The Eleventh Annual

*Ranger Research Day*

Friday, November 18, 2016
Student Center Ballroom ~ Alva campus

LIST OF ABSTRACTS
The Eleventh Annual
Ranger Research Day
Northwestern Oklahoma State University
Alva, Oklahoma ~ Friday, November 18, 2016
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ABSTRACTS

Education

3.06 Psychology

3.06.01, “Background Music during Studies: Does it Impact Concentration, Comprehension, and Retention?” [Poster]
Janet A. Faakye (Prof. Stephanie Widick, Sponsor)
This research paper explores the effects that two types of music as well as the absence of music in the background has on concentration, comprehension, and retention among college students as they retain a definition and perform simple mathematics and English comprehensions tasks. Participants aged 18 and above will be asked to answer a short test written by the researcher in one of three scenarios. One group will be answering the test while music considered as “calming” is played in the background while a second group will answer the same test while music considered to be popular (pop music) and stimulating is played. A third group will act as a control group and will answer the test in a quiet room. This research has implications for students who study with background music.

3.06.02, “Non-Traditional Undergraduate Students’ Perceptions of Online Instruction” [Poster]
Prof. Stephanie R. Widick
While the field of online instruction has increased significantly over the past decade, much is still unexamined or lacking knowledge regarding students’ perceptions of online courses. Student perceptions and emotions are key factors in determining whether a student chooses online or face-to-face courses. This qualitative pilot study explores students’ perceptions regarding online courses as compared to face-to-face courses. In order to investigate these perceptions, interviews and observations were conducted with students previously enrolled in an online course. Results from the study regarding student preferences and perceptions, online instruction disadvantages, and emotional factors regarding online and face-to-face instruction are discussed. Interviews, documents, and observations of the case study regarding student perceptions of online instruction are analyzed. A discussion of theories, themes, overall findings, and implications and future research regarding these perceptions are included.
4.02  English

Chandler Steckbeck (Dr. Jennifer Page, Sponsor)

Various symbols have long been used in literature to portray death; despite the variety and frequency of these symbols, the ghostly apparition is a singular embodiment of how humanity grapples with the abstract idea of death. Through apparitions, authors like William Shakespeare and J. K. Rowling have demonstrated how people conceptualize death. Despite these works being written centuries apart, the Thestrals in J. K. Rowling’s Harry Potter and the Order of the Phoenix and the ghosts of murder victims in Shakespeare’s Richard III both serve as symbols of death and represent the complicated emotional responses to death the living experience.

Furthermore, though the apparitions may vary in appearance from work to work, certain necessary traits remain constant. First, by necessity, the symbol must be a spectral presence. Second, the apparition is a manifestation of the characters’ explicit or implicit sense of guilt. Finally, these symbols, regardless of readers’ or viewers’ interpretations, will represent death itself in a way that no physical object ever could.

4.02.02, “The Role of Women in the Home” [Paper]
Sydnie Lowe (Dr. Kathryn Lane, Sponsor)

In Joseph Conrad’s The Secret Agent, Conrad gives the audience a front row seat to what seems like a typical marriage. For the most part, that is exactly what it is. Mr. Verloc, a less-than-active anarchist, assumes the role as head of the household. In this position, he is expected to take care of his wife, Mrs. Verloc, as well as her little brother, Stevie. Mrs. Verloc generally stays home and ensures that her house is maintained, her brother is taken care of, and her husband’s needs are met. Though it does not seem as basic, Margaret and Henry in Howard’s End also display a fairly common marriage. They assume the typical roles of husband and wife. Henry is the provider while Margaret stays home. This familiar marriage is seen yet again in To the Lighthouse by Virginia Woolf. Mr. Ramsay assumed the role of breadwinner while Mrs. Ramsay is thought of as the caregiver. Time after time, 19th and 20th century marriages display the man as the one that provides the stability in the home, and the female to be the one that does most of the up keeping. Though usually, the importance of the female in the portrayals of marriage is very clearly ignored; the women of the house are far more influential than the men.

