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Corpus Juris: Non-Medical Drivers of Health Policies in Older Adults
Student Caregivers: Balancing Education & Family Needs

Angelina M. Fortner

Faculty Mentor: Dr. Paige Trubenstein
Program: Master of Science (M.S.) in Applied Psychology

The aging population in the United States is predicted to increase substantially by 2030 and will require individualized support for different health care challenges (CDC, 2019; Lakin & Burke, 2019). Family and friends are essential in providing this caregiving assistance (CDC, 2019). While the caregiver role has been linked to adverse effects such as poor health outcomes, caregiving is also associated with providing a sense of purpose (CDC, 2019; AARP & NAC, 2020). College students who act as caregivers for aging adults are reluctant to share their circumstances with academic professionals and student peers (Skufca, 2020; AARP, 2020). The purpose of this study is to uncover the student caregiver experience and identify ways to improve their academic success and overall college experience. The final sample included 138 undergraduate and graduate students (ages 18-57, \( M = 20.16, SD = 4.26, 72.7\% \) female), of which 23 students (16.7%) identified themselves as caregivers for an adult. Participants completed over two-hundred items across ten different scales measuring demographics, college satisfaction, anxiety symptoms, resilience, and caregiving. An independent t-test was conducted for college satisfaction and showed a significant difference between caregiver statuses specific to programs offered by the university and their flexibility, \( t(136) = 2.01, p = .047, 95\% \) CI [.00741, 1.04476], \( d = 3.25 \). Additional t-tests conducted to determine differences in anxiety symptomology and resilience yielded no significant differences based on caregiver status. Results indicated commensurate patterns for both student caregivers and non-caregiving students. Implications for student caregivers are discussed.
Down In The Dumps? Expressions Of Negative Emotionality Might Explain The Relationship Between Social Power And Work Talk

Carter Adams

Faculty Mentor: Tyler N. Livingston

Program: Industrial/Organization M.S. Program

Background
Feelings of power stem from experiences leading organizations, evaluating others, and succeeding in social influence. Power can buffer against negative emotions, leading members of organizations to approach new problems from a creative mindset and act without inhibition. The current study examined relationships between power, negative emotionality, and mentions of work-related constructs (hereafter “work talk”) within participants’ written narratives of a time they felt powerful or powerless.

Method
Participants (N = 403) were community members recruited from Qualtrics Panels. Participants wrote about powerful or powerless experiences according to random assignment. Participants self-reported their feelings of power from 1 (very powerless) to 7 (very powerful). We used Linguistic Inquiry and Word Count (LIWC) analysis to measure negative emotions and work talk.

Findings
The effect of feelings of power on work talk was partially mediated via negative emotions. The direct effect of power on work talk was significant (b = .49, t(401) = 5.31, p < .001). The indirect effect through negative emotions was .16. Bootstrapping procedures (10,000 iterations) tested the significance of the indirect effect, revealing a 95% CI from .07 to .25. The model demonstrated that power was positively related to work talk; negative emotions were negatively related to both power and work talk.

Conclusions
Members of organizations derive feelings of power from positive experiences in the workplace. These experiences can buffer against negative emotions, insulating the organizational member from distress and potentially contributing to a more productive organizational environment.
Immediate Effect Of Warm-Up On Single-Leg Balance In Individuals With And Without Functional Ankle Instability

Emily Abalos, SPT

Faculty Mentor: You-jou Hung, PT, MS, PhD, CSCS

Program: Physical Therapy

BACKGROUND AND PURPOSE: Ankle sprains account for about 20% of all sports injuries in the United States. About 5-10 minutes of general warm-up is recommended to enhance performance and reduce injuries. However, its immediate impact on single-leg balance is unclear. The purpose of the study was to examine if different warm-up protocols could impact single-leg balance in individuals with and without functional ankle instability (FAI).

METHODS: Thirty volunteers (aged 19-29 years) participated in the study. The Cumberland Ankle Instability Tool was used to examine FAI and the Athletic Single-leg Stability Test of the Biodex Balance System was used to examine single-leg balance. Subjects were examined in three separate sessions (no warm-up, 5-minute warm-up, or 10-minute warm-up) with one week apart.

RESULTS: Results show warm-up conditions had a significant impact on single-leg balance (p=.021). Pairwise comparisons showed the balance after the 5-minute warm-up was significantly worse than the no warm-up condition (p=.000). In addition, subjects with FAI exhibited significantly worse single-leg balance than those without FAI (p=.003). However, the immediate effect of warm-up on balance control was similar between individuals with and without FAI.

