocoding, a genome analysis platform, relies on very low ionic strength conditions to elongate DNA molecules up to 1.06 (fully stretched DNA molecule = 1), which is the largest stretch reported in the literature (1). Understanding how electroosmotic and electrophoretic forces vary, as ionic strength decreases, will enable better Nanocoding devices to be developed or other genome analysis platforms. Using gel electrophoresis to determine overall mobility (includes contributions from electrophoretic forces and electroosmotic forces) in different ionic strength conditions, nicked and supercoiled DNA molecules analyzed was pUC19 (2.7 kb), pBR322 (4.4 kb), Î¦X174 (5.4 kb), and PSNAPf-H2B (6.2 kb) in varying gel concentrations (1.5%, 1.25%, 1%, 0.75%, 0.5%). Additionally, the buffer concentration (Tris-EDTA, TE) was also varied. As the buffer concentration decreases from 2X TE (Ionic strength = 13.8 mM) to 1X TE (Ionic strength = 7.3 mM), the overall mobility increased. As we further diluted TE (< 1X TE), the overall mobility drastically decreased as the ionic strength decreased.

Poster 52 – Eunju Jang
Advisor: Dr. Haishi Cao
Title: *Synthesizing new fluorescent molecules used as fluorophores for detection of hydrogen sulfide*

Hydrogen sulfide is known as toxic molecule to environment. Recent studies found that little amount of Hydrogen sulfide is essential to human and plants. Therefore, detection of hydrogen sulfide becomes important. One of the effective methods to detect hydrogen sulfide is the fluorescence-based approaches. When hydrogen sulfide reacts with fluorescent probe, fluorophore and cyclic molecules are formed. Therefore, hydrogen sulfide is detected by fluorescence signal of fluorophore. This research focused on synthesizing new fluorophores, and variety of fluorophores are designed by Suzuki reaction. Suzuki reaction is the reaction that each compound containing functional group of boronic acid with halide react together and form carbon-carbon bond. The structures and photophysical properties of new fluorophores will be characterized by is 1H-NMR and fluorimeter. We expect that new fluorophores show a longer emission with a high quantum yield.

Poster 53 – Joshua Lallman
Advisor: Dr. Kounovsky-Shafer
Title: *Determination of electroosmotic forces in a dynamic range of ionic strength conditions*

Nanocoding is a single DNA molecule genome analysis platform that electrokinetically moves DNA molecules from microchannels to nanochannels using an electric field. Utilizing an electric field to move DNA molecules in a gel or a microfluidic device requires an understanding of how electroosmotic and electrophoretic forces affect these DNA molecules. Electroosmotic forces can be determined with a neutral dye, called Rhodamine B. Electrophoretic forces only move charged molecules, so if a neutral dye (Rhodamine B) moves during the experiment it is due to electroosmotic forces. Under different gel concentrations with the same ionic strength, we can determine the mobility of Bromophenol Blue, which is negatively charged, and Rhodamine B, a neutral dye. Next, the ionic strength is varied to determine how electroosmotic forces vary with ionic strength. In decreasing the ionic strengths of the buffer, the mobility of Rhodamine B and Bromophenol Blue increased. The Rhodamine B dye moved toward the negative electrode and the Bromophenol blue moved toward the positive electrode. The mobility of Rhodamine B was a result of electroosmosis. Analyzing the mobility of these two compounds allows us to observe electroosmotic forces and electrophoretic forces that affect DNA molecules moving via an electric field for future implications in Nanocoding experiments.

Poster 54 – Sitong Liu
Advisor: Dr. Haishi Cao
Title: *Exploring fluorescent dyes with a near-IR emission on the basis of 1,8-naphthalimide*

Fluorescent dyes with a near-IR emission (FDNI) are the highly desired molecules as labeling reagents for biosamples. Currently, most of fluorescent dyes show

an emission in ultraviolet and visible range (300-700 nm), in which many biomolecules (e.g., protein, amino acids and coenzyme) may give a strong fluorescence background as the interference. So far three types of FDNI have been commonly used including cyanine dyes, squaraine dyes and thiazine and oxazine dyes. In our group, we recently found dyes based on 1,8-napthalimide structure may give a strong absorption and emission in the near-IR range. In this project, we use Suzuki coupling reaction for preparation of different derivatives of 1, 8-napthalimide, and investigate the relevance between structure and photophysical properties.

Poster 55 – April Maschmann
Advisor: Dr. Kristy L. Kounovsky-Shafer
Title: *Determination of restriction enzyme activity when cutting fluorochrome labeled DNA molecules*

Optical Mapping,a single DNA molecule genome analysis platform, uses fluorescently labeled DNA molecules that are elongated on the surface and digested with a restriction enzyme to produce a barcode of that molecule. Understanding how the cyanine dimer fluorochromes affect enzyme activity can lead to modifications to the Optical Mapping System. The effects of restriction digestion on fluorochrome labeled DNA (Ethidium Bromide, DAPI, H33258, EthD-1, TOTO-1) have been analyzed previously (3). However, TOTO-1 is apart of a family of cyanine dimer fluorochromes (YOYO-1, TOTO-1, BOBO-1, POPO-1, YOYO-3, TOTO-3, BOBO-3, and POPO-3) and the rest of the fluorochromes have not been examined in terms of their effects on restriction digestion. Therefore, lambda DNA was stained with one of the cyanine dimer fluorochromes and then digested with a restriction enzyme (BamHI, SmaI, ScaI-HF, HindIII, SgrAI, EcoRI, or PmlI). The restriction enzyme activity in regards to each dye, as well as each restrictionenzyme, was compared to determine if there was complete digestion, incomplete digestion, or inhibited digestion. Some enzymes were inhibited by the YOYO-1, TOTO-1, and POPO-1 fluorochrome.

Poster 56 – Miranda Neumann
Advisors: Dr. Christopher Exstrom, Dr. Kristy Kounovsky-Shafer, Dr. Scott Darveau
Title: *Synthesis of gold nanoparticles using tea extracts and size separation using gel electrophoresis*

Recent literature reports have described a “green” synthesis of gold nanoparticles using tea as polyphenols including catechins, flavonoids and other phytochemicals found in tea, have been observed to reduce and stabilize gold chloride to form gold nanoparticles. The extent to which this method can produce monodisperse nanoparticles has not been investigated. In this work, gold nanoparticles were synthesized via a one-pot synthesis reaction containing only brewed tea extract and $HAuCl_4$. Different varieties of teas (green, black, and herbal) produce nanoparticles with different shapes and degrees of aggregation as indicated by UV-Vis spectroscopy. Monodispersity of the nanoparticles was investigated by

transmission electron microscopy and gel electrophoresis (GE). The impact of GE separation on different nanoparticle capping ligands, including 2-mercaptoethanol and 11-mercaptoundecanoic acid, will be discussed.

Poster 57 – Nga Nguyen
Advisor: Dr. Mahesh Pattabiraman
Title: *Using Q12 non-covalent interactions to direct regioselective 2+2 photocycloaddition within a macrocyclic cavitand*

We are currently exploring means to extend this cavitand-mediation approach to effecting stereo- and regioselective photodimerization of longer alkenes and dienes. Our studies indicate that cyclodextrin is in fact efficient in directing the reactions in this case as well, though the selectivity appears to be generally low. The relative orientation of guests within ternary inclusion complexes is governed by the host guest and guest-guest supramolecular interactions. Selectivity in 2+2 photocycloaddition between two alkenes included within macrocyclic cavitand (Î³-cyclodextrin) can be controlled using non-covalent interactions. Using caviand-mediated control of regioselectivity between alkyl cinnamates by non-covalent interactions have shown that regioselectivity can be switched completely from a head-to-head dimer to head-to-tail dimer. The reactions were also stereoselective in most cases. Stoichiometry experiments were performed to explore relative stabilities of the complexes, which indicate that the ternary complex is more stable than others. Selectivity in the photocycloaddition reaction was also applied retrospectively to deduce intermolecular orientations.

Poster 58 – Drew Thompson
Advisor: Dr. Kristy Kounovsky-Shafer
Title: *Developing a Method to Create Microspheres of DNA Encapsulated in Agarose*

For this experiment, LEagarose microspheres are the intended product to form a gel of micropheres used for better DNA extraction. Multiple tests were run to create the ideal microsphere: dropping agarose into a chilled distilled water bath while a magnet spun, dropping agarose onto a cooled metal surface, and adding ingredients to help the process such as salt or sugar. Blue dye was added for easier examination of microspheres.

Physics & Physical Science

Poster 59 – William Jones
Advisor: Dr. Kenneth Trantham
Title: *An Implementation of Online Robotic Labs*

With the advancement of technology and the internet, instructors and students through the use of online classes are no longer tied to a physical classroom. This has its advantages and disadvantages. In the following presentation we will offer a solution to the problem of online science laboratories. There are currently two solutions to this problem that have been implemented. The first of which is a virtual laboratory. The difficulty here is

that the student no longer has the hands-on experience of actually using instruments and accounting for errors observed during the lab. The second solution is to use equipment kits. These kits are not cost effective and are usually disposable. This solution might work for simple labs, but with higher level courses this is not economically feasible. We suggest a third alternative in which students will operate the lab experiment online using robotic equipment. This addresses the issues of both of the other solutions, students still get the hands-on experience and because they will actually be reading real instruments, will still be able to account for error. It is also cost effective because the lab can be assembled and reused as well as operated by using a low profile, low cost computer called a Raspberry Pi. As proof of principle, our approach is applied to two example laboratories from UNK's General Physics laboratories (PHYS205L and PHYS206).

Poster 60 – Austin Ryan
Advisor: Dr. W. Lee Powell Jr.
Title: *The O'Connoll Effect in Binary Stars*

In binary star systems, two eclipses occur while the two stars orbit around their common center of mass. Each eclipse is expected to have equal brightness values. Exhibiting different values of brightness in each eclipse is known as the O'Connoll Effect. This effect is not expected but could be due to starspots, transferring masses of gas from contact systems, or even exoplanets. To explore this effect, photometric observations of poorly studied binary stars that exhibit the O'Connoll effect were taken using the 30 telescope at the McDonald Observatory in Fort Davis, Texas for a total of 10 nights in July and August of 2015. More observations were taken in late 2015 and January of 2016 using the same telescope remotely from UNK. These observations were taken mostly in the Johnson B and V filters. IRAF was used to reduce this data, which allowed us to produce B and V lightcurves and calculate the period of each system. These lightcurves were used to examine both the parameters of each system (such as the masses and temperatures of the stars) and its exhibited O'Connoll Effect. Binary Maker 3 was used to modify these parameters to fit a light curve to match the data set for each star. For W UMa type stars specifically, a numerical method was used involving their period to calculate the mass ratio, which could then be compared to the Binary Maker 3 results. The mass ratio is especially important because it gives us an insight on the stellar evolution between various masses of stars. Future work will involve taking more observations at the McDonald Observatory this summer to explore more poorly studied binary stars that exhibit the O'Connoll effect. We will also be taking more observations of the same stars to see how this effect changes over time. Finally, we plan on adding spectroscopy to our stars to find the radial velocity of each system, which will strengthen the validity of the parameters found using Binary Maker 3.

Professional & Applied Studies

Accounting/Finance

Poster 61 – Aaron Kroll
Advisor: Dr. Nacasius Ujah
Title: *An Ex-post Effect of Banking: Does Rural America Matter?*

US banking institutions are not prone to macro-economic losses, however during the recent recession the housing markets were affected adversely. Ex-ante and ex-post of the recession, a number of scholars examined the housing markets to evaluate the events that led to the burst as well as how prepared financial institutions are towards future systemic risk. Gabe and Florida (2013) examines the housing boom in early 2000 in metropolitan areas to unemployment rates. They found that the housing boom had negative or no influence on unemployment rate prior to the recession. However, ex-post recession, the housing boom increased unemployment in metropolitan areas. Mills (2009) examined land use and the subprime mortgage crises specifically in metropolitan areas. Mills (2009) contends that the rapid escalation of housing price is caused by the stringent local government land-use controls, which restrict urban housing supply. Unlike the prior scholars that have focused on metropolitan areas, a number of scholars have discussed the crisis effect to the economy. Yet, there is dearth in the literature. Exploring the behavior of banks, specifically lending behaviors in the rural areas compared to the metropolitan areas during the crisis is crucial to understanding where financial institutions went wrong. Rural America's importance within the United States economy is often negated. According to the Bureau of Labor Statistics, agriculture alone makes up over 2 million U.S. jobs. Additionally in the 2010 U.S. census, 19.3% of the population was considered rural while over 95% of the land area in the United States is classified as rural. This evidence justifies the importance of the rural United States and the effects it has on the economy as a whole.