Bethany Morphis (Dr. Kathy Earnest, Sponsor)

Halsey is a musical artist known for her controversial blatancy. She states “I will never be anything but honest,” and this becomes evident in her writing as she attempts to ignore the inherent will of all humans to value pride over truth. One of her most famous songs, “New Americana” not only exemplifies this idea but also sparks further discussion about the influence of publicity on the American dream. It is, in and of itself, an argument. While musically uplifting, the lyrics are hard to swallow; the best way to describe it as a whole would be to call it a dark anthem.
The purpose of this commentary is to interpret the image Halsey creates through her concept of a “New Americana.” It consists of a thorough analysis of the song followed by observations taken from a supplementary work, T. S. Eliot’s “The Love Song of J. Alfred Prufrock.” In an attempt to explore all facets of the piece (as a poem, as a song, and as a cinematic production), the author of this analysis intends to treat all layers of possible meaning as one would a series of lenses which are capable of producing a kaleidoscope of various interpretations, no matter how they are combined.

Ashley Wilson (Dr. Shawn Holliday, Sponsor)  
This paper explores the practice of dentistry in the United States through an historical perspective and discusses how this historical view impacts the understanding of Frank Norris’ 1899 novel McTeague. The novel follows the life of McTeague, a brutish man who practices dentistry, and his wife Trina, who develops an insatiable love of money. Upon receiving notice that he cannot practice dentistry due to his lack of formal education, McTeague’s life begins to regress economically and socially. The decline in McTeague and Trina’s life is not due to the notice of McTeague’s disbarment from the dental profession. Rather, the deterioration of McTeague’s practice and his life with Trina is due simply to their ignorance of government policies. It is the ignorance of Trina and McTeague that keeps them from questioning the notice of disbarment or how to alleviate the situation in order to remain in practice in order to sustain their socioeconomic status.

4.04 History  
4.04.01, “Letters to Pauline (Schlegel) Lehl: Family Correspondences from Russia to Oklahoma: 1913–1937” [Poster]  
Dr. Eric Schmaltz  
Ten thousand ethnic Germans from the Russian Empire migrated into Oklahoma between 1890 and 1920. In 1913, one of these immigrants included a young Pauline (Schlegel) Lehl (1893-1982), who settled in Ingersoll and later Alva, Oklahoma. From January 1913 to April 1937, Pauline received a total of 180 dated letters (283 pages), nearly all in Russian, from relatives who stayed behind in Russia’s Saratov Province along the Volga River and elsewhere. This extensive exchange started before the First World War and ended with the beginning of Soviet dictator Joseph Stalin’s Great Terror. Written communications on both sides of the Atlantic had gone on for decades, but the turbulent events of the Communist takeover and consolidation of power after 1917 alarmed and even created desperation for those facing revolutionary changes, especially after Stalin’s forced collectivization drive. Sometimes through subversive techniques and coded language to avoid the censors, the letters related to the outside what was happening inside the old country. Most such letters from the Soviet Union remained unpublished in North America, some lost or destroyed, but many others stored in attics, basements, and closets for decades. Pauline kept safe this body of correspondences. Memories of the letters and the harsh experiences of the early Soviet period faded into relative obscurity, at least until the Cold War’s conclusion in 1991, when
younger generations of scholars and relatives began in earnest searching archives and private residences in North America, uncovering a nearly untapped treasure-trove of information and reestablishing former transnational family networks.

**Math & Science**

**6.01 Biology**

6.01.01, “Effects of Different Colors on Blood Pressure and Heart Rate” [Poster]

Wisdom Baidoo Addae (Dr. Steven Thompson, Sponsor)

Colors play vital roles in altering psychological and physiological behaviors of humans. For instance, some researchers indicate that red, yellow, and orange colors are associated with excitement, stimulation and aggression whereas blue and green are also associated with calm, security, and peace. Although not conclusive in many cases, certain types of colors have also been studied to influence or trigger different types of physiological responses, such as blood pressure, heart rate, brain activities, galvanic skin response (GSR), and so on. Using the three primary colors (red, yellow and blue) and green, I studied the extent of effects of these four colors on the heart rates and blood pressures of ten human subjects. Results show that while all the participants showed changes in blood pressures and heart rates when subjected to the four different colors, the changes were not significantly consistent to support a particular group of effects induced by the different colors.