CONCLUSION: Clinicians should consider implementing single-leg balance testing and training for those who are identified as having FAI. Despite its known benefits of enhancing performance and reducing injuries, general warm-up activities may have an immediately negative effect on single-leg balance control. It is possible that warm-up makes the tissues surrounding lower extremity joints more flexible, therefore making single-leg balance control more challenging.
Cybersecurity In Healthcare Organizations: A Qualitative Systematic Review Of Recent Trends, Threats, And Mitigation Strategies

Leslie Brozozowski, Michelle Dowz, Sebastian Gallardo, Cristina Herrera-Garcia, Shelby Hollis, Jocelyn Perez

Faculty Mentor: Dr. Denise Goddard
Program: Nursing

**AIM** The aim of this systematic review was to explore all available qualitative literature on mitigation strategies for healthcare organizations to alleviate recent cybersecurity trends and threats.

**BACKGROUND:** In 2020, over 29 million personal records were exposed through data breaches in the healthcare industry. Weak cybersecurity in the healthcare industry comes at a high cost, with hospitals and clinics incurring millions of dollars of debt to respond to crises. Apart from the monetary losses, cybersecurity attacks compromise patient information, decreasing public safety, trust, and security and disrupting healthcare operations.

**METHOD:** We followed the PRISMA Statement on systematic reviews. The databases Academic Search Complete, CINAHL Plus with Full Text, Directory of Open Access Journals, and Gale Academic OneFile were searched using the MESH terms cybersecurity, mitigation or prevention or reduction, and healthcare cybersecurity threats from years 2017-2022. We used Joanna Briggs Institute (JBI) appraisal instruments to evaluate studies.

**RESULTS:** Sixteen articles met the strict guidelines imposed in this systematic review. The review of literature yielded three major themes of recommendations to mitigate cybersecurity risks in healthcare organizations: cybersecurity education and proper cyber hygiene, IT budgeting and technical solutions, and risk assessment and administrative solutions.

**CONCLUSION:** Implementing and updating technological advancements and staying abreast of cyber threats is an arduous job that requires constant monitoring. Further studies are needed to determine ongoing threats and mitigation strategies.
Improving Access To Quality Care: A Qualitative Systematic Review Of Telemedicine In Rural Communities

Sandra Iturbe, Lacey King, Amanda Latham, Myrtis Loudermilk, Laramie Ratto

Faculty Mentor: Dr. Denise Goddard
Program: Nursing

AIM The aim of this systematic review was to explore all available qualitative literature to deepen the understanding on the effectiveness of telemedicine specific to rural communities, creating an opportunity for analysis and improvement.

BACKGROUND: It is estimated that 60 million Americans live in remote and rural areas. There are several challenges that healthcare providers face when serving rural communities stemming from long commutes which make initial care and follow-up less likely. These challenges can cause further suffering for the patient by delaying necessary care or making their treatments more difficult to adhere to.

METHOD: We followed the PRISMA Statement on systematic reviews. The databases Google Scholar, Ebscohost, CINAHL, and Pubmed were searched using the MESH terms telemedicine in rural communities, rural telemedicine statistics, negative effects of telemedicine, positive effects of telemedicine, barriers to rural medicine, barriers to telemedicine, benefits of telemedicine, benefits of telehealth, telehealth in rural communities, telehealth positives, telehealth and quality of health, and rural access to healthcare from years 2017-2022. We used Joanna Briggs Institute (JBI) appraisal instruments to evaluate studies.

RESULTS: Twenty-one articles met the strict guidelines imposed in this systematic review. The review of literature yielded the major themes highlighting the positive effects of telehealth, the negative effects of telehealth, and the barriers to utilization of telehealth in the rural setting. The types of positive effects ranged from cost improvements to overall health satisfaction through decreased time spent at visits, increased access to care, and increased feelings of safety. Areas of concern were identified regarding telehealth use in rural communities for older adults, cybersecurity, and risk of missed diagnosis. Knowledge deficits related to technology and billing were noted to be barriers for the utilization of telemedicine in the rural setting.

CONCLUSION: Improved access to care is a major benefit, producing a positive impact on our rural communities. Further studies are needed to determine appropriateness and utilization of telehealth technology for health promotion in the rural setting, not just
disease management. Further research is required to identify methods to improve telehealth services available to the elder population.
Athletic Training Student's Perceptions On Interactions With Student Athletes, Preceptors, And Coaching Staff

Tyler Hoover

Faculty Mentor: Chelsea Procter-Willman

Program: Health Science Professions

Context/Background: There has been a dramatic increase in the prevalence of women in the field of athletic training, as well as an increase in burnout and the number of members leaving the profession. For these reasons it is important to identify how athletic training student’s, who will soon become professionals, perceive the experiences most closely exampling their future careers.