Communication Disorders

Poster 62 – Emily Koski
Advisor: Dr. Miechelle McKelvey
Title: *Screening the Elderly for Traumatic Brain Injury: Training, experience and individual perspectives from service coordinators at the Area Agency on Aging*

Service Coordinators at The Area Agency on Aging (AAA) provide services to elderly individuals to facilitate independent living for as long as possible. The service coordinators evaluate elderly clients to determine the need for services and develop an individualized plan of care. It's important for the service coordinators to identify any

individuals with brain injury so that appropriate services are obtained. The purpose of this study is three fold: (1) asses case managers' knowledge of brain injury; (2) identify number of elderly clients screened and the number who screen positive for brain injury; and (3) collect feedback from case managers on the screening process. Qualitative data was collected through semi-structured interviews regarding the case managers' thoughts, feelings, and opinions about the screening process and brain injury training. Research questions included: What were the responses of service coordinators to their training and education regarding brain injury and the screening process? How effective was the training for TBI after completing the screening process? How many clients had a positive screen that initially did not have record of a traumatic brain injury?

Poster 63 – Brianna Wardyn
Advisor: Dr. Whitney Schneider-Cline
Title: *Emergent Literacy Intervention for at Risk Preschoolers: A Case Study*

Currently, there is limited information regarding the early indicators of reading problems in children less than five years of age. It is well-documented that early intervention is significant, yet, little is known about what services may be helpful for this population. From the research available, researchers know that targeting a child's emergent literacy skills, such as phonological awareness, rapid automatized naming, and letter knowledge may reduce the child's risk of developing a future reading disorder. The purpose of this study was to examine the effects of an emergent literacy intervention on the pre-reading skills of a four-year-old child who is at-risk for later reading problems. Children are considered to be at risk for developing reading problems if they have a family history of reading disorders, are from low socioeconomic status, or have limited exposure to books and other print materials. The participant in this study was a four-year-old male with a family history of dyslexia; he spoke English as his primary language and was enrolled in preschool at the time of the study. Prior to intervention, the participant completed a pre-assessment battery that measured the following emergent literacy skills: phonological awareness, rapid automatized naming, and letter knowledge. Researchers have identified these emergent literacy skills as strong predictors of a child's future reading abilities. After the pre-assessment, the researcher and the child's primary caregivers implemented a four-week emergent literacy intervention based on the Systematic and Engaging Early Literacy (SEEL) method. The researcher implemented intervention sessions for one hour, two days per week, and the primary caregivers implemented intervention sessions for one hour, 3 days per week. At the end of the four-week intervention period, the researcher tested the participant again using the same measures conducted in the pre-assessment. Pre-test and post-test results were compared to assess the effectiveness of the SEEL method in improving the child's emergent literacy skills, thus, decreasing his risk for future reading problems.

Family Studies & Interior Design

Poster 64 – Kyla Bruxvoort
Advisor: Dr. Mickey Langlais
Title: *Creeping on Facebook: The Role of Self-Esteem on Relationship-oriented Facebook Behaviors*

Numerous studies have examined self-esteem in the context of social media networks (Forest & Wood, 2012; Kalpidou, Costin, & Morris, 2011). However, with the rapid rise of social media, a limited number of studies have been conducted on the connection between social media behaviors, specifically behaviors on Facebook, and self-esteem (Fox, Warber, & Makstaller, 2013). The goal of this study is to examine how various relationship-oriented Facebook behaviors influence self-esteem and also how self-esteem influences relationship-oriented behaviors on Facebook. We conducted an online survey of adolescents who use Facebook between the ages of 14 and 18 (N = 138). Adolescents answered questions about their self-esteem and relationship-oriented Facebook behaviors, such as monitoring Facebook profiles or engaging in affectionate communication on Facebook; participants answered questions regarding their current partner if they were in a serious dating relationship or their primary crush if they were single. Regression analyses revealed that across the study sample, Facebook monitoring was negatively associated with self-esteem (B = -.44, $p < .001$). In addition, monitoring a Facebook crush was negatively associated with self-esteem (B = -.38, $p < .05$). Subsequently, self-esteem predicted increases in total monitoring behaviors (Î”R2 = .049, $p < .001$) and monitoring behaviors associated with a crush (Î”R2 = .117, $p < .01$). Self-esteem plays a significant role in the relationships adolescents have with current and potential partners based on their Facebook behaviors. Implications for the social network media usage with adolescent romantic relationship development are discussed.

Poster 65 – Breanna Hiner
Advisor: Dr. Toni Hill
Title: *Title IX on Single Gendered Campuses*

Sexual assault is and will remain a problem in America and around the globe until greater measures are taken to combat it. Sexual assault is a life-altering experience which occurs on a 24 hour clock and in a variety of locations globally, including American college campuses. It does not discriminate against gender, sexual orientation, race, ethnicity, nationality, age, or ability. Title IX, a comprehensive federal law, includes protections for all genders, sexual orientation, and educational settings. Title IX provides for the safety of all students and requires federally supported colleges to take steps to protect all students. This study examined sexual assault across several American college campuses. There are a number of reports addressing college campuses serving both male and female students. For this study, sexual assaults were considered beyond the male-on-female problem on college

campuses. Specifically, this study examined American college campuses that serve only a single gender to determine whether or not sexual assault was a concerning occurrence on theses campuses. I analyzed twelve single-gendered campuses and used their undergraduate population and public crime reports to determine that one in one thousand students are sexually assaulted on their single-gendered campus. The number of sexual assaults reported on same sex campuses is considerably similar or higher than reports from mixed gender campuses, matching UNK 1:1, but schools like UNL and UNO 10:1. Until the number of assaults reported is zero, sexual assault is still a serious concern across all campuses. Title IX enforcement as well as sexual assault education on all college campuses can help to lower the assaults that are taking place across America. I want to see a change in the colleges and lower sexual assault rates across America.

Poster 66 – Meghan Rockefeller
Advisor: Dr. Mickey Langlais
Title: *How SnapChat Behaviors Influence Relational Conflict*

The number of SnapChat users has increased significantly over the past few years with an estimated 100 million active users sending more than 400 million snaps every day (Piwek & Joinson, 2016). Research on the influence of social media networks on relationship processes has increased recently (Toma & Choi, 2015), but few studies have directly examined the impact of SnapChat behaviors for relationship quality, specifically conflict. The goal of the current investigation is to explore how certain SnapChat behaviors influence six different conflict approaches (compromise, avoidance, interactional reactivity, separation, domination, and submission; Zacchilli, 2007). Data for this study comes from an online survey of young adults (ages 17 to 27) from a Midwestern area of the U.S. who have SnapChat (N = 149). Participants answered general SnapChat questions, such as how often they check SnapChat, relationship-oriented SnapChat behaviors, such as how often they snapped their romantic partner, and conflict. Regression analyses revealed significant effects of SnapChat behaviors for interactional reactivity (Î”R2 = .416, $p < .01$). Frequency of posting to stories and sending pictures/videos of legally questionable activities on SnapChat was associated with more interactional reactivity ($B = .44$, $p < .05$; $B = .44$, $p < .01$) and frequency of sending pictures/videos of themselves (i.e. selfies) was negatively associated with interactional reactivity ($B = -.45$, $p < .05$). Frequency of messaging romantic partners on SnapChat was significantly associated with compromise ($B = -.39$, $p < .05$). Findings indicate that SnapChat contributes to conflict resolution approaches and relationship maintenance.

Industrial Technology

Poster 67 – Mayra Hernandez
Advisor: Dr. Sonja Bickford
Title: *Community View: Assessing the Indicators for Community and Person Fit*

While people such as high school and/or college graduates are looking where to locate, what qualities and values in a city are they looking for? Married couples look for something different than single people. Ultimately choosing a city in which to relocate will impact one's life tremendously and the understanding of which values make up a community brand is important for the community decision makers as well as those living in it. People think about a place, such as a city, in terms of a handful of attributes, a promise, and some kind of story. That simple brand can have a major impact on one's decision to visit the city, buy its products or services, to do business there or to relocate. In this proposed study, face-to-face surveys of three different generations in ten communities will provide an understanding of how communities, such as Kearney, are viewed by people within and outside the community. The aim of the study is to understand how a community is viewed, in addition to assessing whether a good paying job outweighs a city without much entertainment and other opportunities or will one prefer to choose a city filled with entertainment, better climate, and benefits offered by a company? From the understanding of what values communities and cities provide its residents and what residents are looking for companies operating in the communities can better understand whether they should offer perks for employees that complement or supplement what the city and/or community provides based on what residents value and are looking for. Through my research I will be able to decide what to look for in a city, but also provide companies ideas on how to make their company's valued by employees and the community they operate within.

Kinesiology & Sport Sciences

Poster 68 – Leah Danielson
Advisor: Dr. Megan Adkins
Title: *Comparison of Fundamental Movement Patterns of Home-schooled to Public School Children*

A child's choice of physical activity may be partially attributed to their perception of competency and success in fundamental movement skill development (Stodden, 2008; Barnett, 2008). According to the motor learning theory, after a skill has been learned, a person will acquire a relatively permanent change in their ability to perform the skill, thus providing the perception of competence and success in the performer's eyes (Barnett, 2008; Shumway-Cook, 2007; McMorris, 2004). This success then can be a contributing factor to how involved a child engages in future physical activity opportunities. Many of the FMS are taught to children in

Elementary Physical Education during the school day. If students are not presented the opportunity to learn and practice FMS in a structured environment, such as Physical Education, does this lead to delayed development of FMS, thus impacting physical activity participation in adolescents through adulthood? The purpose of this study was to compare the performance in FMS of public school and home school children who completed the Test of Gross Motor Development (TGMD-2). Participants, ages 4-9 years, performed the TGMD-2 in the fall of 2015 with an 89% inter-reliability rate amongst administrators. The TGMD-2 test assesses twelve sub-set gross motor functions of students in the areas of locomotor (7) and manipulative (5) skills. The sub sets of the test include locomotor (run, skip, hop, leap, gallop, slide, horizontal jump); manipulative (bounce, catch, strike, kick, overhand throw). Gross motor quotient scores on the TGMD-2 were measured and are currently being analyzed.

Poster 69 – Marco Escalera
Co-Presenter – Taylor Turek
Advisor: Dr. Gregory Brown
Title: *Determining Factors Necessary to Have Well Defined Abdominal Muscles*

INTRODUCTION: Many individuals who engage in regular and strenuous exercise seek to have well defined abdominal muscles (which are also known as 6 Pack Abs). These fitness enthusiasts seek to obtain 6 Pack Abs through numerous exercises in hopes to strengthen and tone the abdominal muscles. It is also thought that to have well-defined 6 Pack Abs a person must have low amounts of body fat. However, there has been little to no research determining what factors are necessary to have well-defined 6 Pack Abs. PURPOSE: The aim of this study is to evaluate the relationship between total and regional body fatness and abdominal muscle definition. The role of abdominal muscle strength on abdominal muscle definition will also be evaluated. METHODS: In order to evaluate the relationship between body fat, muscle strength, and abdominal muscle definition, male and female participants who have nice abs are being recruited to participate in this project (with a goal of getting at least 50 participants of each gender). Testing includes a measurement of body composition via DXA (which measures total and regional body fat content), abdominal skinfold measurement, an assessment of abdominal muscle strength through performance of a 60 second crunch/sit up test, and a photograph of the subject's bare abdomen for later scoring of 6 Pack Ab quality using bodybuilding judging criteria. The relationship between 6 Pack Ab score and body composition will be evaluated using simple linear regression. RESULTS: Data collection is currently underway.

Poster 70 – Luke Friesen
Advisor: Dr. Scott Unruh
Title: *SLAP Lesion Repair vs. Biceps Tenodesis: A Review of Outcomes and Success*

Context & Objective: The purpose of this study was to determine the patient perceptions of functional outcomes from two surgical techniques (SLAP Repair &

Biceps Tenodesis) used to correct shoulder injuries that have resulted in damage to the glenoid labrum. Measurements of abilities for the glenohumeral joint were done by quantifying the satisfaction of patients based on functionality and pain ratings utilizing the American Shoulder & Elbow Surgeon Assessment (ASES) and the Simple Shoulder Test (SST) in patients equal to or older than 40 years of age. Design & Setting: Methods used to collect data involved a survey completed during follow-up and/or post-surgery in-clinic visits post-surgery. Patients were also sent a letter with a paper survey or the option to complete the survey on-line utilizing the Qualtrics electronic survey program. Survey questions were a combination of the ASES assessment and the SST. Consent was provided in the clinic when the patient came in for a post-surgical follow-up. Consent was identified within the contact letter for patients responding via paper or electronic format. A Leikert Scale (0, 1.67, 3.33, 5) was used to score the responses on an individual question basis.