6.01.02, “Chemical Communication in Earthworms” [Poster]

Fiifi Neizer-Ashun & Christian Agbola (Dr. Aaron Place, Sponsor)

Studies have shown that earthworms secrete a coelomic fluid through dorsal pores when alarmed or terrified. Mucus secretion is a potent aspect of earthworm existence and is manifested in feeding, avoiding predation, migration, and individual function in the niche. This fluid secreted by the earthworm when terrified is coupled with pheromones that indicate the purpose for which the mucus is being secreted. Different species of earthworms respond differently to coelomic fluid. Two experiments were conducted to show exactly how earthworms respond to these signals. The species used for this project include *Eisenia fetida, Diplocadia riparia*, and *Lumbricus terrestris*. In experiment 1, the worms were subjected to electric shock to secrete mucus. Same species and different species were allowed to come into contact with the mucus. All the worms moved away from the secretion and fell off the plate. The time taken for the worms to fall off the plate differed for different species. In experiment 2, the worms were allowed to move either positively or negatively with respect to three applied organic chemicals. Some species moved closer to the applied chemical while others moved away. It is interesting to note that the worms communicated using chemical signals, but it is even more interesting to note that it is not just the chemicals but how they are combined. A signal comparison of two chemicals might inform nearby worms to go away. However, the addition of a third chemical will tell the worms to gather round. This project shows how the secretion of mucus is essential for avoiding predation and locating feed.
6.01.03, “Hot or Cold?” [Poster]
Abbie Tillman, Willow Gahr, & Riley Trousdale
(Dr. Aaron Place, Sponsor)
Snakes, as misunderstood as they may be, are thought to be cold and vicious creatures. In retrospect, this is simply not true; they are only viscous if you happen to be a small frog and cold if the ambient temperature is so. Many species of water snakes are considered thermoconformers. They use the ambient temperatures of the ground, water, and air to reach preferred internal temperature ranges, and thus fluctuate with them. Being that they are generally thermoconformers, homeothermy is not a viable means of body temperature regulation. To understand the extent to which water snakes thermoconform, three water snakes were surgically implanted with temperature sensitive radio transmitters. They were released back to their original habitats in which they were monitored hourly for a 24-hour period, checking ambient air temperature as well as body temperature using the radiotelemetry equipment. Two of the snakes showed true thermoconformation. Their temperatures typically fluctuated within +/- 3 degrees of the ambient temperature as temperatures changed throughout the duration of the study. The snake that was identified as female showed deviation from the ambient temperatures. Previous research has noted that thermoconforming animals which deviate with higher temperatures are usually more active, have eaten and are therefore digesting, and/or are female.

6.02 Chemistry
6.02.01, “Study of Iodine Gas Scrubber Efficiency and Iodine Distribution in Northwestern Oklahoma Brine Waters” [Poster]
Austin Anderson (Dr. Jason Wickham, Sponsor)
In the late 1970s, it was discovered that the brine waters of NW OK contain significant amounts of Iodine (above 60 ppm). However, the exact amounts and distributions of Iodine throughout this region were unknown. Currently, the majority of the world’s supply of Iodine comes from mining Iodate minerals in Chile (≈ 65%), brine water aquifers in NW Oklahoma (≈ 5%) and Japan (≈ 25%), and seaweed extraction. With the growing need for Iodine compounds in the various fields the demand for Iodine is higher than ever. Thus, Iofina has recruited the aid of NWOSU to quantify the Iodine concentrations and distribution throughout the brine aquifer, as well as to determine the longevity of these iodine concentrations. Currently, this study has to the discovery of new sites within the aquifer that may be of commercial interest and has taken an in-depth look at three of these possible sites, as well as measuring iodine fluctuations up to 100 ppm, which is a much larger fluctuation than the expected 10 ppm. Currently, we are investigating rather these fluctuations are due to the change from vertical to horizontal wells or inhomogeneity within the brine aquifer. We also studied iodine gas scrubber efficiencies, which captures Iodine gas during the crystallization process. A balance between fluid recirculation rate, air flow, internal surface area, and a chemical balance without disrupting other plant operations is needed, which will result in improved overall iodine recovery capture.
6.02.02, “Introductory Bioorganic Study of Firefly Luciferase—An Enzyme to Drive Bioluminescence” [Poster]
Dalton Pannell, Brady Fields, & Yeboah Gyening
(Dr. Cornelia Mihai, Sponsor)
The objective of the proposed research project is to initiate a comprehensive bioorganic study of Firefly luciferase, which will consist of: extraction of the luciferase from dry firefly lanterns, purification and analysis of luciferase. This introductory study will be used to develop new laboratory experiments that will be incorporated in the Biochemistry laboratory course currently taught in the Department of Natural Sciences at NWOSU.

6.06 Nursing
6.06.01, “Super Infection Reduction” [Poster]
Shasta Alcorn, Cristina Perez-Macias, & Tanner Holmes
(Dr. Leslie Collins, Sponsor)
Hospitals and medical facilities use a wide variety of products to clean and disinfect surfaces and equipment. The selection of these products is based on research regarding which chemicals are most effective. Our research shows products containing chlorhexidine gluconate are more effective at reducing microorganisms than other products. Chlorhexidine gluconate, often referred to as CHG, is an antibacterial antiseptic cleaning agent that can be shown to reduce the risks of not only many common infections but also the “super infections” VRE and CRE.

Vancomycin resistant enterococci (VRE) and Carbapenem-Resistant Enterobacteriaceae (CRE) are often termed “super infections” because they are antibiotic resistant and are hard to treat. This makes them dangerous to contract. Research studies show the relationship between using CHG cleaning products and the reduction of CRE and VRE infections in the hospital setting.

6.06.02, “Massage Therapy for Pain in Older Adults” [Poster]
Jonathan Allotey, Nissi Jordan, & Cydni Phelps
(Dr. Leslie Collins, Sponsor)
Pain management is one of the most common problems seen in the healthcare setting. Non-pharmacological treatments have the potential to complement traditional medication treatments, but they also care for patients holistically. In older adults, chronic and persistent pain is prevalent, which leads to physical and emotional stress, lower quality of life, and higher use of pain medication. There are several options to treat pain medically, but there are also non-pharmacological routes such as massage. Our research suggests massage to be useful, relevant, and feasible for pain management. Generally, massage therapy is frequently used for back pain but there have been few studies that explore the benefit of massage therapy on stress, emotional stability, and overall better health. Pain is subjective and varies between patients so further research will be necessary to evaluate the effectiveness of massage therapy for pain relief in older adults.
6.06.03, “Cooling Cap Use in Neonates” [Poster]
Rebecca Black & Bryanna Ross (Dr. Leslie Collins, Sponsor)
A cooling cap is a therapeutic device that is used to help lower the body temperature to a hypothermic state. The purpose of this is to slow down the metabolism and circulation in the brain in order to prevent neurological deficits. Our research suggests that several different conditions can be treated with this method. For neonates, the most common reason for receiving this treatment is for hypoxic ischemic encephalopathy (HIE). Hypoxia occurs when there is a deficiency of oxygen reaching the body tissues. When a body is cooled to a hypothermic state, the body functions slow down, decreasing the need for oxygen. In HIE, the brain is deprived of adequate amounts of oxygen. If the brain remains deprived of oxygen, then the neonate will likely develop neurological deficits, such as cerebral palsy. This study showed that hypothermia is the only current treatment used to minimize brain injury in neonates with hypoxic ischemic encephalopathy.

6.06.04, “Battle of the Biotics” [Poster]
Shanndi Boor, Rebecca Ellis, & Danielle Williams (Dr. Leslie Collins, Sponsor)
Necrotizing enterocolitis is a disease that is caused by bacteria invading the intestinal wall. The bacteria causes a local infection and inflammatory response that, if left untreated, can cause bowel destruction and infant death. Necrotizing enterocolitis mostly affects premature infants in the second or third week of life, formula fed infants, injury to the intestinal wall, and underdeveloped intestines. Probiotics are the “good” bacteria that live naturally within the digestive tract and support digestive and immune health. Prebiotics are a type of fiber that help to stimulate the growth of good bacteria within the digestive tract. Our research suggests that the use of prebiotics and probiotics will decrease the incidence of necrotizing enterocolitis in preterm infants. The use of these supplements is aimed at preventing necrotizing enterocolitis, rather than just limiting the progression of the disease once it has occurred.