Objective: To validate the Athletic Training Student Frustration Index (ATSFI), identify the differences in student perceptions of their clinical experiences, and evaluate the negative perceptions between students as individuals and groups. This evaluation seeks to answer the following questions: are there differences in perceptions between males and females and do the levels of frustration among athletic training students trend with the levels of burnout and dissatisfaction currently found within the profession.

Method: All participants were from accredited Master of Athletic Training programs from Texas who completed the ATSFI. Of the (24) participants, (6) were male and (18) were female. The average age of participants was 24.13 (±3.48). There were 21 Division 1 participants, and 3 Division 2 participants. Of these 9 were in the first year and 15 within the second year of their respective programs. A Mann-Whitney U test was performed in order to show the differences between group responses. The study only found 1 statistical difference confidence performing skills with males feeling more confident.

Conclusions: Our study suggests Athletic Training Students feel low levels of frustration with the highest levels coming from balancing class work and personal lives with clinical obligations.
Leaders within the workplace have historically been dominated by the male population, making women widely underrepresented (Schwanke, 2013). Women are still finding it difficult to make their way through the pipeline (Barsh & Yee, 2011). They are constantly in competition not only with their male counterparts but gender stereotypes as well (Eagly & Carli, 2007).

Eagly and Carli (2007) identified the “double bind”, which is when women experience a clash between two associations: communal and agentic. Communal qualities can be described as affectionate, friendly, sympathetic, gentle, and soft spoken. Women are commonly associated with these qualities. Agentic qualities are to be expected from men, such as being dominant, self-confident, aggressive, and ambitious. Research has shown that these agentic qualities are most closely associated with managerial success (Kiser, 2015). When women express agentic qualities, they are criticized for not being communal enough. However, when they show communal qualities, they are criticized for not being agentic enough. Either way, they are not seen as possessing the “right” qualities to be a powerful leader (Eagly & Carli, 2007).

The purpose of this study is to examine the perceived discrimination between men and women in leadership roles, by demonstrating how a woman’s leadership experience differs from her male counterparts. Overall, our study revealed that communal qualities were more favorable in leaders. Leaders who displayed communal qualities were rated higher in respect, leadership effectiveness, confidence in leadership ability, and likelihood to be promoted.
The Effect Of Shoe Collar Height On Single-Leg Balance In Individuals With And Without Functional Ankle Instability

Daniel Hernandez, Sneha Paswan

Faculty Mentor: Dr. You-jou Hung
Program: Physical Therapy

**Background:** Ankle sprains makes up 45% of all sport injuries. The purpose of this study was to investigate the impact of shoe collar height on single-leg balance control in individuals with and without functional ankle instability (FAI).

**Subjects:** Thirty-one subjects (16 males and 15 females, aged 18-31 years) participated in the study. Subjects must be able to stand on the dominant leg without pain or discomfort for one minute and provide their own high and low-collared shoes to participate. Subjects who depend on an external support brace for balance were excluded from the study.

**Methods:** Participants completed the Cumberland Ankle Instability Tool (CAIT) to determine their FAI stability status. The Athletic Single-leg Stability Test (ASLST) of the Biodex Balance System (BBS) was used to examine single-leg balance. Subjects performed the balance test with either high-collared or low-collared shoes in random order over two testing sessions.

**Results:** Subjects with FAI exhibited significantly worse single-leg balance than those without FAI in the overall and medial-lateral directions, but not in the anterior-posterior direction regardless of footwear. Results also showed wearing high-collared shoes did not have an effect on single-leg balance control when compared to low-collared shoes in subjects with or without FAI.