Poster 71 – Alexa Kasl
Advisor: Dr. Kazuma Akehi
Title: *Thigh muscular architecture changes during season-long college soccer participation*

The purpose of the study was to examine the influence of season-long competitive sport participation on subcutaneous tissue thickness (ST; cm), muscle thickness (MT; cm), pennation angle (PA; °), and echo intensity (EI) of the thigh muscles in a college women's soccer team and the risks of lower extremity injuries. Eighteen college women's soccer players completed the study (age=20.31±1.04yrs, height=168.12±36.31cm, body mass=66.30±18.05kg). ST, MT, PA, and EI of the rectus femoris (RF), vastus medialis (VM), vastus medialis oblique (VMO), vastus lateralis (VL), vastus intermedius (VI), and biceps femoris (BF) muscles were measured every 4 weeks from the pre-season to the post-season using sonography. MT of the RF (MTRF), VM (MTVM), VMO (MTVMO), and BF (MTBF) muscles increased immediately after the season started ($P<.02$). PA of VM (PAVM) and VMO (PAVMO) muscles were influenced by the past injury history and dominant side of the leg ($P<.02$). EI of RF (EIRF), VL (EIVL), and VM (EIVM) muscles decreased immediately after the season started ($P<.01$). We also observed unique trends of muscular architecture changes in each thigh muscle with types of musculoskeletal injuries, but there was no statistical difference due to the few number of injuries. Thigh circumference measures did not have a strong correlation with each thigh muscle thickness ($P>.05$). These results indicated that season-long athletic participation in the women's soccer team influenced the changes in muscular architecture but it was hard to detect these changes based on the circumference measures using a tape measure. These changes might also help to determine potential risks of lower extremity injuries depending on how muscular architecture changes over time. Future studies need to examine a relationship between the muscular architecture and strength adaptations during season-long competitive sport

participation, along with its risk of lower extremity musculoskeletal injuries.

Poster 72 – Callen Maupin
Advisor: Dr. Kate Heelan
Title: *The Impact of a Before School Walk/Run Club on Fitness Levels and Academic Performance in Elementary School Students*

Research has suggested increasing fitness levels among unfit children could potentially have the greatest effect on a child's academic achievement (Hansen, et al., 2014). Purpose: To determine the impact of a before school run/walk club on physical fitness levels and academic scores in math and reading among unfit students. Methods: 76 out of 149 students (51%) in grades 2nd-5th (age: 9.4±1.0 years) elected to participate in a before school walk/run club during two mornings each week over the year. Aerobic fitness was assessed by the Fitnessgram 10 Progressive Aerobic Cardiovascular Endurance Run (PACER) in both the fall and spring. Students below the 50th percentile for PACER were considered "unfit" (n=57, 38%). Academic performance was determined by raw scores (RIT) in math and reading from the Measures of Academic Progress (MAP) test in the fall and spring. Results: Among the "unfit" students, there were no significant differences in PACER laps, math RIT, or reading RIT in the fall between those that participated in the walk/run club (n=26) and those that did not (n=31). However, in the spring, those that participated had significantly higher PACER laps (19.7±5.2), math RIT scores (214.2±16.5), and reading RIT scores (212.4±11.6) than those that did not participate (15.8±5.3, 206.2±14.6, and 203.9±18.3 respectively) ($p<0.05$). Discussion: Our results suggest that an early morning walk/run club may significantly impact fitness levels as well as academic scores among physically unfit children. It also appears that early morning walk/run clubs attract a high number of students (51%) and should be encouraged as a feasible intervention for elementary schools.

Poster 73 – Alexis Mercado
Advisor: Dr. Gregory Brown
Title: *Salivary Cortisol Response to Aerobic and Resistance Exercise*

Author: Ali Mercado UNK Student, Department of Kinesiology and Sports Science Advisor: Dr. Greg Brown, Department of Kinesiology and Sports Science Title: Salivary Cortisol Response to Aerobic and Resistance Exercise Abstract INTRODUCTION: Cortisol is a steroid hormone released from the adrenal cortex that has many effects, including reducing the use of glucose to make ATP as well as mobilizing amino acids and fatty acids to be used for ATP formation. Cortisol is secreted in response to stressors, such as exercise. Cortisol secretion during exercise increases once exercise reaches sufficient intensity and/or duration. Aerobic and resistance exercise provide different types of stress to the body, and thus may cause different levels of cortisol secretion for similar exercise intensities and durations. PURPOSE: The aim of this study is to evaluate the salivary cortisol concentrations before and after 40 minutes of moderate intensity resistance and aerobic exercise.

METHODS: Students in PE 461 (Exercise Physiology) during the fall 2014, spring 2015, fall 2015, and spring 2016 semesters (n=111) participated in this experiment as part of their regular laboratory experience. Fifty-six of the students participated in 40 minutes of self-directed moderate intensity aerobic exercise and fifty-five participated in 40 minutes of self-directed moderate intensity resistance exercise. Saliva samples were collected using an oral swab immediately before and after the exercise. Saliva samples were stored at -80 C until analysis for cortisol concentrations using a commercially available Enzyme Linked Immunosorbent Assay (ELISA). Data will be analyzed using a two way (Exercise Type X Time) repeated measures analysis of variance (ANOVA) with an alpha level of 0.05 and a Student Newman Keuls posthoc test. RESULTS: Salivary cortisol analysis is currently underway.

Poster 74 – Michelle Reutter
Advisor: Dr. Megan Adkins
Title: *Factors Influencing Student Enrollment in Secondary Physical Education*

Physical education (PE) can increase student involvement in moderate to vigorous physical activity and help high school students gain habits early in life to have the knowledge, attitudes, and skills to engage in lifelong physical activity (Center for Disease Control, 1997 & 2001). High school students staying physically active in PE classes may help develop lifelong healthy habits, however, research shows secondary PE students are not meeting goals of PE programs. Students are less motivated, and demonstrated negative attitudes when participating in PE as students increased in age (SHAPE, 2012). Perlman, (2012) found that engaging students in a highly autonomy-supportive learning environment led to better self-determined motivation and enjoyment in PE class. Teachers who focused on developing specific teaching behavior that would match up with higher levels of autonomy support and control discovered students willing to be active in high school PE. Overall, the results reinforced self-determination within PE could be associated with using a highly autonomy-supportive learning system (Perlman, 2012). These results indicate motivation in PE as an important factor contributing to student engagement in class and continuation of physical activity beyond the district's requirements. However, besides student motivation levels, what leads students to participate in non-mandated PE courses offered at schools? The purpose of the research project is to determine factors influencing student registration rates in non-mandated PE courses in high school PE classes in the SHAPE America Central District (CO, MN, NE, WY, SD, ND, KS, CO, IA). Questions from the EMI-2, and Physical Education Classroom Questionnaire from the CDC (2006 and 2000), will be used in the questionnaire (Kilpatrick et al., 2005). Data will be collected and analyzed using an Excel spreadsheet.

Poster 75 – Ryuta Sakai
Advisor: Dr. Kazuma Akehi
Title: *Effects of competitive female college sports participation on muscular morphological adaptation and lower extremity injury risks: Case Study*

It has been reported that muscular morphological adaptation depends on intensity and volume of training. Muscular morphological adaptation is commonly measured using a tape measure. However, the traditional measurement does not isolate each muscle and its changes. The purpose of this case study was to determine 1) how thigh muscle morphological and architectural characteristics (MAC) changes through the season-long college soccer participation influenced lower extremity injuries, and 2) how post-knee surgery rehabilitation influenced MAC changes. Eighteen competitive college female soccer athletes (age=20.31±1.04yrs, height=168.12±36.31cm, body mass=66.30±18.05kg) completed the study to measure the thigh circumference (cm), subcutaneous tissue thickness (ST; cm), muscle thickness (MT; cm), pennation angle (PA; °), and echo intensity (EI) on the rectus femoris (RF), vastus medialis oblique (VMO), vastus lateralis (VL), vastus intermedius (VI), and biceps femoris (BF) muscles every 4 weeks during the in-season using diagnostic ultrasound. Two athletes who have suffered Grade 3 non-contact anterior cruciate ligament (ACL) sprains and have continued post-knee surgery rehabilitation were continuing to participate in the post-surgery testing sessions. Immediately before these athletes suffered the knee injury, their injured side of thigh circumference, RFMT, VIMT, and VLMT were decreased up to 20% compared to the previous testing session. There were up to about 10% of bilateral thigh circumference and RFMT and VLMT differences. Additionally, VLEI increased about 20% at the time of injury, which means the VL contained more non-contractile tissues. Following 12 weeks of post-knee surgery rehabilitation, their MT regained to the pre-injury stage. These results would indicate competitive college athletes adjusted their MAC to their athletic events, and maintained or improved their athletic performance. Some athletes however failed to adjust their MAC, which would lead to an increase in lower extremity injury risks. Diagnostic ultrasound would be more sensitive to determine the MAC changes than a tape measure.

Poster 76 – Trevor Schramm
Co-Presenter – Brianna Jackson
Advisor: Dr. Greg Brown
Title: *The Effects of Two Different Pre-Workout Supplements on 400 m Sprinting Performance and Salivary Cortisol Concentrations*

BACKGROUND: When taken in doses of 3-5 mg caffeine (or more) per kg of body mass, caffeine delays fatigue and increases sports performance. Pre-workout supplements typically combine 80-120 mg caffeine with various herbal extracts. These supplements typically come in a powder form to be mixed with water, and are designed to be taken 30-60 minutes before exercise or sports performance. Pre-workout supplements

are advertised to increase energy, which will then help individuals more effectively participate in strenuous exercise or sports performance. However, the effects of pre-workout supplements, with their combinations of caffeine and herbal extracts, have not been thoroughly evaluated. PURPOSE: The purpose of this project is to evaluate the effects of the pre-workout supplements Blitzz and AdovoCare Spark, which contain 120 mg caffeine + various herbal extracts in proprietary blends, on 400-meter sprinting performance and salivary cortisol concentrations. METHODS: The study will consist of 20 subjects (10 college aged males and 10 college aged females) who regularly engage in strenuous exercise. On three separate occasions, in a randomized double blind crossover manner, the subjects will consume either a placebo drink, Blitzz, or AdovoCare Spark. Salivary cortisol concentrations will be measured before and 30 minutes after drink consumption. Thirty minutes after drink consumption the subjects will run two timed 400-meter sprints, separated by 10 minutes of passive rest. Salivary cortisol concentrations will again be measured after the sprinting. These data will elucidate not only the benefits of pre-workout supplements on sprinting performance (or lack thereof), but also provide insight on the effects of pre-workout supplements on the endocrine response to strenuous exercise. RESULTS: Data collection is currently underway.

Poster 77 – Amanda J. Skalka
Advisor: Dr. Bryce Abbey
Title: *School Fruit and Vegetable Production Changes Following a Student Participatory Marketing Project*

The school setting is known to influence students' eating patterns and has been identified as a key setting for nutrition-related obesity prevention programs in the United States (Prelip et al. 2012). The new school meal requirements mandate that students must select at least a ½ cup of fruit or vegetable or a combination of ¼ cup fruit and ¼ cup vegetable during lunch (Byker et al. 2013). Federal guidelines require schools participating in the national school meal program complete food production records for the meals produced. Production records demonstrate how meals contribute to the requirements of food components, food items, or menu items for each meal served. PURPOSE: The purpose of this study is to evaluate the effectiveness of student involvement in the design of fruit and vegetable promotional materials in schools on production and waste of fruits and vegetables on school salad bars. METHODS: Four elementary schools participated including one control school. 4th grade students at an Involvement and Marketing (I&M) school and Involvement Only school received 2 lessons on health benefits of fruit and vegetable and all students in the schools were asked to design materials to promote fruit and vegetable. Promotional items from the I&M school were subsequently posted in the I&M and a Marketing Only school. Fruit and vegetable production and waste were determined by the number of

servings prepared on salad bars during lunch periods and by the number of servings left over (Gase et al. 2014). Food production records data were recorded by school cafeteria staff on a standardized template. Production records were collected during four periods; baseline, design, promotional, and follow-up periods. Productions records will be compared between schools and time periods to determine changes in production and waste.

Poster 78 – Brian Szekely
Advisor: Dr. Gregory Brown
Title: *The Effects of Creatine, Sodium Bicarbonate, and Caffeine on Blood Lactate Concentrations During a Wingate Bicycle Test*

BACKGROUND: Creatine is a widely used nutritional supplement that may enhance the adaptations due to strength training. Caffeine and sodium bicarbonate (baking soda) can enhance physical performance during strenuous exercise and are also used by athletes. Pre-workout nutritional supplements are widely used and are purported to lead to more effective exercise, thus resulting in greater adaptations to training. Many pre-workout supplements combine creatine, caffeine, and sodium bicarbonate. However, the efficacy of using creatine, caffeine, and sodium bicarbonate together has not been evaluated. PURPOSE: The purpose of this research is to study the effects of creatine, sodium bicarbonate, and caffeine on blood lactate concentrations and power output during a 30 second anaerobic Wingate bicycle ergometer test in physically active men. METHODS: On three separate occasions, after a 2 hour fast, 12 adult male UNK students (19-25 years of age) will have resting blood lactate concentrations measured. Then, in a randomized, double blind, crossover manner, the subjects will consume Advocare Spark (which contains 120 mg of caffeine per 8 oz. serving), Blitzz (which contains 120mg of caffeine plus 1500mg of creatine per 8 oz. serving), Blitzz + 4.2 g baking soda (sodium bicarbonate), or a placebo. After 30 minutes for digestion and assimilation, the subjects will then engage in a 30 second Wingate bicycle test. During the Wingate test, absolute and relative peak power output, average power output, and the fatigue index will be measured. Immediately following the Wingate test, post-exercise blood lactate concentrations will be measured. RESULTS. Data collection for this project is currently underway. The results from this project will increase our understanding of possible synergistic or antagonistic effects of ingesting caffeine, creatine, and sodium bicarbonate before strenuous exercise.

