

The Ninth Annual
Ranger Research Day

Friday, November 21, 2014
Student Center Ballroom ~ Alva campus



**LIST OF
ABSTRACTS**

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Ranger Research Day

Northwestern Oklahoma State University
Alva, Oklahoma ~ Friday, November 21, 2014
Student Center Ballroom ~ Alva Campus

A B S T R A C T S

Arts and Music

1.02 Music

**1.02.01, Oscar Stover: An Overview of His Career from Coffeyville, Kansas, to Michigan State, and Finally to Alva, Oklahoma [Poster]
Dr. Ken Drobnak (Faculty)**

In July 2013, when perusing shelves in one of the back rooms on the third floor of Northwestern's Fine Arts building, I came across the *1956 Michigan State University Marching Band Rose Bowl Program*. I thought, "What on earth is that doing here?" Six months later, I found a 1974 Michigan State University Alumni Band program in a binder at the bottom of a different shelf. Looking more closely this time, I saw the name "Oscar Stover" and thought, "That name looks familiar." After checking online, I realized that the same Oscar Stover served at both Northwestern and Michigan State. In addition to serving Northwestern for sixteen years as Director of Bands, Mr. Stover taught at Coffeyville Public Schools (Kansas), Coffeyville Junior College, Kansas State Teachers College, and Michigan State University. Sometime after Mr. Stover retired in 1976, he put together a series of scrapbooks that included pictures, newspaper clippings, programs, and other memorabilia from his career. These items were forgotten, if not lost, in the various corners of the Fine Arts building until last year when the Instrumental Area began a general cleanup. My objective in this session is to display Stover's journey as a band director at a small junior college of 500 to national prominence in the Big Ten Conference at the Rose Bowl, and his return to rural surroundings. After retiring in 1976, he remained active at the national level as a clinician and guest artist. He was inducted into the Oklahoma Music Educators Association Hall of Fame in 1989.

Education

3.06 Psychology

3.06.01, “The Effect of Children on Marital Disagreement” [Poster]

Brittany Earhart (Dr. Sherril Stone, Sponsor)

Researchers have been studying marital quality and unhappiness for many years. Marital disagreements and conflict have a multitude of causes, including unfair distribution of labor between spouses. Disagreements between spouses may have negative effects, including emotional unavailability and increased cannabis use in their offspring. In this study, it is hypothesized that individuals with children living in the home will have more marital disagreements with their spouses than individuals who do not have children at home. The participants in this study include married individuals with varied backgrounds between the ages of 20 and 35 years. The data collected will be analyzed by a type of 2-sample *t*-test.

3.06.02, “The Hawthorne Effect and Fitness Productivity” [Poster]

Amber MacKenzie (Dr. Sherril Stone, Sponsor)

The Hawthorne Effect is defined as the phenomenon of altered behavior or performance as a result of being observed. It has been most commonly used in work areas and, more recently, the medical career field. The Hawthorne Effect might also be helpful in reinforcing positive behaviors when applied to fitness productivity. The researcher performed an experiment that measured the performance and productivity of 120 volunteers in a controlled location. Each participant completed the same exercise circuit three times in a row while being video recorded. To determine if performance and productivity were altered, the researcher left the room during the experiment. The recordings were reviewed to measure performance and productivity. It is hypothesized that participants will improve their physical fitness productivity while being observed.

3.06.03, “Effects on Blood Pressure: Service Dogs and the Elderly”

[Poster]

Kristina Bernitsky (Dr. Sherril Stone, Sponsor)

Blood pressure readings are important because they inform doctors about the function of the circulatory system. The body can make dramatic changes in blood pressure within seconds, depending on the situation. In recent years, therapy dogs have been shown to be beneficial for individuals with physical and mental disabilities. With this in mind, the current study investigated the effect of a therapy dog on an elderly person’s blood pressure. Two groups of elderly individuals participated in the study. One group had their blood pressure recorded by a nurse while petting a dog. The other group did the same procedure without the dog present. It was hypothesized that the blood pressure would lower with the dog present. The results of this study supported this hypothesis.

3.06.04, “Effects of Colored Paper” [Poster]

Allison Butler (Dr. Sherril Stone, Sponsor)

This study focuses on how colored paper affects a student’s grade. There have been numerous studies about this topic with college students but few with elementary students. It has been argued that different colors affect a person’s mood and cognitive ability. The paper colors utilized were two colors, yellow and red, and regular white. The color red is often associated with danger and failure. This is often seen by children in school when the teacher marks their wrong answers with red ink. The color yellow is often thought of as a happy

color because it is bright. White is the color that children are most use to seeing their work printed on. White is neutral and does not come with a lot of emotions. The current study utilized yellow, red, and white to determine if they had an effect on tests scores in children. It was hypothesized that color would not affect the test scores.