**Conclusion:** Single leg balance training would be a more effective area for clinicians to focus on instead of shoe collar height concerning single leg stability on individuals with or without FAI.
Lanthanide Mofs With Interstitial Solvent Molecules

Mia Van Oudtshoorn, Aidan Henry

Faculty Mentor: Ralph Zehnder
Program: Chemistry
Sponsorship: Welch Foundation

Slow diffusion reaction of trivalent lanthanide ions, Ln³⁺ (Ln = La, Ce, Pr, Nd, Sm), with the terephthalate (TP) ligand and glutarate (Glut) entities at room temperature (RT) in THF/EtOH/H₂O solvent mixtures results in the formation of three-dimensional (3D) Ln-coordination polymers of formula Ln₂(Glut)₂(TP)(H₂O)₄•16H₂O that exhibit spacious channels along the b-direction with interstitial water molecules. In previous work, we were able to extend this collection of Ln₂(Glut)₂(TP)(H₂O)₄•16H₂O frameworks to include the terephthalate derivatives (TPX) that bear the bromo (X=Br), nitro(X=NO₂), amino (X=NH₂), and the hydroxy group (X=OH). This did not change the structural properties whatsoever, and simply introduced the respective functional groups into these networks. Herein we show that in some instances, ethanol or THF molecules occupy the channels replacing some of the interstitial water molecules.
Thank You For Your Service: Enhancing Awareness Of Veteran Health Concerns For Undergraduate Nurses

Katie Blackledge

Faculty Mentor: Dr Robert Michael

Program: Nurse Educator

Veterans face unique health concerns across the lifespan as a result of their military experience, including the potential for hazardous exposures, post-traumatic stress disorder, traumatic brain injuries, substance use disorders, military sexual trauma, amputations, mental health concerns, behavioral adjustments to civilian life, risk of suicide, risk of homelessness, and polytrauma. In San Angelo, Texas, the veteran population is estimated to be 10%, which is higher than both the Texas (6.5%) and national averages (6.9%). It is a common misconception that most veterans receive their healthcare at Veterans Affairs (VA) facilities; most receive care within their local communities. Angelo State University (ASU) nursing students are likely to encounter veterans during their training at local hospitals due to the high percentage of veterans in the San Angelo, Texas area, and will definitely encounter them in their nursing careers regardless of where they practice. Therefore, ASU nursing students need training in identifying veterans and assessing their potential health concerns. Upon analysis, the undergraduate nursing curriculum at ASU currently lacks dedicated instruction on the topic of military veterans’ health concerns. This project discusses the design and development process of a module entitled “Thank You for Your Service: Enhancing Awareness of Veteran Health Concerns” to address this knowledge gap in the undergraduate nursing curriculum.
Machiavellianism is defined as an individual's tendency to manipulate, scheme, and use others to maximize their personal benefits and/or to achieve their goals. Existing literature suggests men are the most likely perpetrators of both possessing and utilizing traits and behaviors associated with Machiavellianism, particularly within workplace contexts. Could the differences in the likelihood of men and women displaying and internalizing Machiavellian related traits be associated with the differences in how they are perceived and rewarded within the workplace? This study sought to closer examine this relationship.

A total of 100 participants were recruited through Amazon’s Mechanical Turk survey response system. Each participant completed two separate studies. Study one consisted of participants completing self-report measures that included: demographic information, occupational success and rewards, and a Machiavellian personality inventory. Study two had participants take the role of an external consultant assigned with determining which employee would receive merit pay increases. Employees in the scenarios possessed 1 of 4 traits aligned with Machiavellianism and had their sex swapped between participants. In both studies, results indicated that there was no statistical significance between how men and women who scored high in Machiavellian traits were perceived or rewarded between genders. Despite this, the study found statistical significance with how individuals high in Machiavellianism perceived their occupational success, regardless of whether their objective indicators of success were actually reflected. There were also a variety of findings for future implications within the subjects of Machiavellianism, reward systems, leadership, perception, and performance.
Microwave-Assisted Reactions For The Undergraduate Organic Laboratory

Andrea, Alexia, Elisa

Faculty Mentor: Saravanan Ramasamy

Program: Chemistry

Sponsorship: Dr. Ramasamy’s Frep Fund From Asu (2020-2021), - Chemistry Department's Welch Fund, - ASU Undergraduate Travel Grant

We developed an inquiry-based undergraduate organic chemistry lab experiment involving microwave-assisted chemical reactions. Microwave-assisted heating is known for significantly increasing the rate of many organic reactions, as the radiation delivers heat directly to the molecules instead of heating the vessel first. The electric field of the microwave induces rotational motion of the polar molecules, resulting in instantaneous and consistent heating. Microwave-assisted reactions are not only fast, but they are safe, and they provide reproducible results. We designed the experiment to study the effect of (a) molar equivalence of the base, (b) nature of the base, and (c) protonation step in a Claisen condensation reaction. We used a research-grade microwave reactor to run up to 64 parallel microscale reactions, which provided identical experimental conditions for all students. The use of the microwave technique has accelerated the hour-long conventional reactions to complete in 15 minutes. This modification will give students more time to engage in data analysis and critical thinking and repeat the experiment with better understanding. Incorporating this energy-efficient, safe, and versatile technique in the undergraduate lab curriculum provides students a meaningful learning opportunity. We used a one-group pre-lab/post-lab questionnaire to analyze the improvements in students’ learning.
Reliability Of Hamstring Shear Wave Elastography Measurements