Poster 79 – Jerri Tuma
Advisor: Dr. Megan Adkins
Title: *Enjoyment of Physical Education Among Home Schooled Students*

An estimated 2.1 million children in grades kindergarten to twelfth grade are currently educated in the United States in a Home School (HmSchl) based atmosphere (Ray, 2011). Within the HmSchl student's curriculum, students are required to receive Physical Education (PhysEd). Many parents fulfill this requirement by having their children

participate in youth programs offered in local communities that focus on the sport skills, but lack with sufficient opportunities to develop fundamental movement patterns or motivation towards physical activity. In response, the University of Nebraska-Kearney (UNK) Health and PhysEd program developed a structured PhysEd program for HmSchl students (Fall, 2015) to help meet the PhysEd requirement and provide a quality education in all five standard areas of PhysEd defined by the SHAPE America. Students participating in the UNK HmSchl PhysEd class have never participated in structured PhysEd class prior to the program. Considering the fact that physically literate individual recognizes the value of physical activity for health, enjoyment, challenge, self-expression and/or social interaction (SHAPE America, 2015), the purpose of this study is to explore HmSchl students' (ages 6-9) enjoyment and motor skill levels, as well as the relationships between these two variables in the PhysEd program. Students' enjoyment will be measured by the Sport Enjoyment Scale, which includes four items, rated on a five-point Likert scale that ranged from 1: strongly disagree to 5: strongly agree. Some of the items are: (a) physical education lessons make me happy, and (b) I enjoy physical education lessons. Scores for the four items will be averaged and then used as students' enjoyment levels. The scale has been found to have satisfactory internal consistency in sport settings (Scanlan et al., 1993). Pearson Correlation will be employed to examine if there are any correlations between students' enjoyment levels and motor skill levels measured by TGMD2.

Poster 80 – Abby Vidana
Advisor: Dr. Todd Bartee
Title: *Physical Activity Interventions in the Work Place: A Literature Review*

Background: Increasing physical activity to meet the national guidelines has been shown to consistently reduce the risk of many chronic diseases and other adverse health outcomes affecting American adults. Implementing physical activity programs in the worksite has the potential to reach sedentary and low-active adults. The primary purpose of this study was to determine the effectiveness of physical activity interventions in the workplace. Secondary purposes included determining additional health outcomes of physical activity interventions and characteristics of successful physical activity interventions. Methods: A literature search of published original research studies reporting physical activity as an outcome in American worksite settings was conducted. The review was delimited to studies published since 2008 written in the English language. Results: Worksite physical activity interventions were shown to improve moderate and vigorous physical activity on the job, as well as recreationally. Findings differed based on physical activity measure and intervention characteristics. A smaller number of interventions reported significant changes in health outcomes. Conclusion: Physical activity can be increased through worksite interventions although additional meaningful outcomes to worksites are less commonly measured.

Marketing, Supply Chain Management, & MIS

Poster 81 – Maria Gutierrez
Advisor: Dr. Greg Benson
Title: *Ethical Networking-Business Ethics*

The objective of this research is to analyze the behavior of different companies on the market, and also verify if there is any correlation with their ethical parameters. As we live in a consumerist society, and the market is ruled by the law of supply and demand, this research will be extremely attached not only to an analysis of the companies but the way consumers respond to it. The purpose of this project is to better understand how to maintain a healthy market, where there are a number of ethical behaviors that will guarantee a sustainable system. Multiple factors were addressed during this research project. However, it focused on the way that companies treat employees, and the various situations where companies have to deal with partners that do not fulfill the ethical standards of their company. Acknowledging that a company must maintain profit in order to stay in the market, it becomes extremely important to set standards that will ensure that this profit quest will not harm society. Various organizations and corporations that analyze the ethical behaviors of companies, such as Ethisphere, Fair Trade USA , and Fairtrade International, etc, were studied in order to examine the methodology used to identify the ethical behaviors. This knowledge was extremely useful in order to analyze local companies.

Graduate Studies

Biology

Poster 82 – Wilfredo Lopez
Advisor: Dr. Kimberly Carlson
Title: *Production of monospecific antisera for Vago and virus induced RNA-1 (vir-1)*

Monospecific antisera production is used for experimental analysis of a protein of interest because it allows functional annotation. In Drosophila melanogaster, the genes Vago and virus induced RNA-1 (vir-1) are involved in innate immunity during Nora virus infection. However, the antiviral mechanism that Vago is involved in is not fully understood and the role of vir-1 within this mechanism has not been determined. For further experimental analysis, codon optimized proteins were constructed for Vago and vir-1. CD-1 Swiss outbred female mice were injected with either the Vago or vir-1 codon optimized protein for monospecific antisera production. Western Blot analysis demonstrated positive products for both antisera (Vago – 18.1 KDa; vir-1 – 47.4 KDa). The antisera will be used to determine the location of expression of Vago and vir-1, in conjunction with Nora virus infection, and to determine tissue-specificity. This research is novel because previous production of Vago protein was unsuccessful due to poor stability during production and the monospecific antisera for Vago did not exist until now. Ultimately, creating monospecific antisera for Vago and vir–1 proteins will allow for future work in determining the antiviral mechanism of action.

Counseling & School Psychology

Poster 83 – Jackie Engel
Co-Presenter – Caitlin Roussan
Advisors: Dr. Carmelo Callueng, Dr. Tammi Ohmstede
Title: *Academic Growth Patterns of Midwestern High School Students*

An understanding of what impacts and stimulates student learning is essential to those working to improve the educational experience and growth of students. This presentation aims to discuss relevant demographic characteristics of students which are impacting academic performance. The impact of English language proficiency and socioeconomic status of high school students from a Title 1 Midwestern high school is evident in the growth of standardized assessment scores in Reading and Mathematics.

Poster 84 – Christopher Fenwick
Co-Presenter – Jason Dillard
Advisor: Dr. David Hof
Title: *Stand With Me*

This poster presentation details the involvement of the Chi Sigma Iota chapter in social advocacy and community engagement. Alongside local LGBTQ organizations (Kearney PFLAG, UNK ‘s Queer-Straight Alliance), the

LGBTQ community, family, and friends, CSI provided education, advocacy, and support to the community on LGBTQ rights. Poster Display: The poster addresses the theme by providing a real-life example of partnering with the LGBTQ community and organizations to educate and acknowledge the rights of LGBTQ citizens of a rural midwestern town. Counseling students worked together to plan and collaborate with Kearney PFLAG and the University of Nebraska Kearney QSA to bring together the community and provide enriching education using diverse platforms. In an attempt to promote equality across all groups, the event was purposefully chosen to occur on Valentine's Day. A participatory Stand With Me unity circle of LGBTQ persons and allies holding hands around UNK's iconic campus landmark took place. Following the gathering, speakers shared information regarding resources, legislation, and personal experiences of both setbacks and triumphs. The project will be displayed on a poster that meets conference regulations with pictures, text, and will be enhanced by iPad display. The poster will contain purpose and rationale, implementation, attitudes and opinions through entrance and exit surveys, as well as personal and professional experiences in organizing the advocacy event. It is hoped that this presentation will educate and inspire participants to reach out to their community members and stay knowledgeable about current rights of this diverse population.

Poster 85 – Kirstie Hiatt
Co-Presenter – Lacey Farrington
Advisor: Dr. Tammi Ohmstede
Title: *Comparison of High States Reading and Math Assessments of Sixth Graders from Three School Models*

The implementation of the No Child Left Behind (NCLB) act of 2001 changed the way that schools across the nation monitor their academic achievement and increased the amount of pressure put on schools by the governing bodies of the United States. Ever since NCLB has been in place, a drop in academic achievement has been visible during the 5th, 6th, and 7th grades. A possible culprit of this drop is the school model in which a student attends during those three years of school. This study looks at the difference in reading achievement of 6th grade students in three different school models. Archival data from 6th grade students in the State of Nebraska who attended either a middle school, PK-8 elementary, or PK-6 elementary school were utilized in this study. Nebraska State Assessment (NeSA) reading and math scores were used to compare reading and math achievement across the models. Previous research indicates that the PK-8 school model tends to yield higher academic achievement. Results of this study indicate that the middle school model yields the highest academic achievement in the area of reading in the state of Nebraska in 2013.

Poster 86 – Brittney King
Co-Presenter – Regan Koller, Seth Larson
Advisor: Dr. Carmelo Callueng
Title: *Predictive Validity of a Computer-Based Academic Measure in Eleventh Grade Students*

The purpose of this study was to determine the predictive validity of a computer-based academic measure on high stakes assessment among students in a rural Midwestern high school. Archival test scores in reading, science, and writing of 181 11th grade students were subjected to multiple regression. Results indicated that MAP scores in math and reading were significant predictors of high-stakes assessment in high school students. Attendees can expect to gain an understanding of the validity of computer-based academic measure on high-stakes assessment and its implications on student achievement.

Poster 87 – Savannah Lohmeier
Co-Presenter – Ariel Christensen, Latisha Dominguez, & Christine Frost
Advisor: Dr. Tammi Ohmstede
Title: *The Effect of School Model on High Stakes Achievement of 5th-8th Grade Students*

Schools are showing concern in the decline of academic achievement that is occurring across 5th through 8th grades. Presenters will share results that show the differences in achievement between middle schools (6th-8th grade), junior high schools (7th-8th grade) and secondary schools (7th-12 grade), specifically students grades seven and eight. Practitioners will learn which school structure enables students to be most successful.

Poster 88 – JoLynn Mescher
Advisor: Dr. Carmelo Callueng
Title: *Continuing Professional Development Preferences and Practices of School Psychologists in Rural Nebraska School Districts*

Continuing professional development (CPD) is an important component of a school psychologists' career. The diverse needs of students require school psychologists to continuously update their knowledge, skills, and professional dispositions to provide relevant and competent services to students. The poster presentation reports the professional development preferences and practices of 61 practicing school psychologists from a Midwestern state. Results indicate that school psychologist consider CPD as a professional responsibility and an opportunity for new learning. In general, most participants engaged in various CPD topics; however, topics on social/emotional intervention is an area of need.

Poster 89 – Hilary Messersmith
Advisor: Dr. Tammi Ohmstede
Title: *School Psychology Internship Interview Day*

The School Psychology Internship Interview Day is held on an annual basis and provides both internship candidates and school districts seeking school psychology interns an opportunity to be involved in several interviews within one

day. These opportunities have afforded both internship candidates and school districts a chance to explore internship options and in many cases secure internship placements. The internship interview day has been in place for more than fifteen years with data being collected on the number of interns hired by school districts who attend the interview day the past four years. Over the past four years, 25 of the 45 internship placements were in school districts or educational service units that attended the internship interview day.

Poster 90 – Tabitha Rasmussen
Advisor: Dr. Carmelo Callueng
Title: *Family Involvement, Life Satisfaction, and Academic Achievement of Children*

There are a number of studies that support the positive impact of family involvement on academic achievement, but few consider the impact of life satisfaction on family involvement and academic achievement of children. This study explored whether life satisfaction mediates the relationship between family involvement and academic achievement by looking at the relationship among all three variables, family involvement, life satisfaction, and academic achievement. Participants were 64 third through sixth grade students in three rural Midwestern elementary schools. Series of regression analyses were employed to determine relationships of the variables. Results indicated that family involvement does not influence reading and math achievement. Family involvement also does not influence life satisfaction. Life satisfaction does not influence reading achievement; however, life satisfaction has a significant influence on math achievement. Thus, life satisfaction does not mediate the relationship between family involvement and academic achievement of students.

Poster 91 – Mackenzie Reynoso
Advisor: Dr. Tammi Ohmstede
Title: *Physical Activity and Mental Health within Adolescents*

Mental health is a major concern among adolescent students across the world. One possible prevention or intervention technique is the use of physical activity. We will provide results, comparing the mental health and physical activity levels from Ecuador and Guatemala, as well as any gender or age differences. Here we will show that physical activity and mental health do not have a significant correlation in these two countries.

