

The Eighteenth Annual  
*Ranger Research Day*

Friday, November 17, 2023  
Student Center Ballroom



**LIST OF  
ABSTRACTS**

The Eighteenth Annual  
**Ranger Research Day**

Northwestern Oklahoma State University  
Alva, Oklahoma ~ Friday, November 17, 2023  
Student Center Ballroom

# A B S T R A C T S

## *Education*

### *3.06 Psychology*

#### **3.06.01, “Psychological Inoculation and Inaccurate News: The Use of Psychological Inoculation to Establish a Resistance to Misinformation Circulated by Social Media.” [Poster]**

#### **Heatherene Merrill (Dr. Taylor Randolph, Sponsor)**

Recently, research has shown that social media has become a mainline source for information sharing, and a leading resource in information gathering (Simsek, 2019). However, with the creation of platforms staged to lay out everything at one’s fingertips, comes an opening for agents of manipulation. In an effort to combat the suspected manipulation techniques employed by social media platforms, researchers speculate that implementing psychological inoculation can reduce susceptibility to misinformation. This study attempts to determine if psychological inoculation can be used as a means to facilitate a resistance to psychological manipulation by social media platforms via inaccurate publications. The conceptual variable psychological inoculation is operationalized as an online game designed to increase an individual’s ability to recognize inaccurate news. The control, or group C, played *Arkadium’s Bubble Shooter*, while the other, group E, played the game *Bad News*. The susceptibility to inaccurate information was measured by accuracy, in discerning accurate vs. inaccurate content. The anticipated outcome was that individuals would exhibit more resistance to fabricated information distributed by social media platforms after being exposed to training targeted at recognition of manipulation techniques. The validity of psychological inoculation and the ramifications of susceptibility to inaccurate information provided by social media was also considered when analyzing the results of the study. The discussion addresses whether there was a correlation determined to be present, between age and susceptibility to inaccurate news, based on the results obtained.

**3.06.02, “Academic Performance of Working and Non-Working College Students: Influence of Employment Status in Student's GPA” [Poster]  
Adriana Melisa Quezada (Dr. Taylor Randolph, Sponsor)**

The increase of students entering the workforce while also being enrolled in higher education is a modern phenomenon that requires systematic analysis. The association of academic performance among working and non-working college students was examined in this study. A sample of NWOSU college students was divided into four groups: unemployed students, students working less than 20 hours per week, students working 21-40 hours per week, and students working more than 40 hours (41+). Such students were required to fill out a questionnaire regarding demographic characteristics (age, gender, race, major, etc.), work-status (hours worked per week), and credit hours (hours enrolled per semester to be considered part-time or full-time students). Academic performance was measured based on student’s self-reported Grade Point Average. Interference of work hours with a more limited studying hour period was predicted among working college students. However, a strong association of lower academic performance in working college students was not found.

**3.06.03, “Depression, Isolation, and COVID-19” [Poster]  
Siena Kephart (Dr. Taylor Randolph, Sponsor)**

In this poster the researcher will answer in what ways the relationship between COVID-19 and depression symptoms correlate. It also will answer in what ways COVID-19 affected college students' depression because of isolation. The participants were asked about their depressive symptoms. The participants were also asked how many friends they had before COVID-19 and how many close friends the participants have now. The participants are being measured if their depression, if any, was raised because of friends before/after COVID-19 started due to isolation. This information was measured by the PHQ-9 depression scale. The hypothesis is that participants with more friends after COVID-19 have a lower depression rate. Another hypothesis is that participants with fewer friends now than before COVID-19 may be more depressed.