Yessica Lopez

Faculty Mentor: Yo-Rong Chen
Program: Masters of Athletic Training

Context: Hamstring stiffness can be measured by ultrasound shear wave elastography (SWE). Stiffness represents mechanical properties of tissues, which could possibly identify the clinical treatment effects on hamstring injury. Biceps femoris SWE measurements were found reliable and could detect treatment outcomes, but the measurements on semimembranosus or semitendinosus are still unclear.

Objective: Currently, the reliability of the semimembranosus SWE is undetermined; therefore, this study aims to determine the intra-rater reliability of SWE measurements of the semimembranosus muscles in healthy individuals.

Design: A quantitative study.

Setting: Laboratory

Participants: Nine healthy subjects (4 male and 5 female) age: 21.3±2.7 years. Exclusion criteria included no prior injury history or surgery of a hamstring injury, a BMI of >35kg/m², and physical activity 24 hours prior to data collection.

Instrument: Hologistic SuperSonic MACH 20 machine with a L10-2 transducer were used, and a Q-box setting was chosen to obtain tissue stiffness.

Outcome Measures: Pressure (kPa) and velocity (m/s) were collected from the tissue. The mean and standard deviation was determined and intraclass correlation coefficient (ICC).

Results: Intraclass correlation coefficient statistics showed high reliability for intra-rater data on pressure (kPa) (r=0.938, r²=0.880, 20.4±8.1 kPa) and on velocity (m/s)(r=0.958, r²=0.918, 2.5±0.5 m/s) of the semimembranosus muscle.

Conclusions: Shear wave elastography is reliable to use as a measure of semimembranosus hamstring stiffness.
The Effects Of Varying Lean Points And Packaging Methods On Beef Sensory Traits And Lipid Oxidation In A Retail Setting.

Megan Eckhardt

Faculty Mentor: Dr. John Kellermeier

Program: M.S. in Animal Science
Medical Model Effects On Work-Life Balance Of Athletic Trainers In DII Institutions

Rebecca Nyul

Faculty Mentor: Dr. Kristi White

Program: Master of Athletic Training

CONTEXT: Athletic Trainers’ (AT) employed in the collegiate setting have been traditionally housed in the athletic department. The medical model involves employing ATs through health services and has been shown to provide more comprehensive patient care, as well as standardization of benefits, salaries, and work-hours. Research has shown the effects these factors have on work-life balance for ATs.

OBJECTIVE: Determine and provide feedback on the effects of medical model centered care on work-life balance in DII ATs.

DESIGN: Qualitative Survey study.

RESEARCH QUESTION: Does the use of the medical model organizational structure have a positive effect on the work-life balance of athletic trainers working at NCAA Division II institutions? PARTICIPANTS: 124 athletic trainers from NCAA Division II institutions (59 females and 65 males) completed the survey.

INTERVENTION: Electronic questionnaire, administered via Qualtrics, was used to ask 53 questions related to the demographic information, the organizational structure, job satisfaction, and stress experienced by the ATs.

OUTCOME MEASUREMENTS: Satisfaction Score and Stress Score were calculated for each of the participants. RESULTS: Both the Independent Samples Kruskal-Wallis test and One-way ANOVA were performed. Analysis revealed the organizational structure has no significant effect on ATs self-reported job satisfaction (p=0.753; p=.655) or stress levels (p=0.591; p=0.555).

CONCLUSION: The organizational structure of Athletic Training Services currently has no significant effect on the satisfaction or stress scores of Division II Athletic Trainers. This may be due to, of 124 participants, only three individuals identified a true medical model organizational structure.
The Effects Of Muscle Flossing On Total Shoulder Range Of Motion
Trivett Jones and Michael Terrill

Faculty Mentor: Michael Terrill
Program: Masters of Athletic Training

Introduction: Muscle Flossing is an intervention using elastic bands to create a compression pressure on a specific area of the body to increase the mobility of a joint. Increased mobility of a joint Range of Motion (ROM) is typically the primary goal of injury rehabilitation. Many studies have shown that muscle flossing increases the ROM of the lower extremity joints, but few have done the same on the upper body.

Purpose: This study aimed to determine the effect of muscle flossing on the glenohumeral joint’s total interior and external rotation.