Poster 92 – Haley Strobel
Advisor: Dr. Tammi Ohmstede
Title: *Using High-Stakes Assessment to Evaluate System-Wide Improvement Plan of A Rural Midwestern School District*

Promoting the academic success of all students is a goal of schools worldwide. Examining the academic proficiency across grade levels and the demographic factors that have a major impact upon that proficiency can help promote academic success. Longitudinal data were collected from approximately 200 11th graders from a Title I rural Midwestern high school. Participants will gain an understanding of demographic factors affecting academic proficiency

and their implication for curriculum development to close the achievement gap. Socioeconomic status influenced reading and math proficiency in 8th grade and only reading proficiency in 11th grade. English language learning status affected math proficiency consistently across grade levels, but did not influence reading proficiency in 8th or 11th grade.

Kinesiology & Sports Sciences

Poster 93 – Marissa Bongers
Advisor: Dr. Gregory Brown
Title: *Dietary Habits and Nutrition Knowledge in Female Collegiate Distance Runners*

BACKGROUND. In order to meet the physical demands of training for and competing in sports, athletes need to fuel their body adequately on a daily basis. However, previous research has indicated that the dietary habits of athletes are often insufficient regarding total energy and carbohydrate intake. Furthermore, athletes often do not know what or how much food they should eat in order to meet the nutritional demands of their sport. PURPOSE. The purpose of this study was to assess the effect that nutrition education focusing on total energy, carbohydrate, fat, and protein requirements has on the nutrition knowledge and dietary intake of female collegiate distance runners. METHODS. Eleven female collegiate Division II cross-country runners (19.36 ± 1.06 years, 56.65 ± 4.90 kg, 163.5 ± sd 5.22) completed a nutrition knowledge for athletes survey and three day diet record prior to the start of the intervention. Participants were then presented with four 1-hour nutrition education sessions covering energy balance, carbohydrates, proteins, fats, and hydration. After the nutrition education intervention, participants once again completed a nutrition knowledge survey and three day diet record. RESULTS. The nutrition education sessions increased ($P<0.05$) the participants' correct answers on the nutrition knowledge survey regarding dietary carbohydrate (45.5 ± 24.5% vs. 68.2 ± 29.8%), fat (57.6 ± 21.6% vs. 72.7 ± 20.1%) and protein (76.6 ± 9.6% vs. 93.5 ± 9.8%) intake (for pre vs. post, respectively). Although the participants were not meeting recommendations regarding total energy and carbohydrate intake before the nutrition educations sessions, there were no changes in dietary composition due to the nutrition education sessions. DISCUSSION. The present data are in agreement with previous findings indicating that enhanced nutrition knowledge does not always translate to enhanced dietary practices, even when improved dietary practices could result in improved sports performance.

Poster 94 – Thomas Mattfeld
Advisor: Dr. Megan Adkins
Title: *Teacher Preparation*

Being a first year teacher can be challenging, due to the amount of teacher preparation needed, and struggles with classroom management, curricular freedom, and being in an unsupportive environment (Goodwin, 2012). To help

first year teachers have more success when progressing to this level, one area to review is the quality of teacher preparation training the teacher received during their undergraduate degree program. Numerous strategies have been developed to help with teacher preparation in Physical Education. One approach that hasn't been explored is providing a structured Physical Education class for Home School children taught by pre-professional teachers in the Health and Physical Education major. This study aims to examine the effect of a home school Physical Education program on PETE student teachers' competence and preparation toward their first year of teaching. In this study student teachers who have participated in teaching in the Home School Physical Education program will be compared with student teachers and first year teachers who have not had the opportunity to practice teaching by completing the Pre-Service Preparation to Achieve the National Standards for Beginning PE Teachers questionnaire. The Pre-Service Preparation to Achieve the National Standards for Beginning PE Teachers questionnaire is a valid and reliable test. This is a qualitative study, in which interview and questionnaire will be employed.

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Performance Schedule

Sandhills Room

1:30 pm ---- **M. Hinrichs**: *Somebody's Hero*

2:15 pm ---- **G. Haberman**: *"Who Shall Rule This American Nation?": Songs of the American Civil War*

Performance Abstracts

Music & Performing Arts

Presenter – Gabriel Haberman
Advisor: Dr. Anne Foradori
Title: *"Who Shall Rule This American Nation?": Songs of the American Civil War*

The title for this lecture recital, Who Shall Rule this American Nation?, comes from a song by American composer Henry Clay Work, and addresses the heart of this lecture the struggle between North and South to determine the direction and future of the United States during the time of the Civil War. This lecture recital explores and discusses the choral literature written during the time surrounding the American Civil War. Written in a form of solo songs (verses) and choral response (refrain), these songs form a narrative of patriotism from the home front to the battlefield in the divergent points of view from the Union and Confederacy. The prolific output of composers such as Stephen Foster, Henry Clay Work, and George Root represent the mixed feelings and stirring emotions associated with this conflict. The lecture recital explores this music in its musical, literary, historical and socio-political context. The purpose of my project was to rehearse and prepare a lecture recital performance of

choral music of the Civil War era. I began to conduct research during the summer that would be used in the program's lecture, and in the comprehensive program that would be distributed to the audience. I examined dozens of songs, and chose a program of music that I believed would be interesting to the audience, and serve as illustrative examples for the accompanying lecture. My objective as a researcher was to examine choral music of the Civil War its musical form, lyrics as narrative, and its socio-political context. My objective as a performer was to rehearse and perform this music in an octet of singers, within the context of a lecture recital. The format of a lecture recital allows the performer(s) to discuss the music in its presentation to the audience. The program was performed on Saturday, November 14 at 3:00pm.

Presenter – Makenzie Hinrichs
Advisor: Dayna DeFilippis
Title: *Somebody's Hero*

In a typical performing arts degree, students choose an emphasis and spend their next four to six years honing their skills and gaining practical experience. There are then a handful of students that pick multiple emphases and work to develop each one individually. Rarely is it found, however, where these students get the opportunity to put all their skills to the test at once in a complete project all their own. This is one of the challenges offered through the creative project and dance concert entitled Somebody's Hero. I will be producing, designing, and choreographing the entirety of the concert, utilizing my backgrounds in stage management, theater management, dance technique, live performance, and choreographic styles. With these combined areas, I desire not only to put on a functionally successful concert, but also one that is artistically successful in that it has the ability to provoke meaningful thought and emotion from the audience. In addition to this goal, the project also explores differing styles of movement development for each dance piece. It compares the success and experiences of pre-arranged choreography to those of improvised and/or collaborative choreography, while also considering the experience level of the dancers and how they learn from each method of development. Today's presentation will consist of a discussion of my personal discoveries made through the choreographic process, focusing on the movement development and teaching methods I used, and then the managerial process, focusing on problem-solutions scenarios I faced while facilitating the needs of the concert. The discussion will then be followed by a presentation of one of the pieces that will be showcased in the concert to be held April 24 at 1:00 PM in the Miriam Drake Theater on campus.

Oral Presentation Schedule

Room: Ponderosa C

1:30 pm ---- **A. Daley**: *UNK Students' Knowledge on Human Rights* (Advisor – Dr. Rowling)

1:45 pm ---- **M. Pasbrig**: *The (Il)logic Behind ISIS* (Advisor – Dr. Rowling)

2:00 pm ---- **J. Osborn**: *The Role of the Public Defender in Nebraska: Community Implications* (Advisor – Dr. Longo)

2:15 pm ---- **S. Perez-Zamarripa**: *An Analysis of Social Capital in Selected Nebraskan Communities* (Advisor – Dr. Blauwkamp)

2:30 pm ---- **C. Williams**: *The Problematic Consequences of the Electoral College* (Advisor – Dr. Blauwkamp)

2:45 pm ---- **P. Schrodt:** *Making a Decathlete: The Role of Resilience* (Advisor – Dr. Adkins)

3:00 pm ---- **J. McGinley**: *Kearney Goes to War* (Advisor – Dr. Wells)

Oral Presentation Schedule

Room: Ponderosa D

1:30 pm ---- **R. Jack**: *Founding-Family Ownership and Firm Performance* (Advisor – Dr. Ujah)

1:45 pm ---- **A. Hanson**: *The sabermetrics of Survivor The importance of in-group identity to the survival in reality television* (Advisor – Dr. Ziwoya)

2:00 pm ---- **K. Haschke**: *Reflective Journaling: Building Middle School Students' Self-Esteem, Self-Efficacy, and Decreasing Stress* (Advisor – Dr. Fritson)

2:15 pm ---- **J. Gangstad**: *The Importance and Effectiveness of English Language Acquisition for Japanese Students* (Advisor – Dr. Machida)

2:30 pm ---- **T. Burford**: *Finding Daisy: The Elusive Search for Adapting F. Scott Fitzgerald's Women in Film* (Advisor – Dr. O'Malley)

2:45 pm ---- **A. Wagemann**: *The Monstrous, The Mysterious, and The Mystic: Reanimating Childhood Classics through The Feared City* (Advisor – Dr. Beissel Heath)

3:00 pm ---- **A. Slater**: *Adult Influences in the Construction of Youth War Diaries* (Advisor – Dr. Beissel Heath)

Oral Presentation Schedule

Room: NSU 310

1:30 pm ---- **D. E. Kluver**: *Graceful Gems: Cécile Chaminade's Voice Within Vocal Music* (Advisor – Dr. Foradori)

1:45 pm ----**M. Decker**: *Nineteenth Century French Orientalism in "Quatre Poèmes Hindous" by Maurice Delage* (Advisor – Dr. Foradori)

2:00 pm ---- **N. Pribnow**: *Building Healthy Technique in Young Pianists Through sEMG Biofeedback Technology* (Advisor – Dr. Cisler)

2:15 pm ---- **J. P. Lempke**: *The Evolution, Analysis, and Performance of Exploratory Piano Music: American Composers Cage, Cowell, and Crumb* (Advisor – Dr. Cisler)

2:30 pm ---- **J. I. Hoppens**: *Sequencing Solo Piano Literature for the Left Hand: A Pedagogical Guide for the Development of Musical and Technical Skills Appropriate for Scriabin™s Op. 9 Prelude and Nocturne* (Advisor – Dr. Cisler)

2:45 pm ---- **K. Hodgen**: *Organizational Audit: Honors Program at the University of Nebraska at Kearney* (Advisor – Dr. Seshadri)

Oral Presentation Schedule

Room: NSU 312

1:30 pm ---- **A. Ahmad**: *Hydrogen Sulfide Detection* (Advisor – Dr. Cao)

1:45 pm ---- **L. Hansen**: *Tenofovir-amino acid prodrugs targeting HIV reservoirs in the brain* (Advisor – Dr. Thomas)

2:00 pm ---- **A. Blair**: *Measuring Binding Interactions Between HSA and Desethylatrazine Using High Performance Affinity Chromatography* (Advisor – Dr. Moser)

2:15 pm ---- **A. Donovan**: *Measuring Binding Interactions Between HSA And Deisopropylatrazine Using High Performance Affinity Chromatography* (Advisor – Dr. Moser)

2:30 pm ---- **J. Speer**: *Exploring the role of dopamine in burying beetle parental behavior* (Advisor – Dr. Panaitof)

2:45 pm ---- **J. Morwitzer**: *Glucose and Fructose: Effects on Breast Cancer Cell Proliferation in Type 1 and Type 2 Diabetes* (Advisor – Dr. Chandra)

3:00 pm ---- **J. Burklund**: *Evolution Of An rRNA Intron At One Position In Teloschistales* (Advisor – Dr. Simon)

3:15 pm ---- **L. Attema**: *The function of Nora Virus ORF1 protein* (Advisor – Dr. Ericson)

Oral Presentation Abstracts

Accounting/Finance

Presenter – Rachel Jack
Advisors: Dr. Nacasius Ujah
Title: *Founding-Family Ownership and Firm Performance*

Can the ownership of firms make a difference in their performance? Intuitively, the answer should be yes. However, empirical evidence have been mixed, although there is a congruent that family owned businesses matter. In this paper, I examine the performance of family owned businesses and non-family owned businesses in two contexts. The effect of Sarbanes Oxley Act (SOX) and the effect of the financial crisis of 2007-2009 on their performance. There is ample evidence that would necessitate the need to explore the scope and behavior of firms in general. However, by focusing on family owned businesses, I shed light on the performance of a subset of firms that are important to me and relevant to my community. For instance, according to the US Department of Commerce, family businesses are less likely to lay off employees regardless of financial performance. According to the Conway Center for Family Business, the mean age of employees in family controlled business is 60.2 years and family owned businesses also have a higher survival rate. Astrachan and Shanker (2003) document that 64% of the United States gross domestic product is generated by family businesses.

Biology

Presenter – Larissa Attema
Advisor: Dr. Brad Ericson
Title: *The function of Nora Virus ORF1 protein*

A major defense mechanism used by insects to protect themselves from RNA viruses is known as RNAi. The Drosophila melanogaster Nora virus specifies an inhibitor of RNAi encoded by ORF1. Nora virus replicates in the cytoplasm of infected cells of the intestinal tract and therefore we expected to have RNAi inhibition occur in the cytoplasm. Preliminary results showed that ORF1 protein localized to the nucleus. To investigate this further, we have constructed ORF1-eGFP fusion proteins and expressed them in Drosophila S2 cells. The results are consistent with ORF1 being transported into the nucleus. This suggests that ORF1 inhibits RNAi in a novel fashion.