**3.06.04, “Genres of Music and its Effectiveness on Heart Rate” [Poster]  
Ali Harzman (Dr. Taylor Randolph, Sponsor)**

In this study, the researcher deciphered how different genres of music affect the participant’s heart rate. Many researchers in the past have done similar experiments but with Classical and Jazz music. In this study, the researcher played Jazz, Pop, Rock, and 90s R&B, all of which have a wide variety of rhythms and feel. This study was conducted in a controlled environment where the researcher could account for any other external stimuli. Participants in this study included Northwestern Oklahoma State University students from various majors. Results from the study were analyzed to determine whether other genres also affect heart rate.

**3.06.05, “First Generation College Students: Factors Predicting Success”  
[Poster]**

**Maria Leon (Dr. Taylor Randolph, Sponsor)**

First-generation college students are the first from their entire family to attend a university or college. None of their parents went to a college or university. First-generation students may

experience a variety of changes in their social and support circles during their first year of college, such as new relationships and separation from people who are important to them. First-generation college students face circumstances that lead to stress and a lower feeling of connection, which may prevent them from completing their studies (Garriott et al., 2018). When first-generation college students' parents come from low-income backgrounds, they generally do not graduate from college (Pascarella et al., 2004). This researcher will investigate first-generation students versus continuing students and how first-generation college students end up with symptoms of depression and loneliness when attending a state regional university.

## ***Math & Science***

### ***6.01 Biology***

#### **6.01.01, “Is Lizard Asymmetry Linked to Anthropogenic Disturbance?”**

[Poster]

##### **Walter D. Smith (Dr. Nicholas Ledbetter, Sponsor)**

Environmental stress introduced at key points in development can cause asymmetric anatomy in animals. Little Sahara State Park has been widely used for ATV activity since 1962 which introduces many environmental stressors including noise, vibration, and chemical pollution. The researchers used museum specimens from prior 1962 to compare to current day lizards, caught in Little Sahara State Park, to see if there is asymmetry in the legs. We measured each leg from body to elbow and from elbow to tip of toes and used a T-Test to see if there is a difference. We found that there is a significant difference between lizards of the past and the present in their upper limbs but not their lower limbs. This shows that the stress that the lizards are under living next to the park is causing some asymmetry during development and is mainly focused on the upper legs. Humans have a severe impact on the environment around them, and that could lead to an impact on the resident species. This could be a factor contributing to the asymmetry we have observed in these lizards.

#### **6.01.02, “Limb Regeneration in the Ouachita Dusky Salamander (Desmognathus brimleyorum)”** [Poster]

##### **Cora Taylor (Dr. Nicholas Ledbetter, Sponsor)**

Regeneration consists of restoration or replacement of any damaged or missing cells, tissues, organs, or even entire body parts of an organism, rejuvenating them so that they can function at full potential. Advanced to complete regeneration of lost body parts can be seen throughout several species of salamanders. Because of this, variation in the regenerative patterns can be seen as well, particularly in the bone patterns of regenerated limbs. In this study, we seek to understand the change in morphological skeletal patterns in regenerated limbs in the Ouachita dusky salamander (*Desmognathus brimleyorum*). We specifically compare carpal and digit patterning in original limbs versus regenerate limbs. We predict that regenerate limbs will have distinct morphologies and more variation. This study advances the understanding of this umbrella of salamander and regenerative science. Thirteen specimens were collected and methodically managed throughout the study's amputation and recovery processes. The results supported the chosen hypothesis that regenerate limbs show variance in comparison to original limbs. Because this can be tested in selective species of

salamanders, it is proof that regenerative genes are present in the genetic makeup of those species. Consequently, if the DNA sequence that allows regenerative properties to function can be identified and isolated, it can build the understanding and knowledge of the idea of regeneration being made possible for humans and how it can be integrated into medical practice in the future.

## 6.06 *Nursing*

### **6.06.01, “Substance Abuse in College Athletes” [Poster]**

**Iver Brunson, Kylie Whetstone, & Oritza Delgado**

**(Dr. Leslie Collins, Sponsor)**

Substance abuse has been an ongoing evolution in today's society, but how does this affect our college athletes? We decided to seek out the answer as to whether college athletes have a higher incidence of substance abuse than college students that do not participate in sports. The research shows that college athletes are more likely to abuse select substances more than the average population. It was shown that alcohol, tobacco, and steroids were abused at increased levels. There are many reasons that athletes are leaning towards substances to help with their lives. College is seen as one of the most stressful times in a person's life. Many college students are juggling social life, classes, sports, jobs, and being away from their families. It is important that we stress the impact of these substances on athletes' bodies and minds. Colleges need to review policies and have broader education for their student athletes. We also need to provide support and education for these young adult athletes as they are going through these changes. The college educators can use substance abuse tools to help the athletes with early detection and prevention but also it will show the college educators the impact of substance abuse and how they can help to prevent the substance abuse impact on college athletes.

### **6.06.02, “Diet and Attention Deficit Hyperactivity Disorder” [Poster]**

**Mindy Cosby, Alicia Smith, & Corbyn Austin**

**(Prof. Heidi Ritchie, Sponsor)**

With a rise in prevalence of attention deficit hyperactivity disorder (ADHD) diagnosis in children, parents are seeking alternative forms of treatment from the standard form. The standard treatment for attention deficit hyperactivity disorder is stimulant medications like amphetamine, atomoxetine, and methylphenidate. It is estimated that 2.7 million children in the United States are currently taking stimulant medications for attention deficit hyperactivity disorder. These are daunting drugs for parents to give to their children, leaving them to seek out alternative forms of treatment. The purpose of this evidence-based research project was to understand if there was decreased hyperactivity in attention deficit hyperactivity disorder in children with alteration of diet by eliminating certain foods, or adding things, to create a more rounded, healthy diet. We reviewed multiple studies on this subject, both including studies that involve adding and removing items from children's diets for an extended period while monitoring changes in behaviors. The results from these studies were inconclusive due to unmeasured and nonregulated variables like sleep, screen time, activity levels, parenting styles, and levels of severity of diagnosis in the child and inability to test compliance to diet regimen in children. However, these studies did show the

possibility of decrease of attention deficit hyperactivity disorder symptoms from diet alteration. More research would need to be performed to produce a definitive result.

### **6.06.03, “Hospital Interpreters and Limited English Proficiency Patient Outcomes” [Poster]**

**Tiffany Goss, Viviana Resendiz, & Ana Cruz Hernandez  
(Prof. Heidi Ritchie, Sponsor)**

In recent years, the state of Oklahoma has seen an increase in the limited English proficiency (LEP) population. As evidenced by the Oklahoma census, from 2010-2020, the Hispanic population has increased by 42.1%. Due to the increase of limited English proficiency (LEP) population, hospitals have seen a surge in LEP patients, which has led to a greater need for hospital interpreters. The need for hospital interpreters is due to the language barriers between patients and healthcare workers which can hinder effective communication and patient comprehension. Despite availability of various types of hospital interpreters including video call, in person, or by phone, healthcare professionals tend to rely on ad-hoc interpreters or no interpreters at all according to the research. This places patients at a heightened risk for adverse events such as increased readmission rates, comorbidities, and longer hospitalization rates. Research has demonstrated with the usage of a hospital-wide implemented interpreter system and based off patient's preferences; it will decrease adverse events.

### **6.06.04, “How are Negative Coping Mechanisms Affecting Healthcare Workers?” [Poster]**

**Alexis McNeill, Isabella Freyman, & Adrienne Allison  
(Prof. Heidi Ritchie, Sponsor)**

Substance use in healthcare workers is prevalent worldwide and has been since the COVID-19 pandemic (Moya-Salazar, 2022). Recognizing the impact this has on healthcare is needed. Healthcare workers who develop substance use disorders can impact their professional career, personal lives, and the safety of the patients they care for. Risk factors for substance use include stressful work environment, work stressors such as increased workload, hour shifts, mandatory overtime, lack of resources, caring for high acuity patients, possible frequent exposure to infectious agents, feeling of inadequacy, ease of access to medications, fatigue related to shift work, work related to physical pain, positive affect, social situations, habits or cravings, negative affect situations, chronic stress, burnout, and emotional exhaustion (Ramos, 2018). All these risk factors cannot be reduced, but the negative outcomes related to the risk factors can be prevented with education for healthcare professionals with proper coping mechanisms. The purpose of our research is to educate and highlight the importance of healthy coping mechanisms. The effects of unhealthy coping mechanisms can be detrimental to healthcare workers lives, careers, and the safety of others.

### **6.06.05, “Effects of Nurse-to-Patient Ratios” [Poster]**

**Felicia Bueno & Faith Nino (Dr. Leslie Collins, Sponsor)**

Healthcare is continuously looking for ways to provide patient-centered care and improve patient outcomes. With an increase in admission rates, an important factor to consider is nurse-to-patient ratios. The purpose of this evidenced based project was to determine how a higher nurse-to-patient ratio can result in poor outcomes for the patient and nurse.

Nurse-to-patient ratios are defined as the number of patients a nurse cares for during a shift. A higher nurse-to-patient ratio, refers to an increase in patients per nurse. Research shows a higher nurse-to-patient ratio leads to poor outcomes for the patient and nurse. For every additional patient added to the nurses' typical workload there is a 7% increased risk of patient death within a 30-day period (7). These increased nurse-to-patient ratios lead the patient to dissatisfaction of care, increased risk for admission, increased risk for harm, and a longer length of stay. These ratios result in the nurses experiencing emotional exhaustion, job dissatisfaction, increased hours of work, and increased risk for medical errors. These negative outcomes can be decreased with appropriate staffing as well as supporting the physical and mental well-being of nurses.

**6.06.06, “Opioid Related Deaths: Are We Doing Enough?” [Poster]**  
**Lacey Dunivin, Mackenzie Gonser, & Michelle Hoeltzel**  
**(Prof. Heidi Ritchie, Sponsor)**

**Aim:** Our aim was to identify if Naloxone availability is effectively lowering opioid overdose mortality rates. **Findings:** Naloxone is helpful when used in conjunction with proper patient, caregiver, and family education. Death rates have decreased with naloxone access laws; however, with effective screening tools, discharge education, planned follow up care, and medical provider education, the findings show a much greater success rate in preventing opioid overdose related deaths. **Conclusion:** Naloxone access programs as a single intervention are less effective when compared to naloxone access laws paired with screening and education. **Recommendations:** Naloxone is beneficial for life-saving measures but has little effect on long-term withdrawal symptoms. Relapse is likely for patients who are at elevated risk of overdose. Based on this research, Naloxone should be available without a prescription with effective education such as seeking medical care after the first dose is administered. Another recommendation would be to make naloxone available with all AED machines.

**6.06.07, “Pitocin and Maternal Complications” [Poster]**  
**Sydne Edmiston, Kaylee Milligan, & Daresa O'Connell**  
**(Dr. Leslie Collins, Sponsor)**

Does artificial oxytocin (Pitocin) increase the risk of maternal complications during labor up to 3 days postpartum? In previous research, Pitocin has been shown to progress the laboring process and control postpartum bleeding. While this research is still evident, there are other factors to consider. Still, research shows that Pitocin has positive effects on the induction of labor and control of postpartum bleeding, but new research has proven that there are significant risks with the use of this medication. In the research, it was found that there is an increased risk of postpartum hemorrhage, cardiac rhythm changes, uterine rupture, significant changes in blood pressure, and labor ending in cesarean delivery. Dosing control also has been implemented to reduce these risks and maintain the mother's stability. This research was concluded based on women including nulliparous, multiparous, and mothers experiencing vaginal birth after cesarean. Based on the research, Pitocin does increase the risk of maternal complications.