Participants: 21 healthy subjects were recruited (age: 18±; 8 males and 13 females).

Methods: Subjects’ glenohumeral joint’s total interior and external rotation was assessed by measuring both of those movements on the dominant and non-dominant glenohumeral joints. The treatment was then applied to the dominant arm for 2 minutes while the patient went through passive range of motion exercises. The post-intervention ROM was measured immediately after and one-week after the treatment. An ANOVA was performed to analyze the outcome.

Results: The muscle flossing intervention found a significant increase in the immediate range of motion of the glenohumeral joint’s total interior and external rotation, but the one-week later results did not indicate a continued increase in ROM.

Conclusions: The use of muscle flossing bands can be beneficial to those without an apparent injury in increasing their range of motion in the glenohumeral joint for a brief period but does not seem to indicate a long-term change in joint mobility.
How To Design Like The Tree Cholla Cactus

Zachary Zapata

Faculty Mentor: Dr. Manuel Garcia Ruiz

Program: Mechanical Engineering

The Tree Cholla (Cylindropuntia imbricata) has a unique skeletal shape with specialized properties of supreme torsional toughness and material efficiency. In the past, researchers have looked for designs or materials that have similar traits. We hypothesize that it is possible to recreate the skeletal geometry and thus specialized properties of the Tree Cholla skeleton using topological optimization. Initially the geometry of the Cholla was recreated within a CAD model using hand measurements and then analysed using finite element analysis to study the loading conditions of the branches in their natural environment. The second round of simulation used topological optimization to put a similar simple geometric shape under the same loading conditions and adjust the specifications to conform to the Cholla branches' skeletal structure. Ultimately to validate the results, a Finite Element Analysis of the optimized model was compared against the initial cholla model stress and deflection results. The main goal of the research is to show that the Tree cholla’s unique skeletal structure, as well as the optimized model, shows mechanical efficiency of torsional failure resistance with minimal materials. This is supported by the similar structure that emerges when a simple geometry is optimized in the same manner. Preliminary results confirm this hypothesis. By using the skeleton of a cactus known as the Tree cholla (Cylindropuntia imbricata,) this research project has obtained a similar geometry by using topology optimization. This project has also given a method to reproduce these structures and traits for incorporation into future bio-inspired designs.

REFERENCES
Beginning in the late nineteenth century, a fierce naval arms race occurred between Great Britain and Germany. Germany desired to carve their own sphere of influence by becoming an international and colonial power, as well as expanding markets—an saw the navy as the instrument to do so. For Great Britain, their strength, security, and merchant marine rested in its massive navy—and thus German naval ambitions had been deemed a threat. The naval arms race that followed proved detrimental to Anglo-German relations. This paper will investigate the causes and motivations for this naval arms race. Further explored will be its role within a larger European rise in nationalism, militarism, imperialism, and alliances. Note will be taken of coinciding and overlapping British and German imperial ambitions. The Anglo-German naval race both represented larger trends within Europe in the late nineteenth century and acts as a case study in understanding the causes of World War I.
The White-crowned Sparrow (Zonotrichia leucophrys) is a migratory sparrow that occurs throughout North America. The timing of White-crowned Sparrow migration has been extensively documented, but migratory routes, orientation, and the strength of migratory connectivity between distinct breeding areas and distinct wintering areas is less understood. Traditional methods, such as banding, provide too low of a recapture rate to trace migratory connectivity. Stable isotope markers in feathers can be used for identifying isotopically distinct regions and for investigating the natal origins of birds. We collected 75 feather samples from migrating sparrows at three different locations in Texas from December 2021 to March 2022. Only hatch year birds (25 per study site) were sampled because the stable isotope values in their feathers reflect the stable isotope values of their natal areas. We used stable isotope analysis of δ2H in along with an isoscape map to determine breeding origins for White-Crowned Sparrow wintering in Texas. Through this study we were able to geographically assign all individuals to a map and determine the strength of migratory connectivity, thus will providing insight into the migration ecology of this species.
Creating Brave Spaces For LGBTQ Students Of Color

Carmen McIver

Faculty Mentor: Dr. Amy Murphy
Program: M.Ed - Student Development and Leadership

In the last two decades, lesbian, gay, bisexual, transgender, and queer (LGBTQ) students have become more visible on college campuses, yet college campuses have a challenge in providing adequate needs and progress for LGBTQ students of color. Reports of harassment and discrimination, especially for transgender students of color, remain a problem for this community. Providing resources that are specific to the intersection of race and sexual orientation for LGBTQ students are crucial in student development and sense of belonging.
That's Distracting! Assessing Stimulations On Cognitive Performance, Memory, And Affect

Abishag Porras

Faculty Mentor: Dr. Kreitler
Program: Experimental Psychology

This study sought to understand the links between distractions (via audio & visual stimulations) and areas known to be impacted by screen time, such as cognitive performance, long-term memory, sleep, and affect. The consequences and the impact of screen time on humanity is still unknown. Excessive screen time and the ease of access to children, and adolescents warrants further investigation into the impact screens may play (Marciano et al., 2021). The following factors will be assessed in this study: cognitive performance, memory, sleep, and affect. Participants (N = 66) were recruited through a local west Texas University and all questionnaires were completed in person. Correlational analysis revealed significant associations between correct answers on the cognitive quiz and student perception of the cognitive quiz. ANOVA results revealed significant effects for gender and affect, as well as gender and student perception of cognitive quiz not being difficult. MANOVA analysis did not yield any significant findings. This research gives further understanding of how simulations can affect college students and highlights future clinical implications.
Sex education can be a touchy topic for some, yet research is clear that a comprehensive lack of sex education increases the risk of teenage pregnancy, STIs and STDs (Lederman & Mian, 2003), and sexual assault. As of 2020, only 30 states plus DC required public school to teach sex education, with 22 of those requiring it to be 'medically accurate.' Further, no state requires explicit education with regard to consent (ncsl.org). Given the scarcity of medically accurate sex education in schools, most people learn about sex from four sources: media (57.0%), their maternal guardians (60.9%), teachers and school educators (62.2%) and friends (74.9%) (Bleakley et al., 2009). Importantly, many teens utilize internet sources. However, many of those have inaccurate information. (Buhi et al, 2010). Thus, adolescents are learning more than half of their knowledge from the media and peers. The frequency of sex education is critical, but the quality of education even more so. Sex education of inadequate quality, even if provided frequently, is unlikely to improve consent attitudes, intentions, or actions. (Richmond & Peterson, 2019). This research aims to understand how people define consent, and what they learned about consent using qualitative methods. Participants are given a demographic survey, open-ended questions about learned consent, and are asked to define consent. In addition, they are questioned on their experiences with consent and sexual assault. Data is in the process of being collected and will be analyzed for the poster presentation.
Remote Sensing Of Long-Legged Myotis (M. Volans), And Bat Community Dynamics At The Davis Mountains Preserve, Jeff Davis County, Texas

William Thompson

Faculty Mentor: Dr. Loren K. Ammerman

Program: Master's of Science: Biology

Sponsorship: Southwestern Association Of Naturalists - Howard McCarley Student Research Award; Asu Head Of The River Ranch Scholarship - Department Of Biology

Long-legged myotis (*Myotis volans*) are bats that occur from Washington eastward to Montana and south into west Texas and central Mexico. Long-legged myotis are rare but locally abundant in appropriate habitat. They are known to occur in high-altitude, montane, coniferous forests which are a rarely occurring habitat in Texas. This habitat-type occurs in Texas in the Chisos, Chinati, Guadalupe, and Davis mountains. Including my study site on the Davis Mountains Preserve. This study used audio telemetry, a novel telemetry approach, to attempt and identify long-legged myotis roosts. Further, this study compares capture data among 2 historic surveys and our contemporary survey to elucidate bat community shifts at the preserve. This study also used a linear discriminant analysis (LDA) to classify recorded bat calls at the preserve to elucidate behavioral patterns of bats occurring at the preserve. Our analysis identified shifts in the community from the historic to the modern capture surveys that may be attributable to severe habitat disturbance such as wildfire and woodland thinning. Our acoustic telemetry approach failed to identify roost trees. The LDA could only classify calls to a long-legged myotis and cave myotis (*Myotis velifer*) group. We determined that the *M. volans/M. velifer* species group emerge slightly later than sympatric bats and do not exhibit lunar-phobic behavior. Our analysis of the bat community at the Davis Mountains Preserve and *M. volans/M. velifer* behavior serve as a baseline for bat research in the area and support our understanding of the species in other parts of their range.
The subjectivity and thus utility of subspecies has long been debated. This controversy stems from subspecies traditionally being based around morphological characteristics with the implication that phenotypic variation represents genetic variation, though this has been shown to not always be the case. Modern advancements in sequencing technology now allow for fine scale analyses of genetically distinct populations to test subspecific boundaries at a genetic level. Despite this, many avian subspecies have not undergone reevaluation since their designation decades ago. Small non-migratory birds contain the highest average number of subspecies per polytypic avian species. Focusing on this group will best aid in understanding what drives subspecies on a genetic level. The Bewick’s wren (Thryomanes Bewickii) is a small wren species in North America with 15 putative subspecies primarily described on dorsal color variation. Of the described subspecies, four occur across Eastern New Mexico, Oklahoma, and Texas (T. b. pulichi, T. b. cryptus, T. b. eremophilus, T. b. sadai). Population structure based around the subspecies will be tested using both single nucleotide polymorphisms (SNPs) and mitochondrial DNA (mtDNA). A second season of data collection is needed. This presentation will update of the progress of the project.
Short-Term Effect Of Cupping Therapy On Hamstring Stiffness And Perceived Pain

Briana Santiago, Yessica Lopez

Faculty Mentor: Yo Rong Chen
Program: Masters of Athletic Training

Contexts: Cupping therapy is a traditional treatment, however, the effect on muscle tissue remains unknown.

Objectives: Investigate the acute effects of cupping therapy on hamstring muscle stiffness after one cupping therapy session.

Design: A cross-sectional experimental study

Participants: Seventeen subjects were recruited, fifteen healthy and two with current hamstring strains. Inclusion criteria included no injury or surgery of the lower extremity, BMI <35kg/m². Vigorous activity 24 hours prior to data collection was the exclusion criteria.

Intervention: Cupping therapy included six cups along the length of the hamstring muscle while the subject laid in a prone position with a five-pound weight on the ankle. Cupping intervention lasted seven-minutes. Shear wave elastography (SWE) ultrasound was used to determine muscle tissue stiffness before and after cupping.

Outcome: Tissue stiffness was quantified in velocity (m/s) and pressure (PKa) from SWE. The measurement location was at the posterior mid-thigh on the semitendinosus. Except SWE stiffness outcome, pain scale was also measured on patient subjects as well. Pre- and Post- mean values of the most consistent measurements from individual ultrasound images were calculated and used for analysis. A paired sample t-test was used to compare the stiffness of the tissue before and then after cupping. The α value was set to <0.05.

Results: Both velocity (p=.045; pre: 2.5343; post: 2.9500) and pressure (p=.038; pre: 19.9393; post: 27.2364) showed significant differences.

Conclusion: Hamstring tissue showed a significant increase in stiffness immediately after a single cupping treatment. The injured pilot data have shown a similar trend as well along with the addition of decreased pain perception.
The Effects Of Postnatal Maternal Ethanol Consumption And Cross-Fostering In Young Mice

Amy Howard

Faculty Mentor: Dr. Crystal Kreitler & Dr. Stephen Lippi

Program: Experimental Psychology

Children of alcoholic parents and in foster care are at a greater risk of experiencing neglect and/or developing a mental illness later in life. The current research was to assess the effects of maternal ethanol use and cross-fostering on offspring stress behaviors and neurobiology in a mouse model. Five C57BL/6J female mice were used to breed in-house and randomly separated to one of four conditions: control, ethanol, control/cross-foster, and ethanol/cross-foster. This study replicated an intermittent two-bottle choice paradigm, one of water and the second of 10% ethanol and 5% sucrose solution, to simulate voluntary binge drinking in rodents. After weaning on PND 21, the offspring from each mother were tested using the Open Field Test (OFT), Elevated Zero Maze (EZM), Forced Swim Test (FST), and Activities of Daily Living (ADL) starting on PND 28 to measure anxiety and depression-like behaviors. Glucocorticoid receptors and corticosterone levels were analyzed after euthanasia. Trending effects of the ethanol/cross-foster group were found within all behavioral tests, displaying increased anxiety and depressive behaviors. Ethanol males had significantly lower corticosterone levels compared to other groups. This study assessed short-term effects on adolescent mice who experienced differing levels of early life stress.
Effectiveness Of Simulated Water As A Lure For Bats In The Big Bend Region

Alex Buckel

Faculty Mentor: Loren Ammerman

Program: Biology

Sponsorship: Head Of The River Research Grant

Mist netting is one of the primary methods of capturing live bats for research. In arid environments such as the Trans-Pecos region, mist nets are typically placed over or adjacent to bodies of water to maximize capture rates. Previous research has suggested that bats identify water via echolocation and will attempt to drink from smooth surfaces that echoacoustically resemble a body of water. My study attempted to use smooth reflective surfaces as a mist netting lure in Big Bend Ranