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# SCHEDULE OF EVENTS

Wednesday, March 25, 2009

7:30-9:00 a.m.	Poster Set Up	NSU 238
9:00-11:00 a.m.	Judging	NSU 238
Noon-1:30 p.m.	Luncheon Guest Speaker: Brett Chloupek	NSU 238 A&B
1:30-1:50 p.m.	Music Performance	NSE 238 C
1:30-3:30 p.m.	Oral Presentations	NSU 310 NSU 312 CEDAR
2:00-3:30 p.m.		NSU 238 C
1:30-4:30 p.m.	Poster Session Open	NSU 238
3:30-4:30 p.m.	Award Reception	NSU 238
5:00 p.m.	Posters Removed	NSU 238



# Brett Chloupek

## Luncheon Guest Speaker

Brett Chloupek, a native of Harvard, Nebraska, graduated with a B.S. in Geography and Computer Information Systems from UNK in 2005. While at UNK he participated in the Summer Student Research Program, undergraduate research day, and served as Student Body President and Regent. He and three fellow computer science students were awarded the 2007 Peter Kiewit Student Entrepreneurial Award from the Nebraska Board of Regents for their work on the UNK Carillon Bell Tower. He earned a M.S. in Geography from Oklahoma State University in 2007 where he held a National Science Foundation GK-12 Fellowship. He is currently a Foreign Language/Area Studies Fellow and Fulbright Finalist working on a Ph.D. in Geography and a M.A. in Russian, East European, and Eurasia Studies at the University of Kansas. His academic interests include political geography, the geography of religion, and Eastern Europe.

# Performance

## Music

Presenter: **Ryn Hruza**  
Advisor: Janice Fronzcak  
Title: *Third Hand Improv*

We will be performing one half hour of improvisational theatres, taught by UNK theatre students, performed by students, for students. Third Hand Improv is a breath of fresh air.

# Fine Arts & Humanities

## English

Presenter: **Rachel Jensen (1)**  
Advisor: Charles Fort  
Title: *Prose Poetry and Melody: The Influence of Music on the Creative Process*

The purpose of this project was to discover the creative process from the point of view of poetry influenced by music. It incorporated the form of prose poetry and the musical talent of Eva Cassidy. While the poetry was very much written from motivation by Cassidy's songs, the creative process itself became apparent through the steps of inspiration, creation, literary research, revision, and the final act of documenting my own process. This project combined the process of creation along with actual creation itself. The scholarly work came from both the creative writing and the final examination of my individual inspired progression along with examination of other artists' examination of the creative process. I wrote ten original prose poems stemming from the music of ten different songs, and then my research focused on the steps taken to complete

the poems. From the completion of this project I am better able to understand my own creative work as well as that from other artists.

Presenter: **Alicia Hunt (2)**  
Copresentors: **Gustavo Rodriguez Barrera, Kendra Larson, Casey Webster**  
Advisor: James Payne  
Title: *Music Products Industry*

A group of music business majors at the University of Nebraska at Kearney desired to learn more about the business side of the music industry at the 2009 NAMM Show, an international music products trade show and market hosted by the National Association of Music Merchants, the International Music Products Association. At the show, the students researched their individual interest areas in several ways. They visited various exhibits in order to see and perhaps work with the products and to visit with the sales representatives or technical development staff asking questions concerning the product or information desired. They attended concerts and demonstrations of new products and attended educational sessions given by NAMM or by NAMM Affiliated Music Business Institutions (of which UNK is a member) featuring well-known speakers and educators in the industry.

Presenter: **Megumi Kajigaya (3)**  
Advisor: David Nabb  
Title: *One-handed Woodwind Program*

We engaged in activities to increase visibility of the One-handed Woodwind Program. The program was started by Dr. David Nabb, a faculty in UNK music department and Jeff Stelling, owner of the Stelling Brass and Winds. The mission of the one-handed Woodwind program is to develop one-handed musical instruments and increase availability of the adapted instruments for individuals with permanent disabilities. To achieve the goal, we posted messages on discussion forums and asked owners of disability related web sites to put link to our web site.

Presenter: **Ashley Lawton (4)**  
Copresenter: **Mackenzie Cochran**  
Advisor: Neal Schnoor  
Title: *UNK University Band - Italy Performance Tour*

Between December 28, 2008 and January 3, 2009 the University Band/"Pride of the Plains" Marching Band completed only their second tour abroad. Fifty-nine UNK students and eleven band alumni within a total traveling party numbering ninety-five presented two performances during the tour and immersed themselves into the Italian culture. The Band performed in the Rome New Year parade from St. Peter's Square traveling along the Via d'Conciliazione attended by an international audience numbering over 75,000. The band members performed a variety of selections in various genres including Latin Jazz, American Rock and Popular, Funk and Classical music. In addition to performing for Italian audiences, band members also toured Naples, Pompeii, and Rome.

Presenter: **Kalie Wetovick (5)**  
Advisor: Ron Crocker  
Title: *KSO Program Digitization*

My project is a digitization of concert programs from each concert season of the Kearney Symphony Orchestra. I am creating a database of concert programs and information to be accessed by the public through the Kearney Symphony Orchestra website. My project will provide a service for students, faculty, alumni, and community members in the Kearney area who are interested in or performing research on the orchestra.

## Behavior & Social Sciences

### Criminal Justice

Presenter: **Lisa Peter (6)**  
Advisor: Julie Campbell

Title: *The Importance of Reentry Programs in our Nation's Prison System*

Reentry programs are treatment programs offered to offenders in prisons to help them with reintegration back into society. These programs provide offenders with the necessary tools they will need in order to function in society once they are released. While these programs have the potential to reduce the recidivism rate in our nation, funding simply is not there to establish reentry programs in all prisons today. This may in part be due to a lack of public support. For more than two decades, criminal justice policy has been largely "get-tough" in its foundation. Many criminal justice initiatives are based on the idea that criminal offenders should be punished harshly for their crimes. Programs like reentry, which are largely associated with rehabilitation and treatment, are disdained. The purpose of this study is to explore public opinion in central Nebraska regarding reentry programs for inmates who are soon to be released in to society. Demographics such as age, gender, race, and socioeconomic status will be examined, as well as the public's understanding of correctional philosophies and treatment programs.

### Geography

Presenter: **Matthew Buchanan (7)**  
Advisor: Jason Combs  
Title: *Crime and the Socioeconomic Characteristics of a City's Workforce*

Criminologists have determined that crimes are often committed by persons who exhibit a specific set of characteristics. Socioeconomic status and level of intelligence are two of the primary factors that distinguish what types of crime a person is likely to commit. For example, crimes such as tax fraud and embezzlement are labeled as white-collar crimes whereas theft and vandalism are referred to as blue-collar crimes. Because socioeconomic status and intelligence impact what crimes a person likely commits, one can assume the crime a certain town or city experiences is based on its population workforce. This study examines whether or not this is the

case by analyzing micropolitan areas within the Great Plains region that are home to businesses that attract either highly educated, highly paid workers, or less educated, low paid workers.

Presenter: **Crystal Jacobson (8)**

Advisor: Jason Combs

Title: *Buffalo County, Nebraska's Past and Present Roadside Lodges and Attractions Along U.S. Highway 30*

Over the past few decades there has been an increasing interest in the study of American tourism associated with the automobile and creation of highways in the early twentieth century. Recent works explore the highway system and those physical structures produced by the motoring culture. Structures such as gas stations, motels, parks, cafes, and roadside attractions have all become characteristic features along the American highway system. This study looks specifically at two important features along one of America's greatest highways, the roadside lodges and attractions that once welcomed tourist from the Lincoln Highway. The project evaluates properties along the highway through Buffalo County, extending from Shelton to Elm Creek, Nebraska. The study presents historic information and data on the roadside lodges and attraction structures, their geographical location, and their general function during the height of automobile travel on the Lincoln Highway. Lastly, this study focuses on comparing the locations and conditions of the existing structures to those past structures that have been identified. The study reveals that American tourism trends of the early and mid-twentieth century have shifted with American values and culture over the past few decades. A reflection of this cultural shift is seen in the decline of roadside lodging and attractions along the Lincoln Highway.

Presenter: **Kevin Kurtenbach (9)**

Advisor: Jason Combs

Title: *Mountain Glaciers and Ice Shelves in North America*

Glacial studies have been conducted for several decades in North America. Mountain glaciers

and ice shelves have receded with the climate change. This paper examines how rising temperatures have affected glacial formations. It also looks at data collected from the Little Ice Age (1350- 1850 A.D.) and its contribution to the current glacial landscape. Areas such as Alaska and Greenland are the primary focuses. The final issue addressed is how the melting of glaciers is currently affecting the cryosphere and the changes taking place in the hydrosphere, biosphere, and atmosphere.

Presenter: **Kelsey Bard (10)**

Advisor: Vijendra Boken

Title: *Detecting Corn Planting Dates Using Weather & Landsat Data*

This research examines the strength of the relationship between the time of corn sowing and Landsat-derived NDVI vegetation indices. The study of such relationships will help develop satellite data-based variables that could be used to enhance the accuracy in predicting corn yields. We will examine the relationship between the timing of corn sowing and the vegetation indices derived from Landsat data. We gathered daily weather data from 12 fields within a range of 40 miles South of Kearney, NE using wireless weather stations and data on planting dates and yields from the respective farmers.

Presenter: **Chris Hennessy (11)**

Advisor: John Bauer

Title: *An Examination of Early Automobile Touring Routes in Nebraska*

Automobile route guides were born out of the popularity for travel created by the early automobile. The Official Automobile Blue Book was published by the The Automobile Blue Book Publishing Company from 1901 to 1926. During its years of production, it set the standard for route guides and automobile guidebooks in the United States (Ristow 1964). This research had two goals, to trace the accuracy of the Blue Book routes and directions, and to determine the correspondence between Blue Book routes and modern highways. Some, not all, Blue Book routes were a basis for modern highways.



Presenter: **Jacob McGlade (12)**

Advisor: Paul Burger

Title: *A GIScience Approach to the Consolidation of County-Level Services in Nebraska*

Nebraska's 93 counties were established to serve a largely rural agrarian society during a period of westward expansion. The population of Nebraska has since been shifting away from rural areas to urban primarily in the east. With transportation and access more attainable the question of the whether or not an alternative approach to offering county services through consolidation is economically viable is raised. GIScience provides the tools to approach this question from a geographical perspective. GIScience employs a location-allocation operation for problem solving using two heuristics: Global Regional Interchange Algorithm (GRIA) and Teitz and Bart (TAB). Twenty Consolidated County Centers (CCC) are identified outside of the Omaha and Lincoln metropolitan area with respective counties allocated to the proposed service center creating Consolidated County Units (CCUs). This allocation resulted in a minimal increase in transportation costs, yet it reduced county government centers from 93 to 28 statewide.

Presenter: **Jacob McGlade (13)**

Advisor: Jason Combs

Title: *Kearney's Changing Cultural Landscape*

This research project examines Kearney's changing cultural landscapes and the spatial relationships between Kearney residents and their surroundings. Typically, older homes are densely clustered near community focal points (churches, schools, etc.) and have a more outward orientation. On the other hand, more modern structures tend to compliment suburban lifestyles "larger lots and garage space for multiple vehicles, for instance" and have an internal focus.

Presenter: **Megan Melgoza (14)**

Advisor: Jason Combs

Title: *Are We There Yet*

Cognitive mapping refers to the mental processes which require many psychological transformations that enable people to easily code, store, and recall valuable information about locations. This idea was first introduced in the 1940s by Edward Tolman, who recognized the ability to store spatial knowledge and that by using the "mind's eye" to store this information people increase the ability to recall and learn new information. Though this task seems effortless to many, the ability to code for this information has not always been easily accessed. Children and adults differ in their abilities to use the psychological transformations needed to process cognitive maps. This paper examines the differences in children and adults in the realm of cognitive mapping, and perceptions of time and space. The paper's purpose is to understand the development of the cognitive processes which help to comprehend spatial environments through internal processes!

Presenter: **Travis Minne (15)**

Advisor: John Bauer

Title: *Map Distortion*

In order to understand distortions in maps today, it is helpful to examine how cartographer's understanding of this concept has increased through time. The earliest maps of humankind demonstrate that distortion was not a concern for early humans. As advances in technology occurred, the distortions in maps became better understood. Maps became planimetrically more accurate because distortion could be better minimized. Although distortion is a property of all modern maps, cartographers are able to minimize certain effects that it has on the representation of the earth. Cutting-edge map projections use complex mathematics to do this, allowing the earth to be projected onto surfaces such as dodecahedrons, icosahedrons, and mathematically torn spheres. Because of these advances, modern maps provide a greater amount of planimetric accuracy than those of times past.

Presenter: **Dylan Sims (16)**

Advisor: Jason Combs

Title: *Sirens on the Plains: The Geography of Starbucks Coffee Shops in Nebraska*

Many Nebraskans know that Starbucks is the largest coffeehouse chain in the state whether they drink coffee or not; however, Nebraskans may not know all the communities in the state where Starbucks shops are located or why the company may have opened in those locations. This project begins by providing a brief history of the rise of Starbucks as a gourmet coffee giant. Next, the project identifies Starbucks locations in Nebraska and analyzes some of their demographics. In general, Starbucks targets locations with populations of 20,000 or more and they are found mostly in the eastern half of the state. All locations are in communities with a Caucasian population of 85 percent or more, except Omaha, and a median household income over \$30,000. The project also shows how the opening of different Starbucks shops is correlated with particular locations' characteristics. Starbucks usually opens kiosks within discount or grocery stores in areas with relatively smaller populations, although Lincoln and Omaha have both kiosks and regular shops. However, in the cases of North Platte and York, free-standing stores have been built adjacent to Interstate 80. The project concludes with a discussion of the competition Starbucks faces in Nebraska and why some locations have closed recently.

## Political Science

Presenter: **Sarah Kurz (17)**

Advisor: Christopher Stevens

Title: *Secession in an Anarchic World: State Support and Opposition in the 21st Century*

In the twentieth century several states experienced separatist movements. With over five thousand ethnic groups inside 190 countries, it is likely that in the twenty-first century states will continue to experience secessionist movements as more ethnic minorities begin to demand their right to self determination. Conventional thinking in International Relations predicts that outside states will intervene in secessionist conflicts only when beneficial to the

security of their state; however, after analyzing several post-communist conflicts including the conflicts in Georgia, Kosovo, Nagorno-Karabakh, and Transnistria, my research indicates that a relationship exists between the level of violence used by either party during conflict and the likelihood of external intervention. In the cases studied, a high level of violence on either side of the conflict increased the likelihood of outside intervention. These findings indicate that political scientists must devote more time to studying the relationship between humanitarianism and external intervention in secessionist conflicts.

## Psychology

Presenter: **Adrienne White (18)**

Advisor: Krista Forrest

Title: *A Systematic Investigation of Laypersons' Interrogation Prototypes*

Although some researchers continue to investigate police interrogations and the techniques used (see Kassin, 1997; Leo 2008), other studies indicate that laypersons are unaware of the powerful techniques police officers are legally allowed to use (Henkel, Coffman & Dailey 2008). The goal of this project is to see what comes to mind when people are asked to think about a typical police interrogation. After participants described a typical police interrogation, they rated their experience with the law on a scale of one (no experience) to ten (frequent experiences). Interrogation prototypes included more physical descriptions (i.e., small rooms, one way mirrors) and fewer process descriptions (interrogation techniques) than expected. This research gives insight on what kind of preexisting information a juror uses when evaluating interrogation evidence during a trial.

Presenter: **Destinee Nelson (19)**

Copresenter: **Tera Stokebrand**

Advisor: Krista Forrest

Title: *Fictional Police Interrogations: A Content Analysis of Interrogations in Law and Order*

Police officers and laypersons indicate their perceptions of police interrogations are influenced by media information and dramatization. To determine the nature of fictional police interrogations we examined interrogation techniques in randomly selected episodes of Law and Order's first and fourteenth seasons. After viewing the selected episodes, we timed, transcribed and evaluated the interrogations for strategy use, legality and influence in trial. Content and changes in interrogations from year 1 to year 14 will be discussed.

Presenter: **Brandon Frerichs (20)**

Copresenter: **Olivia McInturf**

Advisor: Richard Miller

Title: *The effects of negative, positive, and neutral messages on environmental conservation.*

The effects of positive, negative and neutral messages on promoting environmental activism were examined. High school students read one message and responded to a survey about its effects. No differences between the messages on promoting change were observed. Students from smaller families were more likely to engage in conservation activities.

Presenter: **Abigail Harris (21)**

Advisor: William Wozniak

Title: *Birth Order, Belief in Paranormal Phenomenon, and Lying*

I investigated the relationships among birth order, belief in the paranormal, and lying. No significant relationships between birth order, belief in the paranormal, acceptability, or lying were found. However, a significant connection between the rated acceptability of lying and different beliefs was discovered.

Presenter: **Jennifer Krecklow (22)**

Advisor: Krista Fritson

Title: *The Effect of Media on Individuals' Perception of Body Image*

In our research, it was found that individuals were effected by the media's portrayal of body

image through commercials. Although, there was no significant decrease in the before and after self-report questionnaires on an individual's body image, there was a decrease in both the control group (viewed commercials with no humans present and no portrayal of body image) and the experimental group (viewed commercials about weight loss and body toning/fitness equipment with humans present throughout the commercial) after viewing commercials.

Presenter: **Brandon Mizner (23)**

Advisor: Wayne Briner

Title: *The Effects of Depleted Uranium on Acetylcholine in the Mouse Brain*

Depleted uranium (DU) exposure alters a variety of behaviors including and working memory. DU affects a variety of biochemical systems in the CNS. Brains of mice exposed to DU for two weeks were stained for acetylcholine-esterase and subjected to optical analysis. We will present the results of the analysis.

Presenter: **Brittany Schmidt (24)**

Advisor: Krista Fritson

Title: *The Influences of Parental Divorce During Childhood on Adult Self-Efficacy*

The present study examined the relationship between divorce and both academic self efficacy and general perceived self efficacy. Eighty-two students completed a demographic sheet including their parental divorce information, a general perceived self-efficacy questionnaire, and an academic self-efficacy questionnaire. Results indicated no significant impact of parental divorce on students' general perceived self-efficacy or academic self-efficacy scores. These findings can be used to support the view that going through a divorce during childhood may not have long-term repercussions on young adults' general and academic self-efficacy. Limitations related to a lack of diversity of the participants are discussed.

Presenter: **Janeen Stuthman (25)**

Copresenter: **Matt Skiles**

Advisor: Krista Fritson

Title: *Exploring the Relationship Between Alcohol Consumption and Intimate Relationships*

A survey was used to investigate the relationship between monogamous relationship length and alcohol consumption. Participants were asked questions about their relationship status, alcohol consumption, and other social relationships. A Pearson correlation showed no significant relationship between relationship length and the amount of alcohol consumed each week by the participants.

Presenter: **Collette Wagner (26)**

Advisor: Krista Forrest

Title: *The Effects of Ploy Complexity on Mock Jurors' Verdicts, Sentencing Recommendations and Evaluation of Police Interrogation Strategies*

I examined the effects of evidence ploy complexity (simple, orchestrated) on juror verdict, sentencing, and ratings of ploy deception and coercion. Participants read a police interrogation transcript containing either a simple or an orchestrated ploy. They also read information presented by an expert witness as well as remarks made by the prosecution and defense attorneys. Participants then selected their verdict and answered a questionnaire about the interrogation. There were no main effects of ploy complexity on ratings of deception and coercion. There was however a marginal effect of ploy complexity when looking at justification. Although, participants rated both ploys as equally deceptive, they did consider orchestrated ploys as more coercive. Verdicts and sentencing did not differ. Faculty Sponsor: Dr. Krista Forrest

## **Sociology**

Presenter: **Jena Lynch (27)**

Advisor: Suzanne Maughan

Title: *The Language of AIDS*

According to the CDC (2008), an estimated 1,106,000 people are currently living with HIV in the United States and about 25% of those who have contracted HIV/AIDS are unaware of their health status. Despite the evolution of the

perception of HIV/AIDS, this disease is still identified as a problem that only affects minority groups. The discourse about HIV/AIDS in the media and among peers influences how people understand this disease and whether they get tested. The objective of this research is to closely analyze the way people talk about HIV/AIDS on the UNK campus. Through anonymous surveys of students in sexual health-related UNK classes, I will examine how students perceive this disease and how they protect themselves against it. Utilizing student surveys, the assistance of UNK student services, and the Nebraska AIDS Project, my goal is to present information valuable to the UNK community.

# Natural & Physical Sciences

## **Biology**

Presenter: **Ethan Cordes (28)**

Advisor: Joe Springer

Title: *Boundary Determination of Two Species of Short-tailed Shrew (Blarina) Hybrid Zone Using Mitochondrial DNA analysis*

Abstract Hybrid zones occur when two species reproduce in a narrowed region. These zones serve as evolutionary test tubes where factors acting on several species and their hybrids can be observed. One such zone is located in central Nebraska where the ranges of two short-tailed shrew species (*Blarina brevicauda* and *B. hylophaga*) overlap. The northern range of the larger *B. brevicauda* and the southern range of the smaller *B. hylophaga* have given the two similar but distinct morphologies and could possibly serve as a template for hybrid zone research. Using mtDNA analysis, it becomes possible to identify each species and their hybrids with certainty. Testing specimens from different regions of Nebraska will shed light on the extent of the hybrid zone and each species

Presenter: **Stacey Bonner (29)**

Advisor: Dr. Keith Geluso

Title: Re-Examination of Diet of the Common Barn Owl (TYTO ALBA) and The Great Horned Owl (Bubo Virginianus) at Crescent Lake Wildlife Refuge, Nebraska

Analysis of owl pellets is a well-known nondestructive process that provides information regarding owl diet, prey distribution, and small mammal communities. Diet analysis was carried out for two species of owls (Tyto alba and Bubo virginianus) inhabiting Crescent Lake National Wildlife Refuge, Nebraska. Previously at Crescent Lake National Wildlife Refuge, the diets of both owl species were examined in the early 1970s. Re-examination of their diets is conducted to determine whether the northern pocket gopher occurs at the site, to examine whether the diets of two owl species has shifted in 35 years, and to compare frequency of small mammals of prey with a recent survey of small mammals at the refuge. Approximately 500 owl pellets and pellet debris were collected from the refuge in October 2008. Small mammalian taxa were identified via examination of mandibular and cranial bones extracted from owl pellet material. Results obtained from owl pellet dissection will be presented.

Presenter: **Richard DuVall (30)**

Advisor: Dr. Ericson

Title: *Sequencing of the Immulectin 4 Gene of Manduca sexta*

A variety of immunity mechanisms are used in the animal kingdom. Immunity systems in organisms aim to defend the organism from pathogens such as bacteria, viruses, fungi, and larger parasites. This experiment focuses on the innate immunity of the tobacco hornworm, Manduca sexta. The innate immunity of this insect synthesizes proteins that recognize the foreign molecules on bacteria, fungi, and larger parasites followed by the production of proteins that eventually ward off the intruder. Each group of the proteins produced serves a different function including antibacterial, prophenoloxidase activation, melanization, binding capabilities, and prophenoloxidase

regulation. Immulectin genes code for proteins that help in pattern recognition proteins, serine proteinases and homologs, proteinase inhibitors, and hemocyte-modulating proteins. To date, five immulectin proteins have been identified including immulectin-4. Sequencing of the Immulectin-4 gene can be crucial in making inferences of the evolution of these immunity genes as well as discovering how human innate immunity functions. In addition, this genetic sequence is the first step in grasping how these genes are regulated in the organism.

Presenter: **Anna Barber (31)**

Advisor: Paul Twigg

Title: *Soybean response to soybean aphids assessed using subtractive hybridization*

Aphids are perhaps the most damaging group of agricultural pests worldwide. They transmit diseases, withdraw phloem sap, and can elicit drastic responses in the plant. In our study, we attempt to address this problem by examining soybeans tolerant to aphid infestation. Tolerance has a much broader genetic basis than resistance and is therefore more durable. We infested soybean plants tolerant to soybean aphid and in parallel another variety that was susceptible. For each, total RNA and mRNA were extracted to perform subtractive hybridization. From the resulting subtracted libraries, we sequenced 100 clones each to get an overview of the differences in the reactions of the two genotypes at the transcript level. The sequences were submitted to GenBank through a BLAST search to find putative identities and functions. These were further classified into functional groups. We will present and discuss the results of this analysis.

Presenter: **Stephanie Bonner (32)**

Copresenters: **Angela Wang**, Julie Shaffer, and Kimberly Carlson

Advisor: Kimberly Carlson

Title: *Characterization of Microbes in Frass From Two Populations of Drosophila Melanogaster*

Throughout an organism's life span, it is constantly being bombarded with various external and internal agents that can damage its

DNA. For more than 90 years, *Drosophila melanogaster* has served as a pivotal model organism allowing the study of genetics and to uncover what factors can contribute to the understanding of aging and longevity. One of these factors may be the presence of bacteria, which may influence both host-fitness and longevity. *Drosophila* live in perpetual contact with their frass and are therefore constantly being exposed to the microbes within it. Preliminary studies using two different populations of *D. melanogaster* show that exposure of one population to another population's frass affects life span. In this experiment, the identity of bacterial species within the frass of the two populations were determined by standard microbiological techniques and 16S polymerase chain reaction. Because the relationship between microbes and the evolution of life span is unclear, characterization of microbes influencing life span is important to understanding the evolution of aging.

Presenter: **Brittany Brown (33)**

Advisor: Dr. Brad Ericson

Title:

Insects protect themselves from pathogens via two pathways, the cell-mediated pathway and the humoral pathway. In *Manduca sexta*, tobacco hornworm, major components of the humoral response are proteins known as Immulectins (IML). There are four evolutionarily related IMLs in *M. sexta*. An understanding of the regulation of the IML genes requires the determination of the exon-intron structure of the genes. Based upon the previously published mRNA sequence for IML-1, we designed Polymerase Chain Reaction (PCR) primers. These primers were used to isolate various portions of the gene. These PCR products were then cloned and sent to UNL for DNA sequencing. The results predict that the IML-1 gene is comprised of five exons and four introns.

Presenter: **Amanda Calleroz (34)**

Advisor: Kimberly Carlson

Title: *Characterization of OTK18 Function in Monocytic Cells using RNAi*

Information about the molecular mechanisms involved with Human Immunodeficiency Virus (HIV) replication and integration into the host genome is imperative. Attention has turned toward OTK18, a human transcriptional suppressor expressed in all normal human tissues that has a role in the regulation of HIV-1 infection of mononuclear phagocytes. Although OTK18 is expressed in all normal human tissues, its homeostatic function is yet to be characterized. In an effort to begin to determine the homeostatic function of OTK18, RNA interference (RNAi) experiments were performed to inhibit OTK18 gene expression in a human monocytic cell line, U937. The monocytes were subjected to RNAi with OTK18 micro RNAs (miRNA), GAPDH miRNA (positive control), and water (negative control). Detection of OTK18 and GAPDH mRNA silencing was completed using quantitative reverse transcriptase polymerase chain reaction (qRT-PCR). In addition, target immune genes hypothesized be regulated by OTK18 will be uncovered using PCR superarrays in conjunction with the RNAi in the future. The results of this study provide information on the regulation of OTK18 of immunity genes, as well as the homeostatic function of this molecule.

Presenter: **Katie Langenfeld (35)**

Copresentors: **Anna Barber, Austin Nuxoll**

Advisor: Paul Twigg

Title: *Assessment of differential gene expression in buffalograss cultivars exposed to chinch bugs using subtractive hybridization*

Buffalograss is a turfgrass with great potential in water conservation efforts in home landscaping and golf courses. Buffalograss has problems with an insect pest called the Western Chinch Bug. There are tolerant varieties of buffalograss. The goal of our project was to identify genes linked to chinch bug tolerance in these cultivars that can eventually be used as markers to assist in directed breeding efforts. To accomplish this, tolerant and susceptible buffalograss cultivars were infested with chinch bugs. RNA was extracted from the tissues and used in a process, which subtracts the genetic sequences common

to both treatments called subtractive hybridization. In this procedure, cDNA from both sources was allowed to hybridize overnight under stringent conditions. Following hybridization, the products underwent PCR, were cloned and sequenced to putatively identify the encoded proteins, which were then classified into various functional groups based upon BLAST searches and GO (Gene Ontology) categories.

Presenter: **Andrew Prosocki (36)**

Advisor: Wyatt Hoback

Title: *It 'Mite' Be the Right Host: Phoretic Mite Relationships with Burying Beetles*

Phoretic mites utilize other insects for transportation to ephemeral resources including carrion and maggots. These mites *Poecilochirus carabi* form close associations with burying beetles (*Nicrophorus* sp.) using them for transportation. I conducted experiments to test phoretic mite associations with host versus non-host species of *Nicrophorus* beetles. I also tested whether the sex of the beetle influenced the number of attaching mites. Finally, I tested the time since burial of the carcass on mites leaving their host. I found that mites strongly preferred the day-active *Nicrophorus* species and that more mites attached to females than males. Unlike previous studies, the mites did not preferentially attach to larger individuals. Within one day of burial, most mites leave their host and by five days nearly all have left the host. The results of these studies provide evidence that these mites represent cryptic species and that they differ from other studies which showed more mites on larger male *Nicrophorus* beetles.

Presenter: **Spencer Ruble (37)**

Advisor: Dr. Brad Ericson

Title: *RNAi-mediated Knockdown of IML-2 Gene Expression in Manduca sexta*

Lectins function as microbe recognition receptors in the innate immunity of insects. The basal expression of Immulectin-2 (IML-2) proteins in tobacco hornworm, *Manduca sexta*, is believed to assist in protection from pathogenic infections. Knock-down of IML-2 gene

expression is accomplished by injection of double-stranded DNA (dsDNA), a technique called RNA interference (RNAi). Injection of various dsRNA concentrations into *M. sexta* larvae is needed to characterize amount required to silence IML-2 gene expression. The half-life of IML-2 proteins and messenger RNA (mRNA) will also be analyzed to determine the time at which to challenge *M. sexta* larvae with a pathogen. Larvae will be challenged with three separate pathogens: *Serratia marcescens*, *Micrococcus luteus*, and *Saccharomyces cerevisiae*. Challenged larvae will be evaluated to determine if expression of the IML-2 gene correlates with immunity.

## Chemistry

Presenter: **Bobbi Arnold (38)**

Advisor: Frank A Kovacs

Title: *Biochemical Characterization of Hemoglobin and Myoglobin: an undergraduate teaching lab*

The purpose of this research is to design a four week lab for college level biochemistry. The first week of the lab would be Size Exclusion Chromatography Purification of Myoglobin/Hemoglobin Mixture where we will demonstrate the size difference of the native forms of these two heme containing proteins. The products from the purification will be analyzed in the second lab, Denaturing Gel Electrophoresis of Purified Myoglobin and Hemoglobin, which will demonstrate the similar size of the subunits of myoglobin and hemoglobin by looking at then denatured forms of the proteins. The third week of the lab is Protein Concentration Assay Using Bradford Assay where the concentrations of myoglobin and hemoglobin will be determined. The concentrations will then be used for the final lab, Heme Concentration via Pyridine Hemochromagen Assay. This assay allows for a mole:mole comparison of heme:purified proteins.

Presenter: **Anatole Mirasano(39)**

Advisors: Christopher Exstrom and Scott Darveau

Title: *Preparation and Characterization of Mixed Indium-Gallium-Selenium Nanocrystalline Materials*

It has been recently reported that the photovoltaic materials  $\text{CuInSe}_2$  (CIS) and  $\text{CuIn}_{1-x}\text{Ga}_x\text{Se}_2$  (CIGS) may be prepared by layering a  $\text{Cu}^+$  or  $\text{Cu}^{2+}$  solution on thin-film  $\text{In}_2\text{Se}_3$  or  $\text{In}_{2-y}\text{Ga}_y\text{Se}_3$  (IGS), respectively. Given the significant activation barriers to Ga and other group 13 element substitution for In in CIS, an analogous route for preparing nanocrystalline CIGS and related ternary chalcopyrites could prove attractive. Toward this goal, the first mixed indium-gallium-selenium nanocrystalline materials have been prepared and characterized. In oleylamine solvent,  $\text{InCl}_3$ ,  $\text{GaCl}_3$ , and Se were combined and heated to 210 C for two hours. During the course of this reaction, a variety of color changes were observed, culminating in a final yellow product that was shown by characterization to be an IGS material. The A1 phonon frequency was observed by Raman spectroscopy to be at 141  $\text{cm}^{-1}$  in contrast to the 151-157  $\text{cm}^{-1}$  frequencies observed in reported thin-film IGS materials. Solid-state intermediates were isolated and determined by Raman spectroscopy to consist primarily of Se, implying the formation of soluble In-amine and Ga-amine intermediates in the reaction.

Presenter: **David Paprocki (40)**

Advisors: Christopher Exstrom and Scott Darveau

Title: *Reaction Pathway Investigations of the Solvothermal Preparation of Nanocrystalline  $\text{CuInSe}_2$  in Chelating Amine Solvents: Effects of Added Salts and Solvent Coordinating Ability*

Interest in the development of more cost-effective, non-vacuum film production techniques has stimulated research in solution-based, solvothermal preparations of nanocrystalline  $\text{CuInSe}_2$  (CIS) and  $\text{CuIn}_{1-x}\text{Ga}_x\text{Se}_2$  (CIGS) materials for photovoltaic devices. Our group's investigations of these solvothermal preparation pathways in the coordinating solvent triethylenetetramine (trien) reveal sequential formations of  $\text{Cu}_{2-x}\text{Se}(s)$ , CIS, and CIGS. The presence of ammonium halide

salts in the original reaction mixture reduces CIS formation time from 24 hours to as little as 30 minutes through a competitive Cu-halide complex formation that limits  $\text{Cu}_{2-x}\text{Se}$  intermediate particle growth as evidenced by scanning electron microscopy data. Intermediate nanoparticle stabilization through the use of surfactant amine co-solvents proved unsuccessful due to immiscibility with trien. Raman spectroscopy data indicate that when preparing CIS in the more strongly-coordinating solvent ethylenediamine under copper-deficient conditions, non-chalcopyrite ternary impurities "possibly of the form  $\text{CuIn}_2\text{Se}_4$ " are produced.

Presenter: **Danielle Policarpio (41)**

Advisor: Dr. Annette Moser

Title: *Development of a Monolithic HPLC Column Capable of Separating & Quantifying Taurine, A Common Compound Found in Energy Drinks*

High performance liquid chromatography (HPLC) is a common technique used to separate various components in samples. In this project we propose to 1) Synthesize a chromatography column capable of separating the various components found in energy drinks and 2) Develop a laboratory procedure which could be implemented in either an undergraduate analytical or organic chemistry laboratory. This procedure would be submitted to the Journal of Chemical Education. The most common type of monolithic support used in chromatographic applications is a methacrylate monolith. The methacrylate support is formed by polymerizing a mixture of monomer (glycidyl methacrylate), cross-linker (ethylene glycol dimethacrylate) and porogen (cyclohexanol and dodecanol). Although the porogen does not actually polymerize, it is necessary for the creation of pores that allow for the solvent to flow through the monolith. This monolith can then be used as a chromatographic support capable of separating organic compounds. The monolith we will be synthesizing will have to be modified slightly to accommodate the separation of taurine from the other components in the energy drink. This will be performed by modifying the functional groups on the monomer to allow for ion-



exchange. Once the ion-exchange column is synthesized, We will develop a method which will allow for the separation and quantification of taurine. This will be performed by changing the composition of the eluent (mobile phase).

Presenter: **Megan Schliefert (42)**

Advisors: Christopher Exstrom and Scott Darveau

Title: *Use of Surfactant-based Solvents in the Preparation of Nanocrystalline CuIn<sub>1-x</sub>M<sub>x</sub>Se<sub>2</sub> (M = Ga, Al, B) Materials*

Surfactant amine and phosphine solvents are known for their utility in the solvothermal preparation of monodisperse nanoparticles, recently of the quaternary chalcopyrites CuIn<sub>1-x</sub>Ga<sub>x</sub>Se<sub>2</sub>. While studies of single-element nanoparticle formation indicate that these solvents form micelle structures in solutions, weakly coordinating to and stabilizing colloidal nanoparticles, solvothermal reaction parameters “temperature, reaction time, surfactant structure, reactant sources” have not been systematically studied in a quaternary system. We have prepared a series of CuIn<sub>1-x</sub>M<sub>x</sub>Se<sub>2</sub> (M = Ga, Al, B) nanocrystalline materials through the reaction of Cu, In, and M salts with Se in heated oleylamine and other surfactant solvents. In the primary procedure, the salts and oleylamine were combined at room temperature and heated, during which the reactants dissolved and formed a clear solution at 130 C. At 285 C, Se/oleylamine suspension was injected into the reaction mixture. Continued heating produced CuIn<sub>1-x</sub>M<sub>x</sub>Se<sub>2</sub> within 45 minutes. Reactions involving more soluble Cu, In, and M stearate salts and dissolved Se in trioctylphosphine indicated that product formation is optimized by the presence of colloidal Se particles and high-temperature nucleation/growth conditions. Reaction pathway comparisons to what our group has established for solvothermal CuIn<sub>1-x</sub>Ga<sub>x</sub>Se<sub>2</sub> preparations in chelating amine solvents will be discussed.

Presenter: **Ashley Vandeventer (43)**

Advisors: Christopher Exstrom and Scott Darveau

Title: *Use of Stearate Complexes as Metal Sources in the Preparation of Nanocrystalline CuIn<sub>1-x</sub>M<sub>x</sub>Se<sub>2</sub> (M = Ga, B) Materials*

Surfactant amine solvents such as oleylamine (OA) are proving useful in the preparation of nanocrystalline CuIn<sub>1-x</sub>Ga<sub>x</sub>Se<sub>2</sub> semiconductor materials. In some literature reports, soluble oleate complexes of Cu and In are used as starting materials. While this opens up possibilities for low-temperature nanoparticle growth pathways, metal oleates are not commercially available and are difficult to prepare and purify in the laboratory. As an alternative, our group is investigating the use of stearate complexes as metal sources. In addition to the previously reported copper-, indium-, and gallium-stearate complexes, a novel boron-stearate complex has been prepared from the reaction between boric acid and sodium stearate in acidic aqueous solution. In IR characterization, In, Ga, and B content primarily affects  $\nu(\text{COO})$  frequencies in analogy to those observed for corresponding acetate salts. The stearate complexes dissolve in OA at lower temperatures (50-60 C) than the corresponding chloride salts (130 C). The reaction between Se and copper and indium stearates in OA yields nanocrystalline CuInSe<sub>2</sub> (CIS) of comparable quality and morphology to samples previously reported in the literature. Effects of stearate complex use in the incorporation of Ga and B in the CIS chalcopyrite structure will be discussed.

Presenter: **Steven Vitosh (44)**

Advisor: Frank Kovacs

Title: *Characterization of APX using microplate assays*

In this study, we are characterizing an enzyme called ascorbate peroxidase. This enzyme functions in the plant as an anti-oxidant catalyzing the reduction of hydrogen peroxide to water while oxidizing either an ascorbate or aromatic molecule. We have worked to develop a repeatable microplate assay that reliably allows us to see background ascorbate oxidation and enzymatic ascorbate oxidation consistently. Once this procedure is developed, it can possibly be used to show APX inactivation by certain aromatic substrates using a simple microplate

procedure. This procedure will also allow for larger data sets therefore reducing error.

Presenter: **Jordan Westengaard (45)**

Advisor: Frank Kovacs

Title: *Development of a Switchgrass Expression Genebank*

Switchgrass is a plant that has been targeted by the US Department of Energy as a biofuel crop. When compared to other ethanol crops like corn, then energy produce from switchgrass is estimated to be approximately twenty times greater. However, the biochemistry for this plant is relatively uncharacterized. This project is the first step in the development of a UNK Switchgrass Genebank. We have access to a number of cDNA libraries made from switchgrass tissue. Here we will outline the protocol we have used to find and clone genes from the library into protein expression vectors containing the histidine purification tag. We also present results from the cloning of the first four genes for our genebank.

Presenter: **Yang Yang (46)**

Advisor: Haishi Cao

Title: *Developing sensor for Hg<sub>2+</sub> with high affinity in aqueous media*

Mercury pollution occurs through a variety of natural and anthropogenic sources. It cause serious environmental and health problems. Developing sensor for Hg<sub>2+</sub> with high affinity in aqueous media is of great interest. Several fluorescent sensors based on cyanine dyes have been synthesized for Hg<sub>2+</sub> detection. These sensors show high binding affinity to Hg<sub>2+</sub> over other heavy metal ions. Photoinduced Electron Transfer (PET) cause the significant fluorescence enhancement of sensor after binding Hg<sub>2+</sub>.

## **Computer Science and Informational Systems**

Presenter: **Michael Andrews (47)**

Advisor: Sherri Harms

Title: *Online Data Collection Feasibility Study*

This research project will study the scientific quality of data collected from on-line forms of input. Using applications like Google Trends, a few polls from large websites (like www.msnbc.com or www.cnn.com), and a few polls from smaller websites, this research will demonstrate how poll results can be skewed by someone who tries to falsify the data. After running scripts to try and falsify input, the results from these polls will be analyzed against their previous values to show change. Preliminary testing shows that some website polls are fairly easy to skew. This research will inform web developers about the potential risks to ensuring data integrity in a manner which can be used to guide the design of more reliable website data collection methods.

Presenter: **Casey Glatter (48)**

Advisor: Sherri Harms

Title: *Using Regression Algorithms to Predict Future Weather Conditions*

This research uses local weather conditions from the past six weeks along with current global weather conditions to make predictions. We first tested selected algorithms on weather station data from seven states (Nebraska, South Dakota, Montana, North Dakota, Colorado, Wyoming, and Kansas), using early spring data to predict weather conditions two weeks later. We expanded the original time frame to test vegetation conditions throughout the growing season. We created a Java program that used the five best algorithms from the first research and historical weather data from 1989-2006 to create a model through which the predictions could be made. After processing all the algorithms with all the historical datasets, we found that LinearRegression, an algorithm that expresses the outcome as a linear combination of its attributes, provided the most optimal results. Future work will use this algorithm and these results to create an application that will allow a user to input current climate conditions of a specific area to predict drought/vegetation stress up to two months in the future in specific regions of the U.S.

Presenter: **Anne Hillebrand (49)**

Advisor: Sherri Harms

Title: *The Simplex Algorithm Cycles*

The simplex method is still widely used to solve linear problems, although it has been created over 60 years ago. The simplex method usually runs fast, but its worst case complexity is exponential time. The way the simplex algorithm is used and this worst case scenario will be explained on this poster. The simplex algorithm walks from basic solution to basic solution until the maximum solution is reached, while making sure that with every step the solution is feasible and will not decrease the objective function. Sometimes however the simplex method fails to finish fast because it “cycles” or “stalls”. This means that it keeps going through the same basic solutions over and over again. This is not only a theoretical point, although it does not occur in practice often. It is therefore interesting to find out in what circumstances cycling and stalling do occur.

Presenter: **Paden Hogeland (50)**

Advisor: Xuli Liu

Title: *Utilizing Idle computers on the UNK campus through Kerberized Services*

At the University of Nebraska at Kearney (UNK), many computers go unused while some faculty and students complain that not enough computing power is available for their research projects. Our solution is to develop software which accepts tasks from legitimate UNK users using kerberos. Kerberos is a network protocol that proves the identity of a user securely over a non-secure network. Once a user is authenticated to log into his/her computer through the Authentication Service (AS) of a kerberos server, he/she is granted a Ticket to Get Tickets (TGT). When the user accesses a kerberized service on the network, instead of presenting the user name and password again, he/she can use this TGT to obtain a service ticket for that service from Ticket-Granting Service (TGS) of the Kerberos server. We are developing Kerberized daemon services that run on each computer and only approve requests from legitimate users.

Presenter: **Philip Lempke (51)**

Advisor: Xuli Lui

Title: *Transparent Access of Idle Systems*

The University of Nebraska Kearney (UNK) currently offers a wide variety of software and powerful hardware on UNK campus for students. Unfortunately, most of these systems and the software they contain are not publicly accessible. Because these systems are not publicly accessible, students may not even know of their existence letting the software and systems sit idle. The solution to this problem is to create an interface that allows each UNK user to view a list of resources based on his or her identity, this way the security of the network is still maintained. The proposed interface will allow the user to select a service which will then be executed remotely. The service interface will be streamed to the user transparently, so even though the user is in a completely different location than the service, it is as if the service is installed on the user’s current machine.

Presenter: **Anatole Mirasano (52)**

Copresentors: **Ryan Henszey, Joseph Ostrander, Wang Jianguo, Jacob Mason, Anne Hillebrand, Casey Glatter, Raymond Williams**

Advisor: John Hastings

Title: *Basketball Playing Robots*

This project presents the result of a one-on-one basketball 3 point shooting robot competition. Past research has focused on methods for simply dropping the ball through the hoop, where this work extends the previous work by investigating the mechanics and logic for long range shooting. In addition to overcoming the difficulty of long range shooting, the objectives of this project were: --To further understand the interplay between the physical design and the mental capacity of a robot in solving a problem, --Experiment with multiple physical designs as well as mental, or algorithmic designs, --Compare various robotic designs by having them compete against one another. The robots compete in a simulated basketball court. Initial testing suggests that a catapult-based design was the most efficient.

Presenter: **Aaron Steele (53)**

Copresenter: **Jordan Van Winkle**

Advisor: John Hastings

Title: *Artificial Intelligence in the Third Dimension with Automatic Case Elicitation*

Case-Based Reasoning (CBR) is an artificial intelligence reasoning approach that applies previously acquired knowledge, stored in the form of cases (or prototypical scenarios), to a new problem. CBR systems are generally comprised of manually acquired cases and are limited to very specific domains with resulting domain-dependent parameters. A more robust method of knowledge acquisition and reasoning is automatic case elicitation (ACE). An ACE reasoner learns from scratch utilizing a process of trial and error by repeatedly attempting actions with no specific knowledge about the domain (e.g. rules or strategies) and adding the results of the chosen action to the knowledge base. These actions are then assigned a success rating and will get ranked and ordered according to their performance. If a matching case is encountered again, the highest ranked action will be selected from the knowledge base and will have its success rating updated accordingly. Once a maximum number of actions is stored, the reasoner starts to “forget” the worst ranked cases by deleting them from the knowledge base. The performance of an ACE reasoner improves over time as the reasoner becomes more familiar with its environment. Our initial reasoner was first developed for the domain of Go, a two-dimensional board game. It was then expanded to the domain of Holo-racer, a two-dimensional racing game, and finally to a game in three dimensions. Our results show the domain independence exhibited by ACE as it is easily adapted to multiple unrelated domains and dimensions, which otherwise would have been timely to develop using an alternate technique.

Presenter: **Aaron Steele (54)**

Advisor: John Hastings

Title: *Basic Speech Recognition*

This project attempts to demonstrate the ability to create a basic yet adaptable voice recognition system. Other voice recognition software

requires extensive engines, grammars, and vocabularies. The recognition method implemented by my recognizer isn't geared toward speech to text, but rather toward the ability to distinguish between two individual voices. This objective is accomplished through a short training phase, in which the recognizer records a specific set of audio samples from an individual. These recordings will then be converted from analog to a digital state in which they will be stored in the recognizer's memory. The recognizer will then compare and analyze a current sample with the saved samples and will attempt to statistically determine if they share a common origin.

## Physics

Presenter: **Carl Corder (55)**

Advisor: Liubov Kreminska

Title: *Optical Singularities*

Optical vortices are screw dislocations in the phase space of a light wave. Such light fields carry quantized orbital angular momentum and are usually characterized by a bright ring with a dark point of zero intensity at the center. Vortices are commonly produced in the lab by using computer-generated holograms or spiral phase plate modulators to create Laguerre-Gaussian waves. However, by using a He-Ne laser (wavelength 632.8 nm, TEM<sub>00</sub> mode) in conjunction with a nested Mach-Zehnder interferometer, our group is investigating an alternative way of creating optical vortices by interfering three plane waves at small angles. Theoretically, we expect the intensity pattern of this interference to be a hexagonal tessellation with a helical phase space distribution (vortex) located at each of the six corners of the hexagon.

Presenter: **Vanessa Engquist (56)**

Advisor: Liubov Kreminska

Title: *Creation and Investigation of Optical Vortices*

Our group is investigating creation of optical vortices by means of interfering three plane waves. Optical vortices are screw dislocations in the phase space of a light wave and are usually

characterized by a bright ring with a dark point of zero intensity at the center. Using a He-Ne laser in conjunction with a nested Mach-Zehnder interferometer, we can achieve small angle interference between the three beams. Finally, a fourth reference beam is reflected off a movable mirror which is mounted to a piezoelectric motor. By shifting the mirror a fraction of the wavelength we are able to finely increment the optical path difference between the beams and create a series of progressing patterns. Capturing these patterns on a CCD camera, we will be able to reconstruct the phase. Theoretically, we expect the intensity pattern of this interference to be a hexagonal tessellation with optical vortices located at each of the six vertices of the hexagon.

Presenter: **Matthew Noffke (57)**

Advisor: Mike Larsen

Title: *Characterizing the sub-pixel and spatial properties of rain in the rain field.*

During the summer of 2008, a rain gauge array, consisting of tipping bucket rain gauges, was constructed and placed near Kearney, NE, to measure the statistical and physical properties of rain as it fell in the rain field. This measured data was compared to radar reflectivity data for that same area which allowed us to also analyze the statistical properties of the differences between the two measuring methods. The combined data for two rain events was analyzed and reported in the Fall of 2008. This is a continuation of the same project. Events that did not appear in earlier research findings have been analyzed, the addition of new equipment, and the use of fractal statistics are included in this continuation of the Rowe Array project.

Presenter: **Kyle Smydra (58)**

Copresenter: **Ben Fullerton**

Advisor: Michael Larsen

Title: *Acoustical Disdrometer*

We are attempting to construct a more affordable version of an instrument similar to a Joss-Waldvogel raindrop disdrometer. Through use of a simple RC circuit, we use the amplification of the sound of drops hitting a surface to detect the arrival times and sizes of individual raindrops.

Our current (working) prototype is now undergoing calibration and characterization tests. It is our goal to have designed a usable, affordable scientific instrument that can be utilized in the field by the end of the semester.

## Mathematics and Statistics

Presenter: **Aaron Steele (59)**

Advisor: Aaron Clark

Title: *Visual Representations of Raw Scientific Data*

As technology marches forward and more advanced scientific instruments become readily available, there is an increasing demand for methods of visually representing raw data from these high-tech devices. My project is focused on two specific visualizations using Java and OpenGL. The first visualizer was designed for representing large scale radiative transfer simulations, either in real-time or from stored data. The visualizer renders in 3 dimensions multiple particles traversing a given medium and graphically indicates all collisions and exit points in the volume. The second visualizer is geared towards capturing and representing raw data from a sonic anemometer. Features of this visualizer include a vector arrow in three-space that shows the direction and magnitude of the air-flow captured in real-time, and the ability to schedule data capture to a file for future analysis.

## Professional & Applied Sciences

### Communication Disorders

Presenter: **Sarah Jensen (60)**

Advisor: Linda Crowe

Title: *Differences in Toddler Communication Based on Movement Type*

The question I will answer by completing this research project is “Are there differences in communication based on the type of movement that is occurring?” I will complete a post hoc

analysis of the collected data on 15 different children. The transcripts I will review are taken from interactions between children and their teachers or peers in a preschool setting. I will code for five different types of movement each child performs in the transcripts. While looking at the different types of movement, I will also code the communication occurring with each type. To do this, I will count the number of utterances (complete statement), words (single word), and morphemes (smallest meaningful unit in the grammar of language). I will then compare the communication in conjunction with the movement that occurred, such as the length of utterance (number of words) compared to the type of movement that happened when the utterance was said.

Presenter: **Sarah Jensen (61)**

Advisor: Michelle McKelvey

Title: *Family Members Preference of Visual Material Used with Patients with Severe Chronic Aphasia*

The purpose of this study is to determine whether six family members of persons with aphasia identified a preference for personally relevant photographs, non-personally relevant photographs or iconic images to be used by their family members to communicate. McKelvey (2007) documented a preference by persons with aphasia to use personally relevant contextualized photographs when communicating with family members. The researchers investigated whether the family members of persons with aphasia also preferred using personally relevant contextualized photographs instead of non-personally relevant photographs or iconic images. Results of this study showed that family members of persons with aphasia preferred personally relevant contextualized photographs to non-personally relevant photographs or iconic images.

## **Health, Physical Education, Recreation & Leisure Studies**

Presenter: **Lacey Batt (62)**

Advisor: Dr. Paul Bishop and Dr. Erin Holt

Title: *Training Para-Educators to facilitate moderate to vigorous physical activity through structured recess.*

Physical activity is an important component of a healthy lifestyle. In most cases, physical education and recess at school are the only sources of physical activity a child receives. Structured recess has been proposed as a mechanism for increasing intensity of physical activity of elementary school children. The purpose of the current study was to train Para-educators how to facilitate fitness based activities for school children during recess. A training session was held for the Para-educators which included the teaching of 10 structured games and advice for instruction and student participation. Para-educators' knowledge was tested before and after the training session on the games taught and the health benefits of physical activity.

Presenter: **Whitney Clark (63)**

Advisor: Gregory Brown

Title: *Changes in Ventilation During Physically Active Video Gaming*

Changes in Ventilation During Physically Active Video Gaming. Whitney Clark. Faculty Mentor: Gregory A. Brown, Ph.D. Human Performance Laboratory, University of Nebraska at Kearney. Playing video games is a sedentary behavior that contributes to the increasing incidence of obesity. However, "Exergaming" (such as Dance Dance Revolution and Nintendo Wii) can purportedly be substituted for traditional exercise activities. A hallmark of aerobic exercise is that it increases ventilation. However, the ventilatory response to exergaming is unclear. The purpose of the current study is to compare changes in ventilation between playing physically active and sedentary video games. 25 children (15 males, 10 females), ages 10-16 years, played Dance Dance Revolution, Nintendo Wii Tennis, Nintendo Wii Boxing, and a sedentary video game (Gran Turismo 4) for 15 minutes in a randomly ordered cross over manner. Pulmonary ventilation, respiratory rate, and tidal volume were measured at 15 second intervals throughout the 15 minutes of game play in each condition

and will be compared using a 2 way (gender X game) repeated measures analysis of variance.

Presenter: **Jennifer Fritson (64)**

Copresenter: **Maggie J. Sass**

Advisor: Kate Heelan and Erin Holt

Title: *How Active Are Children at Recess?*

New research suggests that regular recess and fitness can influence behavior, concentration, and academic performance; however 30% of children receive little or no daily recess (Barros et al, 2009). The purpose of this study is to determine time spent at recess, physical activity levels of children during recess, and the impact of playground equipment availability. Direct observational tools were used at twelve randomly selected 3rd-5th grade elementary recess periods within the Kearney Public School District to determine the child to equipment ratios, as well as physical activity intensity levels. Direct observation methods consisted of scanning the playground and recording the number of students playing each specific activity, the amount and type of equipment being used, and the intensity level of each activity. Intensity levels were measured as sitting, standing, walking, jogging, or sprinting. Time spent at recess, child to equipment ratios, and intensity levels of physical activity will be evaluated by grade and gender.

Presenter: **Sarah Horst (65)**

Advisor: Greg Brown

Title: *Salivary Cortisol And Blood Lactate Responses To Physically Active Video Gaming In Young Adults*

Wang and Perry reported that blood lactate concentrations were not changed playing a traditional sedentary video game, but blood lactate and salivary cortisol response to physically active video games had not been measured. 20 healthy, young adults (10 males,  $22.5 \hat{A}\pm 0.5$  y; 10 females,  $21.0 \hat{A}\pm 0.4$  y) engaged in 15 minutes of physically active video game play (Wii Boxing, Nintendo inc.) in a randomized manner against a human opponent or computer system, measuring blood lactate and salivary cortisol concentrations before and after

each gaming session. Physically active video games did not alter blood lactate in either gender or condition. Females had higher ( $P<0.05$ ) salivary cortisol concentrations than males. However, there were no changes in salivary cortisol concentrations due to intervention. Activity when playing a physically active video game is not enough to alter blood lactate or salivary cortisol, indicating physically active video gaming is not a vigorous exercise.

Presenter: **Jessica McWha (66)**

Advisor: Greg Brown

Title: *Energy Expenditure While Playing Wii Boxing Against a Human Opponent*

Twenty college-aged adults (10 males:10 females) played in a randomized manner the Nintendo Wii boxing for 12 minutes against a human opponent while heart rate, oxygen consumption, and energy expenditure were measured. Heart rates (beats/min) while playing the video game were higher ( $P<0.05$ ) for both the Human ( $103.8 \hat{A}\pm 4.31$ ) and Computer ( $104.6 \hat{A}\pm 4.58$ ) opponent than at rest ( $75.4 \hat{A}\pm 2.90$ ), with no differences between gender or video game opponent. Oxygen consumption (ml/kg/min) while playing the video game was higher ( $P<0.05$ ) for both the Human ( $14.6 \hat{A}\pm 1.80$ ) and Computer ( $14.4 \hat{A}\pm 1.66$ ) opponent than at rest ( $4.4 \hat{A}\pm 0.51$ ), with no differences between gender or video game opponent. The present data suggests that playing against a computer or human opponent does not alter the magnitude of increase in energy expenditure associated with physically active video game play.

Presenter: **Bradley Peters (67)**

Advisor: Dr. Erin Holt & Dr. Kate Heelan

Title: *Accumulation of moderate to vigorous physical activity of 4th grade students during structured recess as opposed to free play.*

Establishing enthusiasm for physical activity at an early age may act to promote and preserve interest in physical activity as children age. Recess, although limited in some schools, should provide an opportunity for students to achieve their daily physical activity requirements if the

children are indeed active. The purpose of this study was to determine if 4th grade students accumulate more moderate to vigorous physical activity (MVPA) when provided a structured recess with adults leading fitness based games as opposed to 'free play'. MVPA was assessed using MTI accelerometers prior to the structured recess program (baseline), during a structured recess with adults present, and during 'free play' after adults had taught students new games. Comparisons between all three time points will be compared using ANOVA.

Presenter: **Matthew Schukar (68)**

Advisor: Gregory Brown

Title: *Validity of heart rate and accelerometer for predicting the energy cost while playing Wii boxing*

Several investigations have used accelerometry to evaluate whether exergaming (e.g. Nintendo Wii) is truly exercise. While accelerometry allows for the evaluation of physical activity with minimal obstruction of movement, the use of accelerometry to predict energy expenditure during physically active video game play has not been validated. This project compared accelerometry to indirect calorimetry for the measurement of energy expenditure in 18 college age adults (9 males, 9 females) while playing Nintendo Wii Boxing for 15 minutes. Although there was a significant ( $P < 0.05$ ) relationship ( $r^2 = 0.336$ ) between energy expenditure from accelerometry and indirect calorimetry, the energy expenditure from accelerometry ( $0.61 \pm 0.26$  kcal/kg/h) was less ( $P < 0.05$ ) than indirect calorimetry ( $0.81 \pm 0.44$  kcal/kg/h). These data suggest that while accelerometry may be used to classify the level of physical activity as low, moderate, or vigorous during physically active video game play, accelerometry significantly underestimates energy expenditure during physically active video game play.

Presenter: **Miki Wilson (69)**

Advisor: Greg Brown

Title: *Energy expenditure while playing the Wii Fit video game.*

Physical activity has decreased due to technology and other advances, resulting in an increased prevalence of obesity in the United States. In particular, mothers of young children tend to reduce their level of physical activity. The Nintendo Wii Fit is marketed towards parents as a fun way to increase physical activity and fitness while using their children's video gaming system. The objective of this study is to determine if playing Wii Fit can be regarded as exercise. Ten mothers (mean  $\pm$  SD years) of young children will have energy expenditure and heart rate measured during 10 minutes of seated rest, 10 minutes of Wii Fit Running, and 10 minutes of Wii Fit Hula Hooping. Heart Rate and energy expenditure will be compared using a one way analysis of variance. These data will help determine if playing Wii Fit can be a useful tool to reverse sedentary lifestyle behaviors and obesity.

Presenter: **Britney Zeller (70)**

Advisor: Kate Heelan

Title: *Nutrition Knowledge, Weight Status, and Fitness of Middle School Age Students*

Studies indicate that 70% of obese adolescents grow up to become obese adults and 11% of adolescents in the United States are considered obese (Dehghan, M et al. 2005). Childhood obesity is an impending epidemic and there is an increasing correlation with overweight children and poor nutritional and activity choices. (Dehghan M, et al. 2005) The purpose of this study was to investigate the current nutrition knowledge, weight status, and fitness of middle school students. Eighteen middle school students (4 girls and 14 boys) age  $11.65 \pm 0.62$  years were given a standard 9 question nutrition knowledge questionnaire assessing their nutrition label knowledge (LL), My Food Pyramid knowledge (FP), energy balance (B), and fast food choices (FF). Height and weight were measured and Body Mass Index (BMI) was calculated as body weight (kg) divided by height ( $m^2$ ). Fitness was evaluated using the Progressive Aerobic Cardiovascular Endurance Run (PACER) to estimate  $VO_{2max}$ . Nutrition knowledge, weight status, and fitness were



calculated using percentiles, mean, and standard deviation.

## Committee

Presenter: **Student Assessment Committee (71)**

Copresentors: **Jessy Hansen, Russell Crawford, Abigail Harris, April Becker**

Advisor: Jeanne Butler

Title: *Student Preferences for Engaging Teaching Techniques for Learning*

This poster presents the results from the Student Instructional Preferences Survey administered by the UNK Student Assessment Committee to UNK students in Spring, 2008. The survey was administered to determine which types of classroom instructional techniques students prefer and to identify how often these instructional techniques were actually being used in classrooms. The instructional techniques chosen for the survey ranged from less engaging techniques to those that fostered greater engagement in and out of the classroom. The techniques ranged from providing study guides, distributing sample work before an assignment, and providing overviews for a lecture to breaking up lectures with other activities, using small groups in class, and providing real-world examples/experiences. The survey results indicated which instructional techniques the students found to be most helpful and how their preferences for an instructional technique compared to the frequency it is used in classrooms. Additional results identified the correlation between students' GPAs and their instructional preferences; student differences in instructional preferences based on the student's year in college (freshman, sophomore, junior, senior, and graduate) along with instructional preference based on gender.

# Graduate Studies

## Biology

Presenter: **Jordan Katt (72)**

Copresentors: W. Wyatt Hoback, Keith Koupal  
Advisor: Wyatt Hoback

Title: *Where's Walleye? Assessing the Impact of Adding Cobble Substrate to a Nebraska Irrigation Reservoir*

Walleye (*Sander vitreus*) recruitment is highly variable in Sherman Reservoir, Sherman County, NE. One factor that may affect year-class strength is the availability of quality spawning substrate. It is thought that most walleye spawning activity occurs at the dam because of the large rip-rap found there. In 2005, this rip-rap was fortified using cement slurry which has greatly reduced its quality as walleye spawning habitat. In 2008, 0.10ha of cobble substrate (12-15 cm in diameter) was placed in the reservoir to provide high quality spawning substrate. The objective of this study was to evaluate use of the spawning habitat by walleye. We sampled the density of adult walleye using electrofishing and the density of eggs spawned using egg sampling disks during March-April in 2007 and 2008. Construction of the spawning habitat delayed filling of the reservoir, which prevented the substrate from being available in 2008 until late in the spawning season. The data shows in 2007, the majority of spawning took place along the dam ( $1893 \pm 596$  WAE/hr;  $677 \pm 147$  eggs/m<sup>2</sup>), while minimal spawning occurred in other areas of the reservoir ( $119 \pm 21$  WAE/hr;  $196 \pm 92$  eggs/m<sup>2</sup> at the second highest site). In 2008, the dam again had the highest density of adults ( $2997 \pm 764$  WAE/hr) and highest density of eggs ( $680 \pm 115$  eggs/m<sup>2</sup>). A high density of walleye eggs was observed on the cobble substrate ( $604 \pm 202$  eggs/m<sup>2</sup>) near the end of the spawn in 2008. This evaluation will continue in 2009 when the cobble substrate will be available throughout the spawning season.

Presenter: **Kristy Rickert (73)**

Advisor: Joe Springer

Title: *Mitochondrial DNA and Morphological Analyses of a Hybrid Zone of Short-tailed Shrews (Blarina) in South-Central Nebraska*

Hybrid zones are regions, often narrow, where genetically distinct populations are in contact, mate, and produce hybrid offspring (intermediates). Hybrid zones are natural laboratories for studying evolutionary and ecological processes. The adjacent boundary (contact zone) in Nebraska between 2 species of short-tailed shrews, *Blarina brevicauda* and *B. hylophaga*, was examined in southeastern Nebraska for possible hybridization, but little is known about it further west into south-central Nebraska. This study investigated the location of the contact zone, and the extent and direction of hybridization between short-tailed shrews in south-central Nebraska using a combination of morphological and mitochondrial DNA analyses. The location of the contact zone was identified in 3 counties in south-central Nebraska, and 8 potential hybrids have been identified thus far. The results of this study provide a foundation for research on the contact zone between short-tailed shrews in south-central Nebraska, and contribute to the limited knowledge about hybrid zones.

Presenter: **John Riens (74)**

Advisor: Wyatt Hoback

Title: *Assessment of the Macroinvertebrate Health in the Rainwater Basin Wetlands of Nebraska*

The Rainwater Basin is one of the most endangered wetland ecosystems in North America. This ecosystem is critical to many species including migratory waterfowl. Land use and runoff from agriculture and cattle confinement operations are likely to be reducing the basin's health and diversity, however little information exists concerning macroinvertebrates. Twenty-two locations were assessed for water quality parameters, vegetation composition, and macro-invertebrates identified to genus. Samples were collected biweekly starting in April through July for two years.

Macroinvertebrate diversity was impacted in areas with little buffer although the effects were not pronounced. Institution of a more effective vegetative buffers strip may reverse this trend to improve ecosystem quality and provide for invertebrate resources for migratory birds.

Presenter: **Christopher Sullivan (75)**

Advisor: Wyatt Hoback

Title: *Diet Analysis of Larval Gizzard Shad (Dorosoma cepedianum) in Harlan County Reservoir*

Gizzard shad, *Dorosoma cepedianum*, were stocked in Harlan County Reservoir to provide a forage base for sport fish. While they once maintained a stable population in the reservoir, recent surveys suggest their abundance has increased up to 653% from previously known levels. Until now, no studies have been conducted which evaluated the potential impacts of these abundant fish on the aquatic community in the reservoir. In previous years, zooplankton density declines in the reservoir coincided with the peak of larval gizzard shad abundance. To determine if gizzard shad were responsible for these declines, we examined the diet components of larval gizzard shad and compared them to zooplankton densities throughout the reservoir during the summer of 2008. This process provided baseline information about the food habits of larval gizzard shad which appear annually in the reservoir. This is a preliminary report of the diet analysis data, including sple processing methods and discussion of further work and analysis of the data.

Presenter: **Clint Williams (76)**

Advisor: Julie Shaffer

Title: *A Comparison Between the Density of Waterfowl and Concentration of Fecal Bacteria in Small Watershed Ponds in Northwest Iowa*

*Escherichia coli* and fecal coliform bacteria have been used as the standard for determining the health of a waterway. This study has been designed to find a direct correlation between the increase in waterfowl concentration on a body of water and the increase of fecal bacteria over time. Two locations on three ponds were

sampled twice a month during the fall waterfowl migration period. Water samples were tested using IDEXX quanti-trays to determine the most probable number of bacteria per 100mL of water (MPN/100mL). Four locations showed increases in both total coliform and E. coli after a major rain event. Three locations showed an increase after the November peak of waterfowl population. One other site had an increase in total coliform but a decrease in E. coli after the population peak. These data strongly suggest an increased risk to recreational users; however, further investigation would be warranted.

Presenter: **Chelsey Young (77)**

Copresenters: W. Wyatt Hoback, Josh Cloeter, Justin Haas, Keith Koupal

Advisor: Dr. W. Wyatt Hoback

Title: *A Nebraska Assessment of Plains Topminnow (Fundulus sciadicus) Distribution and Potential Threats*

The plains topminnow, *Fundulus sciadicus*, was once distributed in the United States from the Mississippi River to the Rocky Mountains, north to South Dakota and as far south as Oklahoma. Two centers of distribution are recognized. One is centered in Nebraska and the second is centered in Missouri. The geographic range of plains topminnow has been greatly reduced in the past several decades. Plains topminnow are now considered a species of special concern in the state of Nebraska and listed as a Tier 1 species in the Nebraska Natural Legacy Project. Elimination of plains topminnow has been associated with introduction of invasive species, as well as loss of backwater habitats due to drought and lowered water tables. The objective of this project is to provide an updated assessment of plains topminnow distribution and population status as compared to all available historical records in the state of Nebraska. Recently plains topminnow were sampled and it was discovered that the topminnow have been functionally extirpated in over 77% of 528 historic Nebraska sites sampled. The sampling of the remaining historic plains topminnow sites will continue in the 2009 season.

Presenter: **Lindsay A. Vivian (78)**

Copresenters: Dr. Wyatt Hoback, Dr. Odair Fernandes, Alexandre Menezes

Advisor: Dr. Wyatt Hoback

Title: *The effects of different volatiles on Telenomus remus (Hymenoptera: Scelionidae) behavior*

*Telenomus remus* is an egg parasitoid of the family Scelionidae and has been released as a biological control agent of the important crop pest, *Spodoptera frugiperda* in many countries, including the U.S. and Latin America. However, *T. remus*' success in the field has been limited, for unknown reasons. This could be due to interspecies competition or poor host site detection. It has been shown that plant volatiles, induced by herbivory or herbivore egg oviposition, are important in recruiting natural enemies for protection from herbivores. These plant volatiles have been labeled as synomones. Furthermore, kairomones, such as sex pheromones or volatiles from adult lepidopteran scales have been shown to be important in parasitoid response. In better understanding plant - herbivore-parasitoid interactions, the use of volatiles to enhance biological control agent efficacy is a possibility. If agroecosystems can be manipulated to release a certain attractive volatile, Integrated Pest Management strategies could be enhanced. Thus, the goal of this study was to assess the effects of different volatiles on the behavior of *Telenomus remus*. *T. remus* was reared on *S. frugiperda* eggs. Adult *S. frugiperda* were reared under laboratory conditions. Corn (*Zea mays*) and tomato (*Lycopersicon esculentum*) plants were grown in a greenhouse and kept free from herbivory until the bioassays began, at which point *S. frugiperda* larvae were introduced to the plants. Using a four-armed olfactometer, the response time, first and last choice to different volatiles were all documented. Bioassays included injured plants vs. non-injured plants and injured plants with and without *S. frugiperda* scales vs. non-injured plants with and without scales. Pure air was used as a control, except for the assays involving moth scales, where non-injured plants served as the control. Plant species were kept separate during this study.

## **Counseling and School Psychology**

Presenter: **April Becker (79)**

Advisor: Max McFarland

Title: *Kindergarten Screening Practices in Nebraska*

Screening practices in elementary schools have become more common in recent years. Kindergarten screenings have been on the rise in the last decade. Schools screen children for many different reasons. Some of the screening practices have been for targeted prevention of behavior problems (Lochman, 1995), screenings for developmental and social skills (Agostin & Bain, 1997), screenings to predict future success (Gordon, 1988), and other screening processes for specific kindergarten readiness (Fenton, 2001). This study seeks to find the purposes of kindergarten screening in Nebraska, how effective the screenings are, how satisfied the practitioners are with the screenings and if the size of the district affects the use of kindergarten screening. Two hundred elementary school principals were sent a survey to assess the practices in Nebraska. It was found that most screening practices in Nebraska are for the purpose of medical screenings. It was also found that most practitioners find these screenings effective and the results satisfactory.

Presenter: **Kyndra Bendickson (80)**

Advisor: Max McFarland

Title: *International Comparison of Early Intervention Services: Importance and Performance*

The purpose of this project is to describe research in which the attitudes and perceptions of school psychology graduate students regarding the importance and current performance of infant mental health services are compared. Data were collected in an Eastern European country, where early intervention services are not supported by government money, and in the United States, where the federal government provides grants to states to provide early intervention services. Session attendees will learn what attitudes and dispositions students are taking away from current early intervention training programs and

how these attitudes and dispositions may or may not be different as a result of cultural differences and government support.

Presenter: **Ashley Carrier (81)**

Advisors: Max McFarland and Teara

Archwamety

Title: *Efficacy of Bullying Intervention Program*

The purpose of this presentation is to explore the efficacy of bullying intervention programs across several variables including; the level of prevention, the intervention approach, the academic level of focus, who the intervention was targeting, who implemented the program as well as which variables are most effective within the programs. The meta-analysis will help participants to further explore how effective our current bullying intervention programs are and what constitutes a successful intervention program.

Presenter: **Liesel Eastman (82)**

Copresentors: **Jesica Vickers, Faithe Kroll, Mira Sabbah**

Advisor: David Hof

Title: *Creating Cultural Awareness: Graduate Students' Experiences on the Pine Ridge Reservation*

This poster presents a student-developed professional and client advocacy immersion project involving students and counseling professionals with members of the Lakota Sioux tribe to move advocacy theory to practice and to collaborate on developing ways to enhance the perception of the counseling profession and access to counseling services on the Pine Ridge Reservation, as well as to strengthen intra-professional relationships for future professional advocacy. Outcome data will be presented.

Presenter: **Jessy Hansen (83)**

Advisor: Max McFarland

Title: *Mental Health Services in Nebraska Schools*

Today adolescents face several different morbidities that include the negative consequences of sex, drugs, and other stressors that threaten their mental, spiritual, and physical

development (Nabors & Reynolds, 2000). Mental health in childhood and adolescence is defined by the achievement of expected developmental, cognitive, social, and emotional milestones (National Association of School Psychologists, n.d.). Mental health is also seen as children and adolescents forming relationships and demonstrating effective coping skills, enjoy a positive quality of life and function well at home, in school, and in the community (NASP, n.d.). The purpose of this study is to identify the need for mental health services within Nebraska schools, the extent to which they are provided, and the level of satisfaction regarding the provision of mental health services reported by school professionals. One hundred and fifty principals and school psychologist's were sent a survey to assess the mental health services in Nebraska.

Presenter: **Terrin Johnson (84)**

Copresentors: **Megan Patterson**

Advisor: Max McFarland

Title: *Identifying Most Appropriate Target of and Location for Treatment Using Infant Cognitive Interventions through Comparison of Effect Sizes*

Purpose School psychologists play an increasingly important role in working across a wide range of disciplines, professionals, and settings that cater to the unique needs of infants (Thomas & Grimes, 2002). Because the accurate and fair identification of the developmental needs of young children is critical to the design, implementation, and success of appropriate interventions, school psychologists must play a key role (nasponline.org) An effective intervention might be able to provide both family support and cognitive enrichment, perhaps resulting in improved social -emotional development as well as higher IQs (Seitz, Rosenbaum, & Apfel, 1985). Based on this information more recent research has come to focus on interventions that will help develop cognitive skills of infants and toddlers. Although there have been some studies that have focused on the target of intervention and/or the location of the intervention, there have not been any meta-analyses done in the area of cognitive interventions. Therefore, the purpose of this study is to compare the effect sizes of infant

cognitive interventions based upon the target(s) of the intervention and the location where those interventions take place.

Presenter: **Andrea Scheitler (85)**

Copresentors: **Lana J. Renzelman, Dr.**

Robin R. Sobansky

Advisors: Max McFarland and Teara

Archwamety

Title: *School Psychologist Job Satisfaction and Implications on Recruitment and Retention*

This presentation explores the possible impact of job satisfaction on retention and recruitment of school psychologists and looks at job satisfaction related to aspects of service delivery such as RtI and mental health services. Job satisfaction data were collected in Nebraska utilizing the Minnesota Satisfaction Questionnaire and compared to national findings. The purpose of this presentation is threefold: to raise awareness of the positive aspects of the profession for purposes of recruitment; outline the unsatisfying aspects of the profession as potential areas for improvement to enhance retention; and finally, to show the importance of a grass roots movement in recruitment and retention. Participants will gain an awareness of what needs to change in order to revitalize the profession of school psychology

Presenter: **Karen Wille (86)**

Copresentors: **Jamie Ellsworth, Tammi**

**Ohmstede Beckman**

Advisors: Max McFarland and Teara

Archwamety

Title: *Factors Related to School Psychologists' Comfort Working with Poverty: Are Training Institutions Doing Enough to Ensure Competency in This Area?*

The purpose of this presentation is to describe a research project that was conducted to determine what factors relate to school psychologists' comfort level working with children of poverty. Influential factors affecting comfort level working with children of poverty and the need for training institutions to incorporate or further develop this type of preparation into their programs will be discussed. Participants will become better aware of the need for school

psychologists to be competent in the area of poverty, and trainers of school psychology attending this session will be able to evaluate their own program and assess the need for change if they determine their program is not currently addressing the culture of poverty.

## **Accounting and Finance**

Presenters: **Benky Atmadja & Gayatri Kocherlakota (87)**

Advisor: Bruce Elder

Title: *International Trade relation between India, Indonesia and the United States*

This paper focused on the trade between India, Indonesia and the United States. It will show how interdependent each countries are regarding the export and import activities. Analysis will be included to support our findings along with some conclusions.

## **Health, Physical Education, Recreation & Leisure Studies**

Presenter: **Megan Costello (88)**

Advisor: Kate Heelan

Title: *The Association Between Soft Drink Consumption And Adiposity In Young Females*

Increasing amounts of soft drink consumption (SDC) has been linked to the rising epidemic of obesity in children and postmenopausal women, however, it is unclear the quantity of SDC in college females and the impact it has on adiposity. The purpose of this study was to determine the quantity of SDC and the association between SDC and adiposity in young women, ages 16-24 years. Sixty-six female participants (age:  $19.86 \pm 2.13$  yrs, BMI:  $23.5 \pm 4.29$  kgm<sup>-2</sup>) were asked to complete a 3-day food record and an assessment of body composition by dual-energy x-ray absorptiometry (DXA). Participants were compared based on SDC greater or less than 32 fl. Oz./day. Associations between SDC with adiposity between the two groups will be analyzed using Pearson correlation coefficients.

Presenter: **Nancy Michalski (89)**

Advisor: Nita Unruh

Title: *Job Satisfaction of College Athletic Directors*

The purpose of this study will be to examine job satisfaction among collegiate athletic directors at all three divisions in the Central Region, these states include: Nebraska, North Dakota, South Dakota, Iowa, Minnesota, Colorado, and Kansas, also included will be members of the National Association of Intercollegiate Athletics, from the states listed above, and universities in the Rocky Mountain Athletic Conference (RMAC). Measuring job satisfaction is important to managers because satisfaction is viewed as important indicator of organizational effectiveness' (Cherrington, 1989, p. 308). The study will specifically examine the relationship between job satisfaction, stress and burnout, work environment factors which include pay, promotion, staffing issues, time allocation, resources available, turnover, and supervision. The survey that will be used to collect data for this study is the Job Satisfaction Survey (JSS). The Multiple Regression testing ANOVA1testing, and ANOVA2R1 testing will be the methods used to analyze the data.

Presenter: **Meghan Ruebel (90)**

Advisor: Kate Heelan

Title: *Lean and Fat Mass Effects on Bone Mineral Density in Female Athletes and Non-Athletes*

There are many factors that effect bone mineral density (BMD) including physical activity, lean body mass, and fat mass. However, controversial evidence has been found regarding contribution of lean mass and fat mass on BMD in young, premenopausal women. The purpose of this study was to investigate the impact of fat mass and lean mass on bone mineral density in college female athletes and non athletes. 111 college females, (60 athletes (ATH); 51 non-athletes (NONATH)) were assessed for lean body mass (LBM), fat mass (FM), body fat percentage (BF) and BMD by whole body dual-energy X-ray absorptiometry (DXA). Stepwise multiple regressions were conducted to determine impact of body weight (BW), Age, LBM, FM, and BF on BMD for ATH and NONATH.

# Oral Presentations - Room 310

## Communication Studies

1:30-1:45      Presenter: **Grant Campbell**  
Advisor: Rachelle Kamrath  
Title: *Rhetorical Criticism*

1:45-2:00      Presenter: **Brandon Ettigrew**  
Advisor: Rachelle Kamrath  
Title: *Rhetorical Criticism*

2:00-2:15      Presenter: **Robert Friedman**  
Advisor: Rachelle Kamrath  
Title: *Rhetorical Criticism*

2:15-2:30      Presenter: **Brock Ingmire**  
Advisor: Rachelle Kamrath  
Title: *Rhetorical Criticism*

## Political Science

2:30-2:45      Presenter: **Timothy Hruza**  
Advisor: Peter Longo  
Title: *Initiative 300: Nebraska's Ban on Corporate Farming*

2:45-3:00      Presenter: **Matthew Morehouse**  
Advisor: William Aviles  
Title: *A Comparative Analysis of the Media, Public Opinion, and Foreign Policy in the US and UK: The Case of South Africa in the 1980s*

3:00-3:15      Presenter: **Tara Spence**  
Advisor: Joan Blauwkamp  
Title: *Women Seeking Executive Office: Is Bias Present in the Media?*

3:15-3:30      Presenter: **Mathew Stange**  
Advisor: Joan Blauwkamp  
Title: *Factors Affecting Challenger Vote Shares in Senate Elections*

# Oral Presentations - Room 312

## Psychology

- 1:30-1:45      Presenter: **Rachael Broadwell**  
Advisor: Richard Miller  
Title: *Locus of Control in Individuals with Eating Disorders*
- 1:45-2:00      Presenter: **Abigail Harris**  
Advisor: Richard Miller  
Title: *Effects of Stereotypes on Physical Attractiveness*
- 2:00-2:15      Presenter: **Jessica Obermier**  
Copresenter: **Tawnee Applegarth**  
Advisor: Richard Miller  
Title: *Effects of Temperature on Memory*
- 2:15-2:30      Presenter: **Brittany Schmidt**  
Copresenter: **Sara Yount**  
Advisor: Krista Fritson  
Title: *The Impact of Family Mealtimes on College Students' Self-Efficacy*

## Sociology

- 2:30-2:45      Presenter: **Rachael Broadwell**  
Advisor: Suzanne Maughan  
Title: *Contributions to America by Single Mother Families*

## Graduate Studies, Teacher Education

- 2:45-3:00      Presenter: **Megan Reiman**  
Advisor: Karen Bostic-Frederick  
Title: *Behavior Contracts*

## Music and Performance

- 3:00-3:15      Presenter: **Michael Walworth**  
Advisor: Darleen Mitchell  
Title: *Broken Piano*



# Oral Presentations - Cedar Room

## History

- 1:30-1:45      Presenter: **Andrew Eder-Moreau**  
                  Advisor: Roger Davis  
                  Title: *Stupor Mundi: The Lessons of Frederick of Hohenstaufen*
- 1:45-2:00      Presenter: **Kalie Wetovick**  
                  Advisor: Mary E Ailes  
                  Title: *Bonnie Prince Charlie and the Quest for the Stuart Thrones in 1745*

## Graduate Studies, History

- 2:00-2:15      Presenter: **Andrew Hermes**  
                  Advisor: Linda Van Ingen  
                  Title: *The Frankenstein Complex: America's Role in Creating the Taliban through Foreign Policy Blunders*
- 2:15-2:30      Presenter: **Ross Huxoll**  
                  Advisor: Mark Ellis  
                  Title: *Cultural Conflict on the Plains: The Westward March of Civilization and the Southern Cheyenne, 1858-1869*
- 2:30-2:45      Presenter: **Amber Lewis**  
                  Advisor: Mark Ellis  
                  Title: *Chicana Women of the Civil Rights Movement*
- 2:45-3:00      Presenter: **Matthew Whitman**  
                  Advisor: Mark Ellis  
                  Title: *Charles Finney's Formative Years: The Beginnings of His Revival Theology*

# Oral Presentations - Room NSU 238 C

## Biology

2:00-2:15      Presenter: **Becky Fusby**  
Advisor: Kim Carlson  
Title: *Investigation of OTK18 Binding to Various Promoter Elements*

## Chemistry

2:15-2:30      Presenter: **Ryo Tamura**  
Advisor: Gene Wubbels  
Title: *Why Density Functional Calculations Mislead Concerning Aromatic Photosubstitution Mechanism*

## Physics

2:30-2:45      Presenter: **Oleksiy Golovin**  
Advisor: Jose Mena-Werth  
Title: *Modeling of Transiting Extra Solar Planets with Two Variable Limb-Darkening*

2:45-3:00      Presenter: **Grant Saltzgeber**  
Advisor: Mike Larsen  
Title: *Nebraska Rain Analysis*

## Computer Science and Information Systems

3:00-3:15      Presenter: **Aaron Steele**  
Advisor: John Hastings  
Title: *Emulated Network Drives with SMTP*

# Oral Presentations

## Biology

Presenter: **Becky Fusby**

Advisor: Kim Carlson

Title: *Investigation of OTK18 Binding to Various Promoter Elements*

OTK18 is a human transcriptional suppressor implicated in regulation of human immunodeficiency virus (HIV) replication. In addition, it is also expressed in most uninfected tissues under normal homeostatic conditions. The role of OTK18 protein and the promoter elements to which it binds under homeostatic conditions is the focus of this research project. The human OTK18 gene was engineered into pET-28a to produce a His-tag fusion protein. The His-tagged human OTK18 was purified from bacteria utilizing fast protein liquid chromatography (FPLC) and a Ni-NTA column. Western blot analysis was performed to determine the size and integrity of the protein. The proposed promoter regions were amplified using polymerase chain reaction (PCR). The purified OTK18 and promoter PCR products were analyzed by gel shift assay to determine if binding occurred. The results of this study provide insight on the role of OTK18 regulation not only under homeostatic conditions, but also with implication to severe HIV infection..

## Chemistry

Presenter: **Ryo Tamura**

Advisor: Gene Wubbels

Title: *Why Density Functional Calculations Mislead Concerning Aromatic Photosubstitution Mechanisms*

We recently probed photosubstitution of halogens by nucleophiles in nitrophenyl ethers such as 2-halo-4-nitroanisole by investigation of the element effect of halogen as leaving groups.

The order found for the nearly diffusion controlled substitutions was  $F > Cl > Br > I$ . This strongly implicates a stepwise mechanism from the triplet state and a sigma complex intermediate. Simultaneous with our report appeared a report of Pinter, et al, of extensive density functional calculations on intermediates in these same photoreactions. They reported that the photo displacement of chlorine by hydroxide ion from 2-chloro-4-nitroanisole was concerted, directly contradicting our experimental results. The disagreement may result from the notorious tendency of density functional calculations to underestimate energy barrier heights. We have investigated this by doing a variety of calculations of these reaction pathways.

## Communication Studies

Presenter: **Grant Campbell**

Advisor: Rachele Kamrath

Title: *Rhetorical Criticism*

Through the use of Chris Segrin and Jeanne Flora's ABC-X communication model, this critical analysis of the children's book, "My Beautiful Mommy" extrapolates how we talk to our children about the process of elective plastic surgery. The picture book uses drawings and a first person narrative of a young girl to demonstrate how a parent choosing elective cosmetic surgery should address the subject with the family. The research answers the communicative question, "Will the picture book, 'My Beautiful Mommy' invoke in children, an understanding and acceptance of elective cosmetic surgery?" Through application of the model, the research draws critical and social conclusions.

Presenter: **Brandon Ettigrew**

Advisor: Rachele Kamrath

Title: *Rhetorical Criticism*

Through the use of Frank Boster's "Communication as Social Influence" model, this work critically analyzes the "We Can Solve It" campaign for environmental responsibility. The campaign approaches environmental

consciousness through bipartisanship. This research investigates whether the public accepts or rejects the message by posing the critical research question, "Will the 'We Can Solve It' campaign invoke bipartisan support for environmentalism?" Through the application of the model, critical implications and social implications are drawn.

Presenter: **Robert Friedman**

Advisor: Rachele Kamrath

Title: *Rhetorical Criticism*

Through the use of Emily Moyer-Guse's communication theory; Entertainment as Persuasion, this oral presentation critically analyzes the rhetorical value of Orlando, Florida's most unusual theme park, "The Holy Land Experience." This interactive museum is designed to emulate the time and events of Christ. Its objective is to spiritually reach guests in an influential but entertaining manner. Critical and social implications are drawn from the research question, "Is entertainment through reenactment an effective method of persuading an audience toward Christianity?"

Presenter: **Brock Ingmire**

Advisor: Rachele Kamrath

Title: *Rhetorical Criticism*

Through the use of Gretchen Spreitzer and Scott Sonenshein's communication model of Positive Deviance, this work critically analyzes the Museum of Bad Art (MOBA) in Boston, Massachusetts. The museum is dedicated to reframing what we appreciate as "good" art by showcasing pieces unfit for conventional art museums. The rhetorical question posed is, "Does the museum of bad art create a new genre of what we believe art to be?" Through application of the model, critical implications and conclusions are drawn.

## **Computer Science & Information Systems**

Presenter: **Aaron Steele**

Advisor: John Hastings

Title: *Emulated Network Drives with SMTP*

As technology advances and the amount of data stored in a digital format grows at an exponential rate, the demand for secure and reliable data storage has surged. Individuals and companies are requiring larger storage facilities to house the surplus of information required to operate. The current procedure for increasing storage facilities is acquisition of hard drives with increasing size and quantities. The Simple Mail Transfer Protocol (SMTP) is one of the prominent protocols that Internet e-mail systems use, when teamed with my GDrive program can offer an alternative solution to the data storage predicament. GDrive makes use of accounts offered by popular e-mail providers (e.g. hotmail, gmail) to create an emulated network drive (END) of any desired size. Each e-mail account is allotted space for e-mail and file storage, but when multiple accounts are used together GDrive can stripe the accounts into one emulated network drive that could contain files of any size. GDrive takes the principals used in servers and backup systems, and implements them on a larger scale, the web.

## **History**

Presenter: **Andrew Eder-Moreau**

Advisor: Roger Davis

Title: *Stupor Mundi: The Lessons of Frederick of Hohenstaufen*

Frederick II was one of the most controversial and unique rulers of the Middle Ages. He was a German who ruled Sicily with an Arab and Greek court and openly defied the Pope. Always a religious skeptic he encouraged his people, both noble and peasant, to look for the most practical and direct solution to any problem. His law reforms, with the exception of Justinian I, rival that in importance of any man in the Ancient or Medieval world. Despite his somewhat confusing heritage he strived to make his kingdom one of tolerance of all religions and open to good ideas no matter where they may have originated from. In the paper I will try to illustrate what examples specifically emphasize

these attitudes and what strategies we, in the 21st century, may try to apply practically to the seemingly never-ending series of problems concerning relations between the Muslim and Western worlds.

Presenter: **Kalie Wetovick**

Advisor: Mary E Ailes

Title: *Bonnie Prince Charlie and the Quest for the Stuart Thrones in 1745*

The Jacobite Rising of 1745 in Scotland, led by Bonnie Prince Charlie, was a significant crisis in the modern history of Great Britain. It effectively ended the prominence of the Scottish clans and the quest of the Stuarts for their confiscated thrones. Had different choices been made during the campaign and key mistakes been avoided, it is possible that Scotland would have gone back to an independent monarchy led by the Stuart family, or it could have gained more privileges through negotiation with the British. In one rebellion that lasted less than a year, the history of Great Britain could have drastically been changed. The Stuarts could have been reinstated monarchs instead of permanently exiled, and Scotland could have been an independent kingdom instead of a permanent part of the British Empire. In my paper, I discuss the reasons and conditions for starting the uprising, its events, its outcome, and then what could and should have been done to gain Scottish success.

## Music and Performance

Presenter: **Michael Walworth**

Advisor: Darleen Mitchell

Title: *Broken Piano*

The Broken Piano Project involves two steps: 1) to alter a piano to produce sounds not normally associated with a piano, creating new sounds and compositions, and 2) to use the sounds to create a tool that can be used to explore the abstract concepts of aesthetics, connotation and preconceptions. The piano alterations will go beyond normal “prepared piano,” such as those seen in John Cage’s Sonatas and Interludes for

Prepared Piano, which involves placing various materials (rubber, felt, metal, etc.) between the piano strings, often at harmonic nodes). The new sounds and compositions will be recorded for documentation, which will be presented to listeners for discussions/reactions that involve aesthetic judgments in the event that the listeners are not able to be in the physical presence of the instrument.

## Physics

Presenter: **Oleksiy Golovin**

Advisor: Jose Mena-Werth

Title: *Modeling of Transiting Extra Solar Planets with Two Variable Limb-Darkening*

We have revised our model of extra solar planetary transits to include two- variable limb-darkening. There are currently 33 confirmed transiting extra solar planets. All of the transiting planets have been discovered in last 8 years, this is a very young field of research in need of observational data and theoretical models. We have developed our model based on transits of HD 209458b, the first extra solar planet to be discovered in 2000. Our model simulates transits and creates light curves that have shallow regions representing periods of transit with accurate slopes of boundaries. We are simulating light curves, which are graphs of a star’s brightness, magnitude, versus period of its variability. Our model is based on the revised parameters of HD 209458b by R. A. Wittenmyer’s group in 2005. It shows that irradiated planet evolution models explain the planet’s 10% to 20% larger radius. This model shows limb-darkening effects as well in effort to precisely simulate light curves derived from photometric observations. Our goal is to devise a model to aid the NASA’s Kepler mission in its search for extra solar planets. Discussed will be the new features and advantages of our model.

Presenter: **Grant Saltzgeber**

Advisor: Mike Larsen

Title: *Nebraska Rain Analysis*

A novel rain measuring system was designed and

constructed on top of the Bruner Hall of Science on the University of Nebraska at Kearney campus. This system --a dense array of tipping bucket rain-gauges-- was utilized to develop well-resolved time-series of rain accumulations during every substantial rain event of the late spring and summer of 2008. This project revolves around an in-depth analysis of these time-series data-sets. As part of our efforts to identify the spatial and temporal statistical structure of rainfall, some of the data-sets have been subjected to more thorough analysis. In particular, we have been trying to characterize any so-called "fractal scaling region" by using a box-counting technique that has been previously used to establish scale-invariant behavior using different instrumentation. Ultimately, we hope to determine whether the fractal dimension is similar from storm-to-storm and from gauge-to-gauge within a storm and use this information to try and infer other relevant physical information about the rain event.

## **Political Science**

Presenter: **Timothy Hruza**

Advisor: Peter Longo

Title: *Initiative 300: Nebraska's Ban on Corporate Farming*

Anti-corporate farming laws have been prevalent in heavily agricultural states since the 1960s and 1970s. One of the nation's most strict anti-corporate farming laws stood strong for almost 25 years. Nebraska's Initiative 300 (I-300) was passed by ballot referendum in 1982. In 2006 the Eighth Circuit Court of Appeals ruled I-300 unconstitutional on the basis of the dormant commerce clause of the United States Constitution. In considering the facts of the case, the decision of the Court, and the evidence of the impact corporate farms can have on rural communities and a community's way of life, it becomes clear that anti-corporate farming laws are desirable in heavily agricultural states. Indeed, Nebraska ought to consider re-establishing anti-corporate farming laws regardless of the Court's decision because it is in

the best interest of the citizens of the state and upholds the socio-economic traditions of rural communities.

Presenter: **Matthew Morehouse**

Advisor: William Aviles

Title: *A Comparative Analysis of the Media, Public Opinion, and Foreign Policy in the US and UK: The Case of South Africa in the 1980s*

This study examines the nexus between elite media reporting, public opinion, and foreign policy. This was done through a comparative case study analysis of the respective media coverage, public opinion, and foreign policies of the United States and the United Kingdom in regards to sanctions against South Africa during the 1980s. It was found that while the elite media in the US were generally supportive of sanctions, the elite media in the UK were somewhat split on the issue. It was found that the media in the US had an influence in increasing issue salience in the public. It was also found that while both President Reagan and Prime Minister Thatcher paid attention to the media and public opinion, neither had any impact upon Reagan's or Thatcher's respective decisions.

Presenter: **Tara Spence**

Advisor: Joan Blauwkamp

Title: *Women Seeking Executive Office: Is Bias Present in the Media?*

This research seeks to investigate how the media cover women candidates for executive office compared to men. I hypothesize that media coverage disadvantages women candidates but not to the extent that others have asserted. The failure of women to attain executive office is more a product of cultural stereotypes and the lack of stepping-stone positions held by women than the press coverage they receive. The research is conducted through a content analysis of newspaper articles from the United States and other countries that compare campaign coverage of Hillary Clinton and Barack Obama in 2008, with John Kerry as a control, since there was no female candidate in 2004.

Presenter: **Mathew Stange**  
Advisor: Joan Blauwkamp  
Title: *Factors Affecting Challenger Vote Shares in Senate Elections*

This study takes the research design used by Paul Herrnson to study the factors that affect vote shares in House elections and applies it to Senate elections. Data from the 2008 Senate elections were utilized to determine the significance of eight variables on a senate challenger's vote share. The eight variables are: the partisan bias of a state, the presence of a contested primary, issue targeting, advertisement focus, challenger and incumbent spending, newspaper endorsements, and the national partisan tide. A regression analysis was used to determine the significance of the variables. It showed issue targeting to be the most significant factor affecting the vote shares of challengers in Senate elections.

## **Psychology**

Presenter: **Rachael Broadwell**  
Advisor: Richard Miller  
Title: *Locus of Control in Individuals with Eating Disorders*

This research investigates a possible relationship between eating disorders and personality (locus of control). Individuals who develop eating disorders may tend to have external loci of control. Finding a relationship between eating disorders and locus of control would have implications for treatment as well as the prevention of eating disorders. This research is based in empirical psychological instruments and feminist theory.

Presenter: **Abigail Harris**  
Advisor: Richard Miller  
Title: *Effects of Stereotypes on Physical Attractiveness*

The perceived physical attractiveness of men and women who were described as breaking or maintaining a gender-based stereotype was examined. Participants read a description and

viewed a picture of a target person and asked to rate their attractiveness. Breaking or maintaining a gender-based stereotype had no effect on perceived attractiveness.

Presenter: **Jessica Obermier**  
Copresentors: **Tawnee Applegarth**  
Advisor: Richard Miller  
Title: *Effects of Temperature on Memory*

This study examined how temperature can affect visual perception/memory of details in scenes that are consistent or contrast with the temperature. Participants were placed in a warm or cold room and shown winter and summer scenes. Members in the cold room had better memory for items in the winter scene.

Presenter: **Brittany Schmidt**  
Copresentors: **Sara Yount**  
Advisor: Krista Fritson  
Title: *The Impact of Family Mealtimes on College Students' Self-Efficacy*

The present study examined the effect of family mealtimes on academic self-efficacy and general perceived self-efficacy. One hundred and sixty students completed a demographic sheet and questionnaires regarding their general self-efficacy, academic self-efficacy, and family mealtimes to explore the quality and frequency of family mealtimes during their first 13 years of living at home. It was hypothesized that students reporting high quality mealtimes would have higher academic and general self-efficacy scores when compared to peers who reported low quality family mealtimes. It was also hypothesized that higher frequency of family mealtimes would result in higher academic and general self-efficacy scores. Results indicated that students reporting high quality family mealtimes had significantly higher academic and general perceived self-efficacy compared to students reporting lower quality mealtimes. The frequency of family mealtimes was found to be positively correlated with academic self-efficacy; however, there was no significant correlation between mealtime frequency and general self-efficacy.

## **Sociology**

Presenter: **Rachael Broadwell**

Advisor: Suzanne Maughan

Title: *Contributions to America by Single Mother Families*

Single mothers suffer the stigmatization of social burden in contemporary society. There is much focus on the shortcomings and negative consequences of families headed by never-married and divorced women. Just as past sociological research has over-emphasized the negative social impact of minority groups, there is a failure on the part of academic research to recognize the positive contributions made to American society by marginalized groups. Sociologist Charles V. Willie emphasizes the positive influence black families have had on American Society through egalitarian family structures and strong work ethic. It is important to recognize the hardships and unique obstacles marginalized groups work to overcome in order to facilitate acceptance in society. Single mother families are often criticized for their deficiencies and rarely acknowledged for their endurance through adversity. Through interviews and surveys, I examine the struggles faced by families headed by single women from a strengths perspective to illustrate the values single mother families contribute to United States society.

# Graduate Studies Oral Presentations

## **Teacher Education**

Presenter: **Megan Reiman**

Advisor: Karen Bostic-Frederick

Title: *Behavior Contracts*

For students with special needs, gaining academic knowledge is a difficult task. This task becomes especially difficult when cognitive disabilities are combined with inappropriate

behaviors. In effort to increase the amount of appropriate behaviors and decrease the amount of negative and knowledge-limiting behaviors, teachers have incorporated behavior contracts into their classrooms. However, the question remains, how effective are behavior contracts at the high school level? To discover this answer, participants were first selected with inappropriate behaviors and the frequency of these behaviors was documented. Then, with the help from the students, behavior contracts were made and installed in the classroom. After further research and documentation, it was concluded that indeed behavior contracts are effective at the high school level; however, the effectiveness rate varies with each individual.

## **History**

Presenter: **Andrew Hermes**

Advisor: Linda Van Ingen

Title: *The Frankenstein Complex: America's Role in Creating the Taliban through Foreign Policy Blunders*

The paper discusses the failures of American foreign policy in regard to the Soviet-Afghan War. In hopes of thwarting Russian success, the Americans poured billions of dollars into Afghanistan. Once the war was over, the American Government hoped to develop a new ally in the region. In order for this to work, there needed to be stability in the war torn nation, so the Americans supported the more radical branch of the Mujahedeen that would become the Taliban. This paper argues the Americans failed to account for the vast differences between the peoples of Afghanistan and the United States, similarly to the way the Soviets failed to account for the differences before they invaded. The American sponsorship of this regime ultimately led to the creation of a government that allowed Al Qaeda to plan, train, and carry out an attack on the United States. The arguments and conclusions of this paper are based on the writings of former Presidents Carter, Reagan and Clinton, the memoir of Richard Clarke regarding his experience in American foreign policy, and



on government documents such as Congressional and CIA records.

Presenter: **Ross Huxoll**

Advisor: Mark Ellis

Title: *Cultural Conflict on the Plains: The Westward March of Civilization and the Southern Cheyenne, 1858-1869*

Green Russell's discovery of gold in a tributary of the South Platte River in 1858 became a catalyst that engendered more than a decade of warfare upon the Central Plains as expectant settlers encroached on Southern Cheyenne homelands. The Colorado Gold Rush, allure of free lands, and promising opportunities to begin life anew provided the impetus for eager Easterners to venture west and stake their claims. As civilization expanded westward, settlers increasingly encountered the free-ranging Southern Cheyenne between the Platte and Arkansas Rivers — their inherit lands extending well into five present-day states. New railroads, more homesteads, and ancillary military posts soon became corollaries of this westward march as they cut through the heart of Southern Cheyenne territory, only furthering tensions and exacerbating problems between the disparate cultures. Out of this milieu emerges a historical account of sorrow and hope, equity and inequity, right and wrong as the story unfolds and perspectives from both cultures are presented objectively.

Presenter: **Amber Lewis**

Advisor: Mark Ellis

Title: *Chicana Women of the Civil Rights Movement*

My research focuses on the role of Mexican-American women in the Chicano Civil Rights Movement of the 1960s and 1970s. This paper will primarily examine issues surrounding inequality in education for Mexican Americans during the Civil Rights era. I will discuss how Chicanas face a three-pronged spear of discrimination based not only on race, but class and gender as well, which highly influences how they advocate for the right to an equal education in the American system.

Presenter: **Matthew Whitman**

Advisor: Mark Ellis

Title: *Charles Finney's Formative Years: The Beginnings of His Revival Theology*

Charles Finney's career as a revivalist came on the heels of the Second Great Awakening in the early to mid nineteenth century. His approach to revivalism helped shape the Holiness Movement, Christian fundamentalism, and revival practices that persist to the present. His dramatic conversion story was an integral part of his sense calling and expectations for those he sought to evangelize. This project explores the events surrounding that conversion, and how his experience shaped his revival theology and practice.

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