6.06.05, “Central Line Infection” [Poster]
Riley Bryant & Brooke Ortiz (Dr. Leslie Collins, Sponsor)
Central line-associated bloodstream infections are preventable complications of central venous catheters. The infectious bacteria that causes this can be acquired during preparation/placement of the equipment, medication or intravenous fluid administration, or through the removal of the central venous catheter. Through evidenced-based practice, it has been shown that certain bundles of interventions can help to reduce the incidence of these central line-associated bloodstream infections in health care settings. For example, a bundle may include proper hand hygiene, use of proper personal protective equipment such as a cap and face mask, sterile gown, sterile gloves, sterile body drapes for the patient, routine monitoring of the catheter insertion site, and routine evaluation of the need for central venous catheter placement. Our Evidence Based Practice project will show that sterile preparation of equipment upon insertion of the central venous catheter can decrease the incidence of central line infections in pediatrics.
6.06.06, “Electronic Charting Means Less Errors” [Poster]
Julieta Carrillo Chaparro, Molly Payne, & Kristina Schmidt
(Dr. Leslie Collins, Sponsor)
An electronic medical record, or EMR, is a digital version of a paper chart that contains all
of the patient’s medical history from one practice. An electronic medical record is typically
used by professionals for diagnosis and treatment of patients. A sentinel event is defined by
The Joint Commission as “any unanticipated event in a healthcare setting resulting in death
or serious physical or psychological injury to a patient, not related to the natural course of
the patient’s illness.” Paper charting is still used by a small number of facilities, but is not
commonly accepted now that electronic medical records are being used. Through the study
we have conducted, we will prove to show how charting through an electronic medical
record system does in fact, decrease the happenings of sentinel events in hospitalized
patients as compared with paper charting systems.

6.06.07, “Code Blues…A Family Affair?” [Poster]
Aubrey Clark, Toni Fowler, & Amy English (Dr. Leslie Collins, Sponsor)
A code blue is an emergency medical situation in which a patient is in pulmonary or
cardiovascular arrest and requires immediate attention from medical personnel to work and
resuscitate the individual. Family presence at this time brings fourth questions as to the
impact it may carry on the healthcare team and their ability to carry out their duties
effectively. Research suggests that family presence in such situations has brought forth both
benefits and concerns. The medical teams’ number one priority in a code blue is to focus on
the resuscitation of the patient. It has been suggested that family presence during this time
can shift part of the focus off of the patient and onto the family members, impeding their
ability to perform at their prime capabilities. This evidence based practice project will show
that family presence may inspire hope in the family and the health care team during
resuscitation efforts.

6.06.08, “Chlorhexidine Gluconate and Antibiotic Resistance” [Poster]
Angela Goodman, Kelsey Hammock, & Megan Middleton
(Dr. Leslie Collins, Sponsor)
Chlorhexidine Gluconate, also referred to as CHG, is an antiseptic solution used topically to
treat both gram positive and gram negative bacteria. CHG is found in dressings and
cleansing products to decrease bacterial colonies in wounds and invasive procedures. Our
research is focused on showing the relationship between CHG and antibiotic resistance,
which is manifested as infection, such as urinary tract, MRSA, and respiratory infections.
Antibiotic resistance is produced from the misuse and over use of antibiotics, such as
prescribing antibiotics for viral infections where they are ineffective. When the body is
exposed to unnecessary antibiotics the microorganism mutates and becomes permanently
resistant to that specific antibiotic. When a later infection requires treatment the antibiotics
will be ineffective. In our study, we will explore the correlation between chlorhexidine
gluconate and antibiotic resistance.

6.06.09, “Electronic Medical Records Impact On Patient Care” [Poster]
Kassy Roberts & Abby Hand (Dr. Leslie Collins, Sponsor)
Electronic medical records (EMR) are trending as they are widely used. They are becoming
the primary source of nursing documentation. They are the future of the health care continuum. Transitioning to electronic medical records impacts physicians, nurses, medical staff, as well as patients. Our research proposed favorable outcomes of implementing EMR’s to be; improved efficiency, patient safety, medical personnel & patient satisfaction as well as promoting cost effective health care. Our research also addressed areas of concern with EMR documentation. The greatest concerns being patient safety and time spent documenting and navigating the system. Since this is a newer system there is minimal research available to conclude an accurate analysis of efficiency and satisfaction. However, there is some research to support the idea that the more time spent utilizing and familiarizing with the system, the more beneficial it is in medical practice.