Presenter – Jacob Burklund
Advisor: Dr. Dawn Simon
Title: *Evolution Of An rRNA Intron At One Position In Teloschistales*

Spliceosomal introns have been found in every sequenced eukaryotic genome, have no known general function, and unclear evolutionary origins. It has been proposed that the need to separate transcription from intron splicing was the driving force for the origin of eukaryates. Thus, understanding their origin may be important for understanding the evolution of eukaryotes in general. In this study, we focused on a set of newly-derived spliceosomal introns with the overall goal of understanding how they originated. The overall hypothesis is that rRNA spliceosomal introns are derived from group I introns. The specific objective of this study was to identify and characterize introns at one position in the small subunit (SSU) of lichen-forming fungi. This position was chosen for primarily two reasons. First, it is a common position, with at least 38 taxa having introns at this position. Second, there is wide variation in intron length and sequence, which meets our expectation for the presence of multiple intr on types. In fact, it appears that within one set of closely related species (Caloplaca gloriae, Fulgensia bracteata), some have a group I intron at the position and others a spliceosomal intron. To carry out the objective, introns at this position were first compiled from existing databases. These introns were mapped onto a host tree and then characterized for the presence of sequence and secondary structure features found in spliceosomal and group I introns. Most of the introns were found to be in the order Teloschistales. We next sought to increase taxon sampling by sequencing additional taxa from the genus Caloplaca. The overall goal is to show a stepwise transition over evolutionary time from a group I intron to a spliceosomal intron.

Presenter – Jane Morwitzer
Advisor: Dr. Surabhi Chandra
Title: *Glucose and Fructose: Effects on Breast Cancer Cell Proliferation in Type 1 and Type 2 Diabetes*

Hyperglycemia decreases the efficacy of cancer treatments and contributes to increased incidence, metastasis, recurrence, and mortality of cancer. Type 1 and type 2 diabetes (T1D and T2D) are metabolic disorders that are characterized by both hyperglycemia and insulin dysregulation. These conditions further progress to cardiovascular and renal pathologies, and also increase the risk of several cancer types. It was hypothesized that T1D (hyperglycemia) and T2D (hyperglycemia and hyperinsulinemia) states increase proliferation rates of breast cancer cells more than normal glucose conditions. Treating early stage breast cancer cells, MCF-7, with high glucose (25 mM) or high fructose (25 mM) for longer periods of incubation (72-120 hrs) significantly increased cell proliferation compared to normoglycemic states (5 mM). The rate of increase was even greater when cells were treated with high glucose/high fructose in combination with various doses of insulin (50 ng/ml-500 ng/ml)

indicative of T2D states. Long term treatment of late stage breast cancer cells (metastatic), MDA-MB-231, with high glucose or high fructose produced similar increases in cell proliferation compared to controls. These results demonstrate that T1D and T2D conditions induce hyper-proliferation in both early and late stage breast cancer cells. Accordingly, excess consumption of glucose and fructose (i.e. high fructose corn syrup) warrants caution in diabetic patients diagnosed with breast cancer.

Presenter – Jarod Speer
Advisor: Dr. Carmen Panaitof
Title: *Exploring the role of dopamine in burying beetle parental behavior*

The burying beetle, Nicrophorus orbicollis, exhibits biparental behavior of offspring. The parenting behavior demonstrated by this species is unique for an insect, and raises questions about the neuromodulatory control of reproductive social behavior. To study the cause of the remarkable changes in behavior seen in N. orbicollis during breeding, whole brain monoamine levels were measured in male and female burying beetles during breeding periods. Monoamine concentrations of serotonin, dopamine, and octopamine between nonbreeding and breeding (parental) beetles were specifically compared, and it was found that dopamine was significantly elevated in breeding beetles compared to controls. To better understand the potential neuromodulation of parental behavior by dopamine, two dopamine receptors (DopR1 and DopR2) were isolated and cloned from the N. orbicollis brain. Ongoing studies will help us understand how dopamine levels and receptor distribution influence burying beetle re productive and parental behavior. The results of this study may be applied to understanding the neuromodulation of behavior across a variety of species.

Chemistry

Presenter – Aatiya Ahmad
Advisor: Dr. Haishi Cao
Title: *Hydrogen Sulfide Detection*

We are trying to utilize fluorescence biosensors to detect small molecules in trace amounts in the body. We are focusing on identifying these molecules because they're essential to our well-being. Hydrogen Sulfide is a molecule that is known to be present in trace amounts ion the body. Abnormal hydrogen sulfide levels have been noted in people who have developed diseases such as diabetes, Down's syndrome, and Alzheimer's disease. Identifying hydrogen sulfide molecules using biosensors will allow us to be able to understand the role it plays in our bodies and how we can utilize it to treat these diseases.

Presenter – Alyssa Blair
Advisor: Dr. Annette Moser
Title: *Measuring Binding Interactions Between HSA and Desethylatrazine Using High Performance Affinity Chromatography*

Human serum albumin (HSA), the most abundant transport protein in blood, has the ability to bind a wide variety of solutes including herbicides. Although numerous studies have examined the interaction with drugs with HSA, very few have focused on the binding between herbicide and herbicide metabolites and HSA. Atrazine and some of its metabolites are often found to contaminate ground water and have the potential to bind HSA and be transported throughout the human body. In this study, frontal analysis, a subset of high performance affinity chromatography (HPAC), was used to measure the binding constant between HSA and desethylatrazine.

Presenter – Anthony Donovan
Advisor: Dr. Annette Moser
Title: *Measuring Binding Interactions Between HSA And Deisopropylatrazine Using High Performance Affinity Chromatography*

Human serum albumin (HSA), the most abundant transport protein in blood, has the ability to bind a wide variety of solutes including herbicides. Although numerous studies have examined the interaction with drugs with HSA, very few have focused on the binding between herbicide and herbicide metabolites and HSA. Atrazine and some of its metabolites are often found to contaminate ground water and have the potential to bind HSA and be transported throughout the human body. In this study, frontal analysis, a subset of high performance affinity chromatography (HPAC), was used to measure the binding constant between HSA and deisopropylatrazine.

Presenter – Logan Hansen
Advisor: Dr. Allen Thomas
Title: *Tenofovir-amino acid prodrugs targeting HIV reservoirs in the brain*

HIV is a debilitating virus that affects nearly 35 million people around the world and over 1 million in the U.S. Several methods have been developed to detect and administer treatment of the virus. Many of these treatments require patients to take several pills a day to combat various aspects of the disease. One of these medicines is Tenofovir, a nucleotide reverse transcriptase inhibitor (NtRTI). Tenofovir helps to eliminate essentially all virions that exist in the body's circulatory system. But tenofovir is not completely effective for one simple reason; it cannot enter the brain. HIV virus particles are able to hide within the brain to avoid the drug. Once a patient quits taking tenofovir, the hidden virions reactivate and spread the virus throughout the body once more. This is because the brain is surrounded by a membrane of cells called the Blood-Brain Barrier (BBB). The BBB acts as a filter to prevent the possibility of dangerous or foreign chemicals interacting with the brain. However, the

BBB contains transporter proteins such as LAT-1 that transports amino acids and other nutrients to the brain. My research project involves attaching tenofovir to amino acids to determine whether the resulting amino acid conjugates (prodrugs) might be LAT-1 substrates. Our hypothesis is that tenofovir-amino acid prodrugs may reach the brain by LAT-1 transport and then release active drugs to eliminate hidden virions.

Communication

Presenter – Andrew Hanson
Advisor: Dr. Fletcher Ziwoya
Title: *The sabermetrics of Survivor The importance of in-group identity to the survival in reality television*

Every day people are thrust into situations in which they are forced to work with individuals they don't know. Often times, these people come from different backgrounds. The only rules these people are bound by are the law and norms of society, which they may or may not break. In reality television game shows such as Survivor, a microcosm of real life and how we live is created. In this paper, I examine how small group dynamics play out in the sixth season of the show Survivor where strangers are forced to work together and create a society for themselves, while eliminating people from the game gradually. This study looks at the role of the in-group and out-group identity in small groups through theories such as symbolic convergency. This is measured through examining voting patterns of players at the game's tribal council. A quantitative analysis will be measured through the voting tendencies, while a qualitative analysis will be completed through dialogue between contestants. This paper hypothesizes that the better job a player in the game does at fostering an in-group identity, the farther the contestant will go in the game.

English

Presenter – Tessa Burford
Advisor: Dr. Maria O'Malley
Title: *Finding Daisy: The Elusive Search for Adapting F. Scott Fitzgerald's Women in Film*

In F. Scott Fitzgerald's The Great Gatsby, the character of Daisy Buchanan is deemed the novel's resident object of desire. Considering the novel was adapted into a film not only once but actually twice, the variations in the actresses chosen to play Daisy are of importance. The way the screenplay was adapted for the character as well as the way in which the actresses chose to represent Daisy are all of equal value. In theory, the portrayal of Daisy Buchanan is a direct reflection on the ideals represented by women in American society. I hope to bring to light the differences in the characteristics of the novel and film adaptations of Daisy as well as what they mean in correlation to her world and ours. The way in which Daisy is portrayed may be indicative of the aim of each adaptation, the time period in which it was created, or simply an altered interpretation of who exactly

Daisy was. She is so vital to the story but the reason why is not so clear. Also, because the other central characters of The Great Gatsby, specifically Gatsby himself, are so concerned and infatuated with Daisy, I hope to investigate what exactly this could mean for the men of the story and their society as a whole. We know what makes Gatsby great but not what makes Daisy desirable. The contrasts in the variations in the design of this character seem overlooked yet essential to the plot, moral, and popularity of the story.

Presenter – Amanda Slater
Advisor: Dr. Michelle Beissel Heath
Title: *Adult Influences in the Construction of Youth War Diaries*

Since the publication of "Anne Frank: The Diary of a Young Girl" in the 1940s, the genre of Children War Diaries has erupted into a marketable business for journalists, editors, and publishing companies around the world. As a society, we like to think that these texts are entirely accurate. Despite these assumptions, however, youth diary writing tends to undergo biased editorial changes from its initiation clear through the editing process. In this presentation, I aim to understand the implications these adult influences have on the genre by examining a collection of recently-published war diaries, including the famous writings of Zlata Filipović, Thura al-Windawi, and Malala Yousafzai. These texts represent a variety of world conflicts, namely, World War II, the Bosnian War in Sarajevo, the Iraqi War, and the presence of The Taliban in Pakistan. I determined through this analysis that family situation, educational background, exposure to media/propaganda, and journalist intervention all have an effect on those who are selected for publication. These factors reveal that as much as we try to be transparent about the effects of war on children, we fail in every sense of the word. Because we cannot handle the thought of childhood innocence being lost in the terrors of war, we show a glimpse of the hurt and heartbeat, but only from the perspective of middle-class, well-educated youth. As a result, only one side of the war story is told the side that encompasses experiences and opinions which the adult population has influenced and deemed acceptable for public attention.

Presenter – Anna Wagemann
Advisor: Dr. Michelle Beissel Heath
Title: *The Monstrous, The Mysterious, and The Mystic: Reanimating Childhood Classics through The Feared City*

I like to tell myself that you're always safe, but there's no such thing, really, is there? (Stead 116). Rebecca Stead's Newbery Award winning novel, When You Reach Me, is set in the swarming metropolis of NYC. The city, crawling with homelessness, mental illness, shady characters, and violence, is an ever-present source of danger, untrustworthiness, and concern for Miranda's mother. In The Graveyard Book by Neil Gaiman, Bod acts a mere observer of the bustling downtown as he grows up sheltered, granted the magical protection of the graveyard. In this paper, I examine the inherent

connections between two literary classics and their modern adaptations: Madeleine L'Engle's A Wrinkle in Time (1962), Rebecca Stead's When You Reach Me (2009), Rudyard Kipling's The Jungle Books (1894-95), and by Neil Gaiman's The Graveyard Book (2008). Fundamentally distinguishing the adaptations from the original texts is the darker nature of the setting. In the 21st century texts, the city morphs into an ever present physical living, breathing, and active character. A Wrinkle in Time journeys to fantastic planets and alien worlds with its setting forming a mystic backdrop to the Murry children's adventure, a stark juxtaposition to the harsh, gritty reality of When You Reach Me's New York City. In The Jungle Books, Mowgli is immersed in the jungle, just as Bod is shadowed by the graveyard; however where Mowgli encounters a permeable boundary between the human world and the wild, Bod realizes his stay in the graveyard is fleeting, and must grapple with the knowledge of no return, the outside world looming ever nearer. Both modern novels reanimate the physical environment into a menacing beast, a separate entity lurking with unseen dangers.

History

Presenter – Jacob McGinley
Advisor: Dr. Jeff Wells
Title: *Kearney Goes to War*

This project explains creating and curating a digital archival resource and a public humanities project. Kearney Goes to War engages in a larger conversation about the effects of World War II on Nebraska. The war brought many social problems, such as segregation, not normally seen in small town Nebraska. Kearney Goes to War is a particularly original project because the community's war effort has never had much publicity besides a 1990 master's thesis. With the use of Omeka with a complete Dublin Core Metadata and a controlled vocabulary, we have brought this information to the general public. While this was being created students on the project had readings on Nebraska during World War II and a master's thesis for background.

Modern Languages

Presenter – Jessica Gangstad
Advisor: Dr. Satoshi Machida
Title: *The Importance and Effectiveness of English Language Acquisition for Japanese Students*

As the English language continues to grow as the language of business across the world, it has become a necessity for any person who wants to join in our globalized world. Many people are lucky enough to have the opportunity to grow up using English on a daily basis, but in other countries, students still struggle to keep up. Japan is a prime example of a globalized, business-oriented country that is trying to enforce English language acquisition in the classroom for its young students. Is it effective, however? Is it worth all the effort? As English encroaches on the Japanese business world, it has been

met with both encouragement and opposition. In addition to drawing evidence from previous studies of the Japanese educational system, globalization of English, and process of language learning, this study will also include first-hand results from surveys given out to students in Japan along with exchange students here on campus. The views of studen ts with no intention to study abroad when compared to students who are studying on campus is very interesting and gives us a look into how Japanese youth feel about the pressure to learn English in their home country. Accounts from ELI teachers who worked with students in Japan and on campus are also examined to provide more insight on how well students fare in English classes, and whether or not their individual majors in college even required English. A compilation of all this information is brought together in this study to determine how effective the English teaching system in Japan is, and the impact it has on the new generation of Japanese students and future of the country.

Music & Performing Arts

Presenter – Megan Decker
Advisor: Dr. Anne Foradori
Title: *Nineteenth Century French Orientalism in "Quatre Poèmes Hindous" by Maurice Delage*

The 19th century movement in Art and Music referred to as French Orientalism inspired artists and musicians to explore culture of the Middle East and East, during a time of travel, colonialism, and curiosity. For composers, this translated into the use of non-western melodic and harmonic traditions, as well as the use or imitation of non-western musical instruments. Maurice Delage was one of several French composers from the late 19th/early 20th centuries for whom all things eastern held a fascination. His music is infused with melodic and harmonic structure that evokes non-Western music: whole tone, harmonic minor, and pentatonic scales, quarter-tone tuning, melismatic/highly chromatic vocal writing, and instrumentation/orchestration to mimic instruments from India. Delage lived his entire life in Paris. A student of Maurice Ravel, Delage was influenced by trips to India and Japan, accompanying his father on business trips when he was a young man. His best-known work, Quatre Poèmes hindous was written when he returned from the east. The four songs are scored for soprano and chamber group, including string quartet, two flutes, oboe, two clarinets, and harp.

Delage's work inspired his contemporaries to employ similar small chamber groups in compositions with voice, including: Pierrot lunaire (Schenberg), Trois poems de Mallarmé (Ravel), and Trois poesies de la lyrique japonaise (Stravinsky). The songs are titled for cities in India and Pakistan Madras (a coastal city in southeast India, now called Chennai), Lahore (a city in the northeast Pakistani province of Punjabi), Bénarès (a northern Indian city on the Ganges River, now known as Varanasi), and Jeypur (a city in eastern India, popular with tourists, now spelled Jeypore). The three of the four songs are dedicated to composer friends of Delage.

Presenter – Jordan Isabella Hoppens
Advisor: Dr. Valerie Cisler
Title: *Sequencing Solo Piano Literature for the Left Hand: A Pedagogical Guide for the Development of Musical and Technical Skills Appropriate for Scriabin™s Op. 9 Prelude and Nocturne*

Historically, one of the challenges that music teachers and performers face is the ability to constructively address incidents in which professional and student pianists find themselves without the use of a hand/arm due to accident or injury. The frequency of this situation is more common than the public is aware, with a great number of injuries caused by overuse or misuse of the playing apparatus (particularly the right hand). Effective piano teachers must have a thorough understanding not only of the symptoms and causes of performance injuries, but of alternative performance literature for one-hand alone that serves to bridge the gap in study due to disability or injury. This purpose of this study is to compile a comprehensive list of works, sequenced by level of difficulty, from elementary through intermediate and early advanced levels, leading progressively to one of the most important works in the pianist's repertoire for the left hand alone, Alexander Scriabin's Op. 9 Prelude and Nocturne. To achieve this goal, a two-tiered review of the literature was conducted: 1) an exploration of piano repertoire as primary sources and 2) a number of secondary resources including journal articles, books, dissertations, and web resources that address one-hand piano repertoire, followed by musical and technical analysis of each work, and finally, the development of effective strategies for learning and teaching literature for the left hand. Left hand piano repertoire poses special technical challenges not found in standard performance literature. The study serves to highlight these challenges through analysis of the Scriabin work and outline str ategies to meet the unique musical and technical demands of left hand alone literature through carefully sequenced studies and performance literature.

Presenter – Danielle E. Kluver
Advisor: Dr. Anne Foradori
Title: *Graceful Gems: Cécile Chaminade's Voice Within Vocal Music*

Cécile Chaminade was a successful French composer and pianist from the late-19th to mid-20th centuries, who was

primarily recognized for her piano and flute pieces. Although Chaminade's compositional output for the voice was smaller than for other instruments, the impact they made on her musical style throughout her lifetime was considerable. She discovered her compositional voice through these graceful and lyrical songs.
Although Cécile Chaminade was praised for her smaller works such as songs and character pieces for piano, she met with opposition and harsh criticism when she composed works in large symphonic genres. Success in large-scale compositions continued to elude 19th century women composers possibly due to gender prejudice. Chaminade's style of composition can be described as melodic, mildly chromatic, and typical of late-Romantic French music. Musicians today continue to enjoy learning and performing CécileChaminade's compositions, and the strides she made in p aving the way for other women to become composers is evident in the history of music. In this paper, I have identified the musical characteristics that Chaminade utilized in order to produce such memorable compositions, specifically within her vocal music. The paper also addresses Chaminade's life as a woman composer in the late 19th and early 20th centuries, and the specific challenges she faced that may have been gender related. I have compared and contrasted the compositional styles and musical idioms within Chaminade's piano, flute, and vocal music, and compared her music to other composers of her time, including Clara Schumann, a well-known female composer. Lastly, I conducted a brief background study of CécileChaminade, in order to better understand her life as a woman composing in this time period.

Presenter – John Paul Lempke
Advisor: Dr. Valerie Cisler
Title: *The Evolution, Analysis, and Performance of Exploratory Piano Music: American Composers Cage, Cowell, and Crumb*

The works The Banshee by Henry Cowell, Sonata No. V from Sonatas and Interludes by John Cage, and Crucifixus [SYMBOL] (Capricorn) from Makrokosmos, Vol. I, represent some of the most groundbreaking works of the twentieth century, and each composer expanded the use of extended piano technique in their own way. The project explores these pieces from a historical, theoretical, and pedagogical perspective. The historical angle traces the development of the various ways that these composers utilized the instrument throughout the twentieth century. It includes Cowell's instructions to play directly on the strings, Cage's development of the prepared piano, and Crumb's further creative use of the instrument, including placing objects on the strings and using harmonics. Theoretically, the pieces are examined formally at the small scale phrases and periods and at the large scale significant sections and, if applicable, a work's relation to its collection. Also, harmonies and pitch collections are scrutinized for patterns and repetitions. Finally, the pedagogical perspective seeks to answer important questions regarding the difficulty of the repertoire, whom it is

appropriate for, and how it can be taught and learned. This multi-faceted approach intends to provide a thorough analysis of these important twentieth century works and define their place among the piano literature.

Presenter – Nolan Pribnow
Advisor: Dr. Valerie Cisler
Title: *Building Healthy Technique in Young Pianists Through sEMG Biofeedback Technology*

Due to an increase in performance-related injuries in musicians over the past few decades, the medical and teaching communities have focused their studies primarily on the causes of and rehabilitative methods for musculoskeletal injuries. Most recently, surface electromyography (sEMG) biofeedback technology has become an important diagnostic tool, with the Cleveland Clinic for Integrative Medicine leading the way in developing the use of biofeedback for neuromuscular re-education. With research focus based primarily on rehabilitation methods for those who have already suffered performance injuries, little attention has been undertaken related to the prevention of performance injuries, particularly those that may have their source in the very early years of study. This case study, focused on elementary level students, seeks to answer the following questions: 1) What are the common technical challenges faced by second year elementary students; and 2) Does empirical evidence based on sEMG Biofeedback Technology help inform effective teaching strategies for fundamentals of piano technique? The study consisted of three main components that included a thorough review of standard teaching methodology as related to elementary technique, the development of effective teaching strategies that promote healthy and efficient practice and performance habits, and subsequent data collection from a series of testing sessions of four elementary level pianists.

Political Science

Presenter – Alysha Daley
Advisor: Dr. Charles Rowling
Title: *UNK Students' Knowledge on Human Rights*

As international conflicts and affairs take national headlines, we are seeking to learn just how much students at the University of Nebraska-Kearney really know about the human rights abuses and infractions taking place around the world. Through literature reviews and survey results, we hope to explain the attitudes of UNK students towards global issues pertaining to human rights. Our study will explain how students learn about the issues taking place, how they feel about the issues, and if demographic information has an impact on their knowledge of or views towards human rights abuses. From here, we will be able to draw conclusions about the implications that will come from these viewpoints and we will discuss what might be done to improve our broader knowledge and understanding of human rights abuses around the world. Lastly, we intend to explore the extent to which biases in the sources of information that

students are engaged might play a role in these results.

Presenter – Jackson Osborn
Advisor: Dr. Peter Longo
Title: *The Role of the Public Defender in Nebraska: Community Implications*

The right to legal counsel is the primary safeguard of a defendant's rights within the criminal justice system. The United States Supreme Court has held that the Sixth Amendment's right to counsel guarantees indigent state court criminal defendants the right to counsel at the expense of the state (Gideon v. Wainwright, 1963). This ruling means that if an individual being charged with a criminal offense cannot afford an attorney, the burden is on the state to provide an attorney for that individual. It is necessary to evaluate how effective indigent defense systems are in order to understand whether or not individuals are being given quality legal representation. Popular belief is that public defenders provide a lesser quality of legal representation than private attorneys. It is often suggested that public defenders are given too many cases and therefore cannot devote an adequate amount of time to each case. This project analyzes the indigent defense systems within the state of Nebraska in order to find answers to these questions. Public defender systems are organized at the county level in Nebraska. Each county has their own system for how these services should be provided. There are three basic types of systems: the elected public defender system, the assigned counsel system, and the contract public defender system. Some counties have all three types of systems operating at the same time, with one system considered the primary system. The differences between counties illustrates that there is not a mechanism in place to regulate the quality of indigent defense across the state. Public defenders throughout the state uniformly receive salaries below those of county attorneys. This disparity highlights how communities prioritize their resources. While some counties are better than others, the state as a whole has failed to adequately guarantee indigent defendants rights.

Presenter – Meaghan Pasbrig
Advisor: Dr. Charles Rowling
Title: *The (Il)logic Behind ISIS*

Ever since September 11, 2001, terrorism has been one of the top priorities in American foreign policy. Since then, al Qaeda has declined in power and the rise of ISIS as the new terrorist threat has captured the headlines of American newspapers. The question is, how much of a threat is ISIS to the United States and what is the logic behind what ISIS is actually doing? ISIS can fall under two categories, an Islamic fundamentalist group or a truly logical terrorist group that has clear-cut goals and strategies. There is controversy among scholars about whether or not a terrorist group can be logical or if it is just a group of irrational people with a common goal. This paper will evaluate the book Dying to Win by Robert A. Pape and the critique Suicide Terrorism, Occupation, and the

Globalization of Martyrdom: A Critique of Dying to Win, by Assaf Moghdam to determine whether or not ISIS is logical in its strategies and goals as a terrorist group. Some believe that what ISIS is doing is purely religious fanaticism and others like Pape believe that terror groups are rational in what they do.

Presenter – Stefani Perez-Zamarripa
Advisor: Dr. Joan Blauwkamp
Title: *An Analysis of Social Capital in Selected Nebraskan Communities*

The relationship between racial diversity and social capital (community involvement) has been the subject of research studies such as Robert Putnam's E Pluribus Unum: Diversity and Community in the Twenty-first Century (2006) and Christel Keslter and Ireme Bloemradd's Does Immigration Rode Social Capital? The Conditional Effects of Immigration-Generated Diversity on Trust, Membership, and Participation across 19 Countries (2010). The study concludes that a community or individual's level of social capital, whether it is low or high, is an indirect result of the community's level of racial diversity. This particular research attempts to replicate the methods used by the two mentioned studies to see if in select Nebraskan communities, racial diversity has an impact on social capital. Through survey work, this project measures three vital areas of social capital: civic engagement, political engagement, and trust. Several Nebraskan communities including Lexington, Schuyler, Fre mont, and Wakefield were chosen as the participant communities based on their known levels of racial diversity in relation to other surrounding communities. Following the results of Putnam and Bloemradd, this study hypothesizes that the higher a community's level of racial diversity is, the lower an individual's or community social capital index will be.

Presenter – Caitlin Williams
Advisor: Dr. Joan Blauwkamp
Title: *The Problematic Consequences of the Electoral College*

Scholars have long debated about the U.S. ElectoralCollege's usefulness and its possible issues. The Electoral College has many problems that were unintended by the men who designed it. A Committee of Eleven within the fifty-five delegates at the Constitutional Convention created the method of electing the president. All of the founders agreed that they needed an election system that would prevent individual state loyalties from overriding the ability to have a leader who could represent the will of citizens in all thirteen states. Making a candidate win states instead of individual votes guaranteed that he would have to win support outside of one or two states. Lesser populated states were especially worried about being dominated by larger populated states that had loyalty to a candidate from their state. In addition to the strong state loyalty, in the times of the founding fathers, a national popular election wouldn't be technically feasible, because they did not have the technology and transportation to account for around four million votes (the population) (U.S. Election

Assistance Commission, 2011). They decided that there would be two steps to election. The first step would be the nomination stage in which an electoral college of electors would vote as the popular votes reflected. Each state had electors based on the number of House Representatives plus two for each state for the Senate members. The next would be a selection stage in which the House of Representatives would choose from the nominees (Amar and Amar, 2001, p. 2528). The main camps of thought on the current Electoral College is that it favors large states, favors small states, does not guarantee the popular vote winner the election, has bias towards competitive states, or that it is satisfactory. The strongest research supports the camps of favoring large states, does not guarantee the popular vote winner the election, and has bias towards competitive states.

Psychology

Presenter – Katelyn Haschke
Advisor: Dr. Krista Fritson
Title: *Reflective Journaling: Building Middle School Students' Self-Esteem, Self-Efficacy, and Decreasing Stress*

Self-efficacy is one's belief in their ability to be successful at a task and is recognized as a predictor of success in many activities. Self-efficacy affects one's willingness to engage in and be successful in completing a task (Bandura, 1977). Self-esteem is the personal evaluation of one's worth. Self-esteem affects one's belief that the individual can accomplish something and be successful (Jordan, Logel, Spenccer, Zanna, Wood, & Holmes, 2013; Zeigler-Hill & Jordan, 2010). Stress is a person's response to circumstances and events that threaten coping abilities (Santrock, 2014). Reflective journaling is the process of writing about personal interpretation(s) of a topic and how it can be applied in one's own life. A creative outlet strategy such as journaling also improves mood and functioning of depressed and anxious individuals (Nicholas, 2006). Given that middle school students are experiencing significant biopsychosocial development changes, it seems likely that their intrapersonal growth would also be influenced by reflective journaling. Students are still at a stage where outside sources have a significant effect on their cognitive processes while they are also becoming independent and able to construct their own ideas and beliefs on topics. Therefore, the purpose of this study was to explore changes in adolescents' self-efficacy, self-esteem, and self-perceived stress levels through reflective journaling about empowering topics. Participants included 131 middle school students from a local middle school during homeroom. The journaling group journaled twice weekly for six weeks over empowering topics, 12 journals total. At the end of six weeks, the students filled out the three previously mentioned questionnaires again. Reflective journaling did not have a statistically significant effect on self-esteem, self-efficacy, or perceived stress. Time had a statistically

significant effect on self-esteem. Qualitative analysis was completed regarding students' perception of the journaling process and the likelihood of using journaling in the future.

Graduate Studies Oral Presentation Abstract

Kinesiology & Sports Sciences

Presenter – Patrick Schrodt
Advisors: Dr. Megan Adkins (chair), Dr. Nita Unruh, Dr. Grace Mims
Title: *Making a Decathlete: The Role of Resilience*

The decathlon is a true test of athletic strength, endurance and speed (Heazlewood, Gahreman & Lee, 2014). It is not necessary for the athlete to win any individual events to win the decathlon. Rather, it's more important for a decathlete to be consistently successful in each event. Competing in combined events like the decathlon is challenging because of the need to acquire new movements & technique, the physical demands placed on the body, the amount of time required to practice and the necessity of mental toughness (Moore, 2012). Although many people attempt to become a decathlete, only an elite group of athletes are able to overcome these challenges. Mental skills like optimism, vitality and self-determination help explain a person's success in becoming a decathlete. The current study attempts to use resiliency, defined as, the ability to overcome adversity and to succeed despite their present circumstances, as a valid measure to predict the likelihood a given track and field athlete to successfully become a decathlete. PURPOSE: To examine the role resiliency plays as a characteristic of decathletes, attempted decathletes and non-decathletes to discern if this is a differentiating quality. METHODS: Current and former male track and field athletes in the Mid-America Intercollegiate Athletic Association (MIAA) conference will complete a demographic and resiliency survey. Resilience will be measured using the Wagnild and Young (1987) 25-item Resilience Scale (RS-25) that is a previously validated instrument. The resiliency instrument is designed to measure the degree of individual resilience, considered as a positive personality characteristic that enhances individual-adaptation. All items are scored on a 7-point scale from 1 disagree, to 7 agree. Taking the sum of the item, possible scores range from 25 to 175, a higher score reflecting higher resilience.

Index by Poster Number

Participant ..... Poster #

Aden, Brianna 25
Andreasen, Jake 26
Armajo, Fredde 14
Augustyn, Evan 44
Bartunek, Kathleen 33
Best, Becca 34
Blum, Jessica 45
Bongers, Marissa 93
Borowiak, Summer 27
Breemes, Mallory 46
Bruxvoort, Kyla 64
Buckmaster, Payton 15
Christensen, Ariel 87
Chun, So-Young 2
Curry, CJ 49
Danielson, Leah 68
Davison, Melissa 47
De Vries, Nicki 16
Dillard, Jason 84
Dolphin, Jocelyn 48
Dominguez, Latisha 87
Dull, Claire 17
Eacker, Cale 6
Edgar, Josh 49
Engel, Jackie 83
Escalera, Marco 69
Farrington, Lacey 85
Fenwick, Christopher 84
Finke, Karissa 50
Flaugh, Rachel 51
Friesen, Luke 70
Frost, Christine 87
Glock, Jordanna 35
Grant, Audrey 19
Gutierrez, Maria 81
Hamilton, Luke 36
Hernandez, Mayra 67
Hiatt, Kirstie 85
Hiner, Breanna 65
Hinrichsen, Alex 28
Hongsermeier, Abby 37
Huffman, Elizabeth 33
Humlicek, Megan 32
Ingersoll, Jordan 38
Jackson, Brianna 76
Jang, Eunju 52
Jones, William 59
Kasl, Alexa 71
Keele, Emma C. 39
King, Brittney 86
Koller, Regan 86
Koski, Emily 62
Kroll, Aaron 61
Lallman, Joshua 53
Larson, Ashley 7
Larson, Seth 86
Leininger, Elenna 18
Liu, Sitong 54
Lohmeier, Savannah 87
Lopez, Wilfredo 82
Maschmann, April 48, 55
Mattfeld, Thomas 94
Maupin, Callen 72
McCue, Patrick 21
Mercado, Alexis 73
Mescher, JoLynn 88
Messersmith, Carson 20

Messersmith, Hilary 89
Moore, Matt..... 48
Mott, Justice..... 8
Navrkal, Christopher 22
Neumann, Miranda 56
Nguyen, Nga..... 57
Oladeji, Olubusola..... 40
Page, Alexis..... 41
Pauley, Nicole 9
Plock, Emily 42
Porter, Jackson 23
Rasmussen, Tabitha 90
Reutter, Michelle 74
Reynoso, Mackenzie..... 91
Rockefeller, Meghan 66
Roussan, Caitlin..... 83
Rowan, Shelby..... 5
Ryan, Austin..... 60
Sakai, Ryuta 75
Schramm, Trevor 76
Schultis, Jessa 24
Sheridan, Fletcher..... 10
Skalka, Amanda J. 77
Slater, Amanda..... 1
Stark, Tanner..... 11, 12
Strawn, Sarah 29
Strobel, Haley 92
Study, Shelby 30
Sutton, Zach..... 31
Sydow, Spencer 13
Szekely, Brian 78
Thompson, Drew..... 58
Tuma, Jerri..... 79
Turek, Taylor 69
VanSkiver, Alison..... 32
Vidana, Abby..... 80
Wardyn, Brianna 63
Wetovick, Alyssa 3
Wiese, Joshua..... 43
Wipperling, Morgan 4

Index of Participants

NAME.....Page #

Aden, Brianna..... 14
Ahmad, Aatiya..... 60
Andreasen, Jake..... 14
Armajo, Fredde 8
Attema, Larissa..... 58
Augustyn, Evan..... 23
Bartunek, Kathleen 18
Best, Becca..... 18
Blair, Alyssa 61
Blum, Jessica..... 24
Bongers, Marissa..... 50
Borowiak, Summer..... 14
Breemes, Mallory..... 24
Bruxvoort, Kyla 34
Buckmaster, Payton..... 8
Burford, Tessa..... 62
Burklund, Jacob 59
Christensen, Ariel..... 48
Chun, So-Young..... 1
Curry, CJ..... 26
Daley, Alysha..... 68
Danielson, Leah 36
Davison, Melissa..... 24
De Vries, Nicki..... 9
Decker, Megan..... 65
Dillard, Jason 46
Dolphin, Jocelyn..... 25
Dominguez, Latisha 48
Donovan, Anthony..... 61
Dull, Claire 9
Eacker, Cale..... 4
Edgar, Josh..... 26

Engel, Jackie 46
Escalera, Marco 37
Farrington, Lacey 47
Fenwick, Christopher 46
Finke, Karissa 26
Flaugh, Rachel 27
Friesen, Luke 37
Frost, Christine 48
Gangstad, Jessica 64
Glock, Jordanna 18
Grant, Audrey 11
Gutierrez, Maria 45
Haberman, Gabriel 52
Hamilton, Luke 19
Hansen, Logan 61
Hanson, Andrew 62
Haschke, Katelyn 71
Hernandez, Mayra 36
Hiatt, Kirstie 47
Hiner, Breanna 34
Hinrichs, Makenzie 53
Hinrichsen, Alex 15
Hongsermeier, Abby 19
Hoppens, Jordan Isabella 66
Huffman, Elizabeth 18
Humlicek, Megan 17
Ingersoll, Jordan 20
Jack, Rachel 58
Jackson, Brianna 41
Jang, Eunju 28
Jones, William 30
Kasl, Alexa 38
Keele, Emma C. 21
King, Brittney 48
Kluver, Danielle E. 66
Koller, Regan 48
Koski, Emily 32
Kroll, Aaron 32
Lallman, Joshua 28
Larsen, Ashley 5
Larson, Seth 48
Leininger, Elenna 10
Lempke, John Paul 67
Liu, Sitong 28
Lohmeier, Savannah 48
Lopez, Wilfredo 46
Maschmann, April 25, 29
Mattfeld, Thomas 50
Maupin, Callen 39
McCue, Patrick 12
McGinley, Jacob 64
Mercado, Alexis 39
Mescher, JoLynn 48
Messersmith, Carson 11
Messersmith, Hilary 48
Moore, Matt 25
Morwitzer, Jane 59
Mott, Justice 5
Navrkal, Christopher 12
Neumann, Miranda 29
Nguyen, Nga 30
Oladeji, Olubusola 21
Osborn, Jackson 69
Page, Alexis 22
Pasbrig, Meaghan 69
Pauley, Nicole 5
Perez-Zamarripa, Stefani 70
Plock, Emily 22
Porter, Jackson 13
Pribnow, Nolan 68
Rasmussen, Tabitha 49
Reutter, Michelle 40
Reynoso, Mackenzie 49
Rockefeller, Meghan 35
Roussan, Caitlin 46
Rowan, Shelby 4
Ryan, Austin 31
Sakai, Ryuta 41
Schramm, Trevor 41
Schrodt, Patrick 73
Schultis, Jessa 13
Sheridan, Fletcher 6
Skalka, Amanda J. 42
Slater, Amanda 1, 63
Speer, Jarod 60
Stark, Tanner 7

Strawn, Sarah 15
Strobel, Haley 49
Study, Shelby 16
Sutton, Zach 16
Sydow, Spencer 7
Szekely, Brian 43
Thompson, Drew 30
Tuma, Jerri 43
Turek, Taylor 37
VanSkiver, Alison 17
Vidana, Abby 44
Wagemann, Anna 63
Wardyn, Brianna 33
Wetovick, Alyssa 2
Wiese, Joshua 23
Williams, Caitlin 70
Wipperling, Morgan 3