3.06.05, “The Effects of Antidepressant Medication and Psychotherapy on Depression” [Poster]

Kelsie Howard (Dr. Sherril Stone, Sponsor)

In recent years and years passed, medications have been largely used for treating depression. Although there are many other strategies for treating depression, the use of medication has always been the mainstay. Antidepressants are prescribed more by doctors than psychotherapy is. Most of the time, psychotherapy is not mentioned. This paper was done to show that psychotherapy, a type of therapy that does not get much attention when it comes to treating depression, will be more beneficial and successful than the use of medications for treating depression. Although medications are helpful to some, psychotherapy and its techniques are healthier and tend to be most helpful in the long run. With psychotherapy, individuals will have a lower chance of relapsing than individuals taking antidepressants. For this study, many individuals were asked a series of questions to see which type of therapy is the most useful. The independent variable is the antidepressants and psychotherapy. The dependent variable is the levels of depression.

3.06.06, “Effects of External Stimuli on Learning” [Poster]

Jessica Taylor (Dr. Sherril Stone, Sponsor)

Learning new material with visual cues from external stimuli will be explored. Previous studies have touched on areas of learning with autistic children and children with hearing impairment. The focus has been on facial recognition and auditory learning as well as using drama classes with assisted learning. Some of the more common studies on learning have been the use of emotional stimuli for better memory recall when learning new material. These studies have found that there are benefits of external stimuli cues because they can trigger the brain and effect learning. The study design of external stimuli and learning has yet to be explored with memory to see if visual external cues can be triggered for exams by using the same attire worn during the learning process of new material and for test taking.

3.06.07, “State of Incarceration of Drug Offenders in Kay County”

[Poster]

Julia Hays (Dr. Sherril Stone, Sponsor)

Located in Oklahoma, Kay County has been experiencing problems as a result of congestion in its prison facilities. The overcrowding of these facilities has led to the county building more prisons. According to reports obtained, the growing number of prisoners has been affecting the whole country by using an increasing amount of taxpayers' dollars to house these prisoners (Bewley-Taylor, Trace, & Stevens, 2005). One of the reasons for this unprecedented increase is the rise in the number of nonviolent drug offenders in the prisons. Therefore, this research will identify the impact of this trend on the state of the prison facilities in Kay County. The research will also compare the number of drug offenders in Kay County prisons to the number recorded in prisons in other counties.

3.06.08, “Gender Differences in Mental Rotation in Children” [Poster]

Gabrielle Cushman (Dr. Sherril Stone, Sponsor)

It has been reported that men and women differ in spatial ability and mental rotation. However, there is little research that indicates if boys and girls differ in spatial ability and, more specifically, mental rotation. The current study investigated the differences in mental rotation between boys and girls ages seven to thirteen years. This study could also help us understand the benefits of training children in spatial abilities. More men are in the field of math and science partly due to their higher performance in spatial ability; therefore, if we can train girls at a young age to better understand and improve their spatial abilities, then math and science might come easier to them, and more women may join these fields in the future.

3.06.09, “Reading with Dogs” [Poster]

April Dahn Burshik (Dr. Sherril Stone, Sponsor)

Studies have shown that even the presence of animals will have a positive effect on a person in several areas. Some of those areas are mentally, emotionally, and physiologically. The current study will examine if there is a difference in reading scores of children who read with dogs verses those that read without. Reading is a valuable asset to our daily lives. We need to be able to read to drive, read caution signs, order from a menu, and fill out important forms. Even reading something as simple as “walk” or “don’t walk” can save a person’s life. Piaget labeled ages seven to eleven as the stage in which a child is learning to read changes to reading to learn. This study will be conducted at this stage to help solidify the foundation and create a difference.

3.06.10, “A Test of the Westermarck’s Hypothesis” [Poster]

Bailey Craig (Dr. Aaron Place, Sponsor)

Westermarck theorized that nature would select out breeders for a successful evolutionary outcome. As such, he hypothesized that there is a natural dislike to mating between persons living closely together from childhood.

Taking this hypothesis into consideration, we looked at the incest taboo in a little different way; this experiment looked at the dating patterns in small rural schools compared to large schools. It has been observed that in small schools (student body size less than a hundred) where adolescents grew up in close association with each other, that they do not date each other within their school; they tend to date other adolescents from small schools in the surrounding areas. Adolescents in smaller schools see the kids they grew up with essentially as brothers and sisters. They do not see their fellow peers as dateable. In other words, small school adolescents see this as a form of inbreeding. Surveying adolescents from rural schools in northwest Oklahoma served as the source for collecting data. As a result of the survey a majority of students currently dating or having previously dated, dated someone from another surrounding school. However, a majority of the students said they would think about dating someone from their school.

3.06.11, “Coffee Consumption and Depression” [Poster]

Walter Northcutt (Dr. Sherril Stone, Sponsor)

This research study tested the effects that coffee has on depression and depressive symptoms. Coffee is a widely common drink found across many cultures, which was the

basis for choosing this beverage. Depression was interesting to study because it is common in society and many people can relate to that feeling. Previous research on this subject has shown that drinking coffee may reduce stress, anxiety, and depression in comparison to drinking other beverages. Several other beverages also affect mood such as alcohol, pop, tea, and energy drinks. However, coffee is more commonly consumed, easier to produce, and is natural. Coffee is also often associated with hyper tendencies resulting from caffeine. The results of this research study support the hypothesis and previous data that coffee is responsible for reduced depression as opposed to caffeine.

3.06.12, “Be Active” [Poster]

Jessica Lounsbury (Dr. Sherril Stone, Sponsor)

Obesity is an increasing problem among the citizens of America, which is no news to most of us. More than one-third (35.7%) of U.S. adults are considered obese (CDC 2014). National College Health Risk Behavior Survey states that as many as 35% of college age students may currently be overweight or obese (Boyle 2011). A survey has random distribution in various locations asking general questions about an individual's physical activities as well as education, confidence levels, and enjoyable activities. After the surveys are compiled, looking for a correlation between the clinically obese will then be conducted. By having a better understanding of what correlations exist between individuals and obesity, we can modify physical activities that are more enticing for individuals. This study will hopefully give insight on new ways to better our physical fitness.

Liberal Arts

4.02 English

4.02.01, “‘As usual, ladies first’: Manners, Etiquette Manuals, and *The Hunger Games*.” [Paper]

Dr. Richmond Adams (Faculty)

During “the reaping” sequence within Suzanne Collins’ *The Hunger Games* series, Katniss Everdeen “volunteer[s] as tribute” to save her younger sister Primrose from “certain death” in the annually broadcast television spectacle. Katniss’ heroism, however, also contains a cultural form that conveys something much greater than what initially appears to be the case. Representing the ruling Capitol during the selection of the Tributes, Effie Trinkett uses an expression which appears so mundane that it can be either easily overlooked or, in its immediate context, met with a sense of revulsion. Just prior to the act of drawing the names of District Twelve’s two representatives, Effie proclaims “[l]adies first.” By using that phrase and its presumption of accepted social proprieties, even for Panem’s future audience, Effie connects both the Capitol and herself to a historical set of discourses that extend well beyond the early years of post-apocalyptic America. I plan to explore how Effie’s insistence on “manners” and “etiquette” actually reflects a cultural matrix that held central sway throughout the Nineteenth Century in the United States. Namely and quite unexpectedly given the immediate context of Panem, the specific relationship between manners and power create one among several necessary impetuses for the Katniss-led Mockingjay revolution against the Capitol.

4.02.02, “A Study of the Young Adult Novel *The Giver* by Lois Lowry”

[Poster]

Jade George, Ali Harbin, & Zakk Burdg (Prof. Kathy Earnest, Sponsor)

The purpose of this study was to explore Lois Lowry’s *The Giver* and how it fits into the classification of dystopian literature. This study of the *The Giver* revealed various aspects of a dystopian society and how that environment can adversely affect the characters that have been subjected to those societal circumstances. This study explored various literary themes in the novel, such as the effects of group control through regulation and the importance of individuality. The main topics covered in this study were key terms, concepts, and aspects of dystopian literature. This presentation also contains a listing of dystopian novels that have been converted into movies. A suggested reading list of popular dystopian novels is available as a take-away for interested readers.

4.02.03, “The Relevance of Manners” [Paper]

Carrie Vega-Hughes (Dr. Kathryn Lane, Sponsor)

Evelina is an epistolary novel about a seventeen year-old girl from the English countryside thrust into the high society of London. Evelina’s only means of navigating society successfully is to learn all of the manners by which to conduct herself properly and avoid scandal. Along the way, many of the supporting characters are terrible examples for Evelina, but she is able to point out their bewildering behavior and work out why their breach of manners is so unbecoming and inappropriate. This essay will take a look at five examples when manners were breached in the novel, and I will compare and contrast the relevance of those manners to today’s society. The quantitative data will come from a survey the author has provided to all levels of college students at Northwestern Oklahoma State University. The survey results will be broken down by age, gender, and college-level classification (i.e. freshman, sophomore, junior, senior). The presentation will begin with a brief real-time audience poll.

4.02.04, “Curse of Creativity” [Paper]

Natalie Sacket (Dr. Richmond Adams, Sponsor)

This academic paper evaluates the correlation between creativity and depression along with other mental illnesses. Numerous writers, artists, actors, and other various creative individuals have experienced mental illnesses. This paper will not only evaluate this link, but will also go into detail as to how mental illness, such as depression, has affected culture in the realm of literature, art, and film. This paper will question whether a creative mind is more prone to mental illness or if mental illness fosters creativity. Is creativity a form of release for the mentally ill? This paper will present research in support of numerous theories, seeking the answer as to why this correlation exists. Is creativity a solution of escape for the mentally ill, or is it the cause, thus deeming it a curse?

4.02.05, “Jonathan Swift and the Evolution of Political Satire” [Poster]

Katrina Henning (Dr. Jennifer K. Page, Sponsor)

Satire, specifically in the American political realm, has become so commonplace in entertainment that it is difficult for an average citizen to differentiate between real facts and exaggerated half-truths. Television broadcasts such as *Saturday Night Live!*, *The Daily Show with*

Jon Stewart, and *The Colbert Report*, to name a few, have made navigating already abstract ideas (politics) even harder. Having the intelligence to wade through the satirical parodies and useless twists of factual information is vital to being a knowledgeable voter and citizen.

In this poster I will demonstrate the implications of Jonathan Swift's *A Modest Proposal* and its influence on American political satire over the course of twentieth century history. I will present a rough timeline of the influence satire (as a literary genre) has had on specific elections in the last 60 years. My research begins with Swift's *Proposal* and ends with examples of successful satire in the media today, explaining why satire is more effective in presenting political news than actual political news channels.

4.02.06, "Cinderella: An Essential Princess for Women?" [Paper]

K. Brooke Ciolino (Dr. Kathryn Lane, Sponsor)

Persuasion and *Evelina* are two classic tales of the maturation and societal system for successful womanhood. These two novels are written in comparable scenarios to the classic, well-known, and beloved fairy tale *Cinderella*. This paper will give an in-depth analysis of the comparisons between *Persuasion*, *Evelina*, and *Cinderella*. How do these novels relate to the Disney/cartoon version contrasted with the original, somewhat darker versions of the classic love story? Is there a reason that the story was removed of its initial darkness? How does society view these two love stories in modern day? Further, the paper will uncover the necessities of a Cinderella-style story in relation to women versus society along with the unspoken but eminent rules women must follow. In addition to women versus society, this paper questions the importance behind the idea of "rags to riches" or, even further, the importance of good versus evil and the necessity for good to triumph according to the purpose, intention, and rationale of society. What happens to the view of humanity if evil is victorious?

4.05 Geography

4.05.01, "Exploring Nepal" [Poster]

Bimala Shrestha, Manisha Shrestha, Lijala Tuladhar, & Pratistha Kharel (Dr. Shawn Holliday, Sponsor)

Nepal has a lot to offer travelers, hikers, and nature seekers. Nepal, it is often said, is a utopia of natural beauty. The marvelous scenic beauty of the Himalayas in the northern part of Nepal is not only remarkable but also offers a lifetime of experiences to patrons. Who wouldn't want to enjoy the glory of being in the midst of a galvanizing mountain desert in Mustang to the embankment of crystal clear Rara Lake? The enchanted subtropical pine forest bluffs anyone with its aromatic presence in valleys like Barun and Langtang.

Nepal is known for its exquisite beauty. It is often called the Biggest Natural Museum in the World with eight of the world's top ten mountain peaks. Thus, this Himalayan country is a great destination with its stunning mountain views, including the world's highest peak, Mount Everest; its ancient culture, with many fine examples of Buddhist art and architecture; and its great outdoor activities, which include hiking and water rafting. Nepal is simply a dream come true.

4.09 *Sociology & Substance Abuse Studies*

4.09.01, “Use of Deadly Force: In Low Income and Minority Communities” [Poster]

Jeremy Kenaston (Dr. Kay Decker, Sponsor)

The use of force, especially deadly force by law enforcement, has been an extremely debatable topic within the United States for many years. Two of the latest large scale examples of the issue are the 1991 case of the Los Angeles police beating an African American man, Rodney King, and the most recent shooting of Michael Brown in Ferguson, Missouri in 2014. The disconnect between the public’s perception and law enforcement’s definition of proper use of force leads to mistrust and various issues between citizens and law enforcement, particularly among low income and minority populations. The deadly use of force in minority populations has created hyper-sensitivity among minorities and low income populations. The purpose of the study is to correlate deadly use of force by law enforcement among minority communities to suggest that a change of current training and procedures of law enforcement is necessary.

4.11 *American Studies*

4.11.01, “The Twinkie and The Egg: Exploring Interracial Marriage between Caucasian Women and Asian American Men” [Paper]

Emily F. Yoshimoto (Dr. Shawn Holliday, Sponsor)

Interracial marriages in the United States are at an all-time high. In the past thirty years, interracial marriages have more than doubled. While this may sound like an impressive leap, interracial marriages only comprise 9.5% of marriages in the United States today. The 2010 United States census data demonstrates that certain cross-racial partnerships are more prevalent than others. Interracial marriage rates can be significantly higher or lower depending on race and gender; about 36% of Asian American women married someone of another race in 2010 compared to approximately 17% of Asian American men.

This paper analyzes the legal, historical, sociological, and cultural reasons why there are fewer marriages between Asian American men and Caucasian women. While the media offers plenty of stereotypes and racist explanations as to why this racial pairing does not often occur, few scholarly works address this issue. By examining anti-miscegenation laws, census data, psychological and sociological studies, and gendered racial stereotyping in mass media, this paper provides scholarly answers as to why in the continental United States, one is less likely to see a Caucasian woman married to an Asian man.

4.11.02, “DY-NO-MITE!: The Evolution of Slang in America” [Paper]

Ezekwesiri Akwari (Dr. Shawn Holliday, Sponsor)

The purpose of this research is to identify the evolution of certain slang words used in different contexts, such as males vs. females, squares vs. hipsters, and the poor vs. the rich. Subsequently, these differences in the use of slang have created many different American subcultures that include beatniks, hippies, and current the hip-hop mindset. Thus, slang usage can be classified socially, politically, culturally, and by age group. Gaining a better

understanding of slang terms used during different decades of the twentieth century sheds light not only on the ideas of what people spoke about during a particular era but also gives insight into the thinking, lifestyles, and the culture of particular generations.

4.11.03, “Franklin D. Roosevelt’s Knowledge about the Pearl Harbor Attack” [Paper]

Jonathan Freemeyer (Dr. Shawn Holliday, Sponsor)

On December 7, 1941, the Imperial Japanese Navy undertook a surprise attack on the United States naval base at Pearl Harbor, Hawaii, killing 2,403 and wounding 1,178 Americans. Recently, some historians have theorized that President Franklin Roosevelt may have known about the attack beforehand, hoping to use the event and its wounded soldiers to galvanize public opinion to support entry into World War II. This paper will explore this theory in detail to determine its legitimacy.

Math & Science

6.01 Biology

6.01.01, “Body Mass in Relation to Song Repertoire Size in Oscine Birds” [Poster]

Jeff Martin (Dr. Aaron Place, Sponsor)

Body mass and repertoire size were compared across 27 species of oscine birds using the independent contrasts test. The purpose of this study was to explore a possible source of variance in repertoire size in birds. Body mass has been shown to cause variation in reptiles, and thus can potentially be used to explain some variation in birds. We hypothesized that if an increase in vocal complexity, as demonstrated through repertoire size is compensation for a lack of body mass, then as body mass decreases, repertoire size should increase. That is, the smaller the bird’s body mass, the more complex the vocal repertoire should be.

Our hypothesis was not supported as a positive correlation was found between body mass and repertoire size. The relationship is statistically significant using a 90% confidence interval, and the effect size was found to account for ~13% of variation in repertoire size. This is potentially due to other factors influencing vocal complexity. Habitat type, habitat density, and population density are all factors that could potentially account for some of the variation in vocal complexity.

6.01.02, “Fuzzy Occupancy: A Modern Day Look at Rodent Gullibility” [Poster]

S. Ben; M. Fewins; B. Frech; D. Hoffman; A. Jones; J. Martin; J. Ortiz; S. Quammen; C. Richmond; & S. Smith (Dr. Aaron Place, Sponsor)

Bait preference can play an important role in future research, as knowing the bait preference of rats can aid in the capture of specimens for either laboratory or field research. This study intended to examine the preferred bait type of the hispid cotton rat (*Sigmodon hispidus*). Rodents were sampled using Sherman live traps. Three treatments were used: oats, soy butter, and an empty control. The study was conducted from September 11, 2014, until

September 14, 2014. A total of 24 individuals were captured representing 4 species. Hispid cotton rats were the most commonly caught rodents. Our hypothesis was not supported as no preference was found among the treatments. A relationship was found, however, between capture success and transect number. Transect one, closest to the road, yielded a higher rate of capture than either of the other two transects. Vegetation, microclimate, and resource availability could all have influenced the distribution and bait selection of the rats. Future research should address these important variables in the habitat use and selection of rodents in Northwestern Oklahoma.

**6.01.03, “Comparison of Acid Production and Growth Rate of Selected Gram Negative Bacteria and Yeasts in Different Carbohydrates” [Poster]
Paige Little (Dr. Venkata Moorthy, Sponsor)**

Several species of gram negative bacteria are known to ferment different types of sugars, including maltose, sucrose, dextrose, and many others. However, the amount of acid produced by different bacteria varies greatly depending on the type of carbohydrate that is present. In this experiment, five gram negative species of bacteria: *Escherichia coli*, *Enterococcus faecalis*, *Proteus vulgaris*, *Proteus mirabilis*, *Enterobacter aerogenes*, and two species of yeast, *Candida albicans* and *Saccharomyces cerevisiae*, were compared to see the growth pattern and acid production in various carbohydrate media. Results show that *Enterococcus faecalis*, *Escherichia coli*, and *Proteus vulgaris* fermented sugars into acid more efficiently compared to the rest of the microbes used in this experiment. The pH of the acid produced by the bacteria is directly related to the growth rate of individual species.

6.01.04, “Studies of Biofilm Formation by Bacteria Isolated from Drinking Fountains” [Poster]

Taylor Waugh (Dr. Venkata Moorthy, Sponsor)

This research was done to identify and determine if bacterial species could be found in drinking water fountains and to determine if these species were potentially pathogenic and could actively form biofilms with other species. Once isolation was achieved, the different species of bacteria were grown in groups of two and growth was measured and compared to the growth measured for each individual species. Bacterial species were isolated and identified by using standard isolation and identification protocols. The amount of growth was measured by spectrometry. The results conclude that different species react differently with other species. Synergistic, to make biofilms, and antagonistic relationships were found to be present with certain mixtures of species. Most individual species identified during the study are known to be pathogenic species.

6.06 Nursing

6.06.01, “Electroconvulsive Therapy” [Poster]

**Carrie Kaltenbach, Katherine Stewart, & Patrick Karr
(Prof. Leslie Collins, Sponsor)**

Electroconvulsive Therapy or ECT has been controversial over the years. This is mostly due to the media portrayals of how ECT is administered. ECT is one of the oldest forms of treatment for major depression and mania. It is used after pharmacological treatment has

failed. ECT is used continuously along with other forms of treatment for patients. ECT does have side effects such as memory loss; however, most of this memory loss is short term. The effectiveness of ECT on the depressed, manic, and suicidal is high. The benefits of ECT outweigh the side effects of ECT in these type of patients due to the seriousness of their mental condition. If patients are given information, understand ECT, and have consented to therapy, their opinions of ECT are positive.

6.06.02, “Healthy Mouth, Healthy Heart” [Poster]

Lauren Martinez Scobell, Lori Shearer, & Angela Mewherter

(Prof. Leslie Collins, Sponsor)

Do patients that receive prophylactic antibiotics before a dental procedure have a decreased risk of developing infective endocarditis compared to patients that do not receive prophylactic antibiotics before a dental procedure? The prophylactic use of antibiotics has been highly recommended for dental procedures for many years. Since the American Heart Association updated its guidelines, the use of antibiotics prior to a dental procedure has greatly declined. Currently, it is recommended that patients only receive these antibiotics if they have a history of heart disease, congenital heart defects, heart transplant, past diagnosis of infective endocarditis, prosthetic valve, or valve repair. The American Heart Association is changing the focus from prophylactic use of antibiotics to improved oral health overall. Antibiotics often have some negative side effects related to them as well as our bodies' built immunity to these medications. The treatment regimen is often not followed as it should be; therefore, they are not as effective. By taking these medications when it may not be deemed a necessity, they may not work as effectively when it is needed for infection. This research aims to show the use of prophylactic antibiotics prior to dental procedures is not always a necessity.

6.06.03, “Healthy Smile, Healthy Heart” [Poster]

Abigail Daniel, Madison Nichols, & Corie Kaiser

(Prof. Leslie Collins, Sponsor)

Endocarditis is an infection of the inner lining of the heart caused by bacteria and other germs entering from another part of the body such as the mouth. If left untreated, endocarditis can damage or destroy the heart valve and can lead to life-threatening complications. Our research suggests that untreated periodontal infections can lead to endocarditis which can possibly prove fatal. Antibiotic therapy following the initial dental procedure or after an infection has occurred has proven most effective in preventing endocarditis when taken for the full course of antibiotics prescribed. The term “periodontal disease” is used to describe a group of conditions that cause inflammation and destruction of the attached apparatus of the teeth. Periodontal disease is caused by bacteria found in dental plaque. This study showed that there is a relationship between dental infections and endocarditis in men who do not receive treatment with antibiotics.

6.06.04, “Post Traumatic Stress Disorder Treatment: EMDR vs. Medications” [Poster]

Courtney Herian and Nayeli Meza (Prof. Leslie Collins, Sponsor)

The effects of first line medication and eye movement desensitization and reprocessing (EMDR) therapies, were compared in a research study of people diagnosed with post

traumatic stress disorder (PTSD) over a 6-month treatment plan. Researchers selected eighty-eight random subjects and were treated with EMDR or fluoxetine. The participants received eight weeks of treatment and the outcomes were evaluated at a 6-month follow-up. EMDR consisted of 90-minute individual sessions, in which it allows the person to think about the traumatic event while focusing on eye movements. Although further research can be conducted for more evidence, researchers believe that the eye movements activate the brain's chemistry to permit changes in the person's memory structures. The outcomes were measured using the Clinician-Administered PTSD Scale (CAPS) that was proven to give reliable results in the reduction of PTSD symptoms. At a 6-month follow-up, it was concluded that the CAPS total score drop was 62.2% for EMDR and 48.3% for fluoxetine. When comparing EMDR with fluoxetine, EMDR is proven to be most effective in treating people suffering from PTSD.

6.06.05, “Circulating-Water Garment in Prevention of Intraoperative Hypothermia” [Poster]

MacKenzie Flowers, Stephanie Mast, & Lindsey Nighswonger
(Prof. Leslie Collins, Sponsor)

General anesthetics impair the body's ability to thermoregulate, which can result in intraoperative hypothermia. Hypothermia is defined as core body temperature that falls below 36°C. Hypothermia increases the risk of cardiac irregularities, infection, bleeding, and death. These complications may prolong recovery time and increase cost (Galvão, Liang, & Clark, 2010). The purpose of this evidence-based project is to compare the effectiveness of two warming methods in the prevention of hypothermia during the intraoperative period. Forced-air warming is currently the most used warming method during surgeries. However, due to the inability to cover adequate body surface area, hypothermia continues to remain an issue. Circulating-water garments are an alternative warming method. They have been found to be superior to forced-air warming systems in the prevention of intraoperative hypothermia. The improvement in thermoregulation is due to the system's ability to cover more body surface area. (Hasegawa, Negishi, Nakagawa, & Ozaki, 2012). In addition, the garments improve blood circulation by the pulsation of water through the garment (Galvão, Liang, & Clark, 2010).

6.06.06, “Effects of 12 Hour Shifts on Nurses” [Poster]

Liesl Maloy, Drew Bartel, & Madison Howard
(Prof. Leslie Collins, Sponsor)

Twelve hour shifts are the norm for most hospitals today because it has been shown to provide improved continuity of care for the patient and increased time for the nurses to ensure proper charting in patient records. These shifts also have the potential to cause negative effects on nurses due to fatigue and the errors that may result. The objective of this study was to determine a balance point between the advantages of extended shifts and the resulting fatigue that lead to loss of productivity and accuracy. This was achieved by an examination of current peer reviewed studies that address the topic of shift work and its advantages and disadvantages. It also addresses employee surveys pertaining to appropriate interventions. The study concluded that during a 12 hour work shift, day shift nurses reported fatigue during the beginning as well as ending of their shifts. The night shift nurses reported fatigue that continued to increase as their shift progressed. Each of these shifts

reported increasingly diminished amounts of sleep between each shift. The conclusion finds that while a 12 hour shift provides benefits for the hospital nurse and care of patients, it brings a rise in the effects of nurse fatigue that continually increase over multiple shifts. It also finds that three consecutive 12 hour shifts should be followed by one full day off to ensure that adequate rest can be restored.

6.06.07, “Skin-to-Skin Contact after Delivery” [Poster]

Taylor Mathes, Crystal Waddell, & Chandra Flynn

(Prof. Leslie Collins, Sponsor)

This poster summarizes the effects of placing the infant in skin-to-skin contact with the mother immediately after delivery. Skin-to-skin contact after birth encompasses placing the naked infant directly on the mother’s chest at, or soon after, birth. Skin-to-skin has been proven to help the newborn infant in their transition from intrauterine to extra-uterine life, including regulation of temperature, blood glucose levels, and hormone levels. Skin-to-skin contact decreases the incidence of hypoglycemia, regulates blood pressure and respirations, reduces the amount of crying, increases the bonding between the mother and infant, and promotes early breastfeeding. We show this evidence in our poster by using a case study and a model study, presenting a list of the nursing interventions, and providing supporting evidence. We also included five current, credible references that are dated from 2009 to 2014.

6.06.08, “Pertussis Epidemic and Vaccinations” [Poster]

Chelsey Tapia and Mariah Harmon (Prof. Leslie Collins, Sponsor)

Research has shown that the incidences of Pertussis have continued to rise. Pertussis, also known as "whooping cough," is characterized by a cough with high pitched sound at the end of inspiration. Symptoms are similar to that of the common cold which leads to misdiagnosis in the early stages. This is caused by the bacterium *Bordetella pertussis*. Untreated, Pertussis can ultimately lead to death in the highly susceptible population. Outbreaks of Pertussis have been linked to ages less than six months, non-vaccination due to personal beliefs, the immunocompromised, and the older population with waning immunity. Research suggests that better education for the general population by healthcare professionals will facilitate the process of decreasing the incidence of Pertussis. Patient and provider education relating to recommended vaccination schedules and hand washing are of utmost importance in preventing the spread of Pertussis.

6.06.09, “Shift Work among Nurses” [Poster]

Darcey Kliever, Staci Stewart, & Chelsea Tate

(Prof. Leslie Collins, Sponsor)

Nursing is a rewarding yet demanding occupation that requires dedication and personal sacrifice by the nurse on a daily basis. Long work hours and unexpected overtime can take a toll on the body and can have negative effects on the health of workers. While shift work is common among nurses, it is not exclusive to this profession. Most nurses are hired for a fixed shift, but there is a high possibility for schedule changes leading to shift work. Shift work is defined as shifts between the hours of 7 p.m. and 6 a.m. Monday through Friday. The high demand required during shift work puts nurses at risk for injury due to fatigue, stress, and lack of consistency in scheduling. These risks contribute to dissatisfaction in the

workplace along with an increase in absence from work. Suggested interventions to decrease the negative effects of shiftwork include stability of work hours, organized shifts for handover, and support from other staff members. Taking steps towards reducing complications associated with shift work will ensure that quality care is provided around the clock.

6.06.10, “Long-Term Pharmacological Management in Adults with Acute Coronary Syndrome” [Poster]

Tiffany Song & Robin Zornes (Prof. Leslie Collins, Sponsor)

Dual antiplatelet therapy comprised of Aspirin and Clopidogrel has been used as a mainstay in patients with acute coronary syndromes (ACS). However, the recurrence rate of ACS events remains higher than desired, prompting interest in and research into newer medications that target thrombosis. Direct factor Xa inhibitors, orally administered anticoagulant medications, are one of the many new therapy modalities that are being investigated for widespread use. These medications directly inhibit the action of factor Xa, a major protein in the coagulation cascade. Since anticoagulants in general target a different aspect of thrombosis than antiplatelets (such as Aspirin and Clopidogrel), their incorporation into traditional dual antiplatelet therapy has gained interest. In this study, the recurrence rate of ACS events was analyzed in adults taking a daily traditional dual antiplatelet therapy consisting of Aspirin and Clopidogrel compared to adults taking a daily dual antiplatelet therapy with the addition of Rivaroxaban, a direct factor Xa inhibitor. The cohort of adult ACS patients who were administered daily doses of Rivaroxaban added to dual antiplatelet therapy were found to have decreased rates of recurring coronary events and of overall mortality.

6.06.11, “Women & Cardiac Rehabilitation” [Poster]

Juliana Sismon Cooley & Audrey Buss (Prof. Leslie Collins, Sponsor)

Cardiac disease is one of the highest causes of death in women. Women who have had a previous heart attack have an even higher risk of experiencing a reoccurring cardiac event. It is important to be compliant with treatment, especially Cardiac Rehabilitation, because of the effects it has on decreasing mortality rates and increasing quality of life. Although those facts are known by most of the female population, barriers such as modifiable risk factors, anxiety, depression, individualized exercise prescription, and no referral or encouragement of the physician can prevent the participation in Cardiac Rehabilitation. Interventions should be implemented in order to change this scenario. This project shows that participation and awareness of nursing staff in education about the importance of treatment and about the removal of barriers plays an important role in increasing enrollments and attendance for the twelve week program, providing successful outcomes in the future. Nursing and medical staff should explain to clients the importance and the proven evidence regarding participation in a Cardiac Rehabilitation program.

6.06.12, “Nurse-Patient Ratios” [Poster]

Loren Quiram & Jermaine Bell (Professor Leslie Collins, Sponsor)

Nurse staffing is a matter of great concern in the United States and abroad because of its effects on safety and the quality of patient outcomes. The purpose of this study was to assess the correlation between patient to nurse ratios and adverse patient outcomes in a hospital setting. Nurse staffing is an extensively studied issue with results derived from nursing staff surveys and statistically analyzed

data. Studies have shown that an increase in nurses caring for patients has resulted in fewer numbers of complications, lower morbidity rates, fewer number of medication errors, and decreased costs associated with care. Substantial links were found between nurse staffing and adverse patient outcomes. In conclusion, this study indicates a need to implement safer patient to nurse ratios into nursing practice.

6.07 Physics & Engineering

6.07.01, “T-Shirt Cannon” [Poster]

Alfredo Baeza (Dr. Steven Maier, Sponsor)

In this poster, I will present an engineering project for the class C-Stem investigations in the fall of 2014. This poster will consist of the series of steps taken for the development of a remote controlled compressed air cannon and buggy. The cannon was originally for launching T-shirts but was then modified due to engineering challenges and new ideas as the project progressed. The engineering challenges leading to the modifications and the current state of the project will be presented in this poster. In addition, the ideas that will help finalize the development of the cannon and buggy will be presented as well as the different parts used with their specifications.