6.06.10, “Benefits of Early Skin-to-Skin” [Poster]
Jacqueline Robison, Ashley Wintersteen, & Kayla Jantz
(Dr. Leslie Collins, Sponsor)
Skin-to-skin contact is also known as kangaroo care. This occurs when a baby is placed on its mother’s chest bare skin to bare skin. This regulates the infant’s body system and helps the transition from womb to world. This is facilitated through breastfeeding and cuddling the infant. This practice is support most in baby-friendly hospitals. This study shows the correlation of immediate skin-to-skin contact and the babies’ overall health. This will also be compared with delayed skin-to-skin to give an overall result of the effects of kangaroo care both immediate and delayed.

6.06.11, “Accessing Healthcare in Rural Communities” [Poster]
Lane Smith, Taylor Brinkley, & Nyki Casillas
(Dr. Leslie Collins, Sponsor)
Having adequate access to healthcare is essential to maintaining a healthy lifestyle and/or properly managing illness. There are many barriers that can decrease the access of healthcare, especially in rural areas. It is important to understand rural health disparities relating to healthcare access in order to address the problem and improve outcomes. According to the Health Resources and Services Administration, 70 of Oklahoma’s 77 counties are medically underserved. This poses a large barrier to healthcare access for the majority of Oklahoma residents. The aim in our research is to outline the extent of healthcare access disparities in rural healthcare. An analysis of Rural Healthy People 2020, Volumes 1 & 2 was our primary method of data collection for this project. Results indicate that Rural Healthy People 2020, Volumes 1 & 2 is actively setting goals to improve healthcare access and the health and well-being for rural populations. This implies that we can expect to see measurable improvements in rural health over the next decade.

6.06.12, “How to Implement Skin to Skin Contact in the OR” [Poster]
Ashley Watkins, Lorene McGhee, & Lindsay Haas
(Dr. Leslie Collins, Sponsor)
Skin to skin contact occurs when a baby is held bare chest to bare chest by the mother or father. It can encourage newborns to adjust to being outside of the womb. It is ideally done immediately after the delivery of the baby and as much as possible during the newborn’s first few days of life. Some of the benefits of skin to skin contact are that it increases breast feeding rates, stabilizes the newborn’s temperature, and encourages bonding between the
parents and the newborn. In the operating room it is not as common to perform skin to skin care following a cesarean delivery. A current study suggests that staff preparation and family birth experiences were the primary roles in effective implementation of skin to skin contact. The goal of this project is to evaluate the feasibility of skin to skin contact within the first ten minutes following a cesarean birth.

6.06.13, “Families Present during Codes” [Poster]
Katie Welch, Shelby Smith, & Harley Wares (Dr. Leslie Collins, Sponsor)
Asystole, more commonly known as a “code blue,” is a life threatening event in which cardiopulmonary resuscitation is necessary to reestablish cardiac function. Our research suggests that when cardiopulmonary resuscitation is required due to a “code blue,” it can be extremely beneficial to the holistic family-centered care of not only the patient but their family as well. Having family members present during cardiopulmonary resuscitation with an assigned health care professional to explain what is happening and addressing questions and concerns is beneficial. The term holistic family-centered care can be described as an approach that envelops all aspects of not only the patient’s care but his/her family’s care as well. This study shows improved holistic family-centered care when families are present for cardiopulmonary resuscitation with health care personnel explaining versus not being present.

6.06.14, “The Effects of Delivery Room Temperature on Newborn Infants” [Poster]
Shannon Wooten & Whitney LeGrand (Dr. Leslie Collins, Sponsor)
Traditional delivery room temperatures are usually maintained relatively cool for the comfort of the laboring mother. However, the OR is significantly cooler for sterility purposes. If ignored, cooler OR room temperatures can lead to higher rates of hypothermia in the newborn infant at the time of the initial health assessment compared to that of the traditional delivery room. Our research suggests that the difference in traditional room deliveries compared to OR room deliveries can significantly affect the initial health assessment temperature of a newborn infant. Heat lamps, swaddling and skin-to-skin contact have proven effective in maintaining the appropriate temperature in a newborn. However, with the added variable of increasing room temperatures in both traditional and OR delivery rooms, the infant is less likely to exhibit decreased body temperatures and maintaining homeostasis. Our evidence based practice project will present the effects of delivery room temperatures, both traditional and OR, on an infant’s initial newborn health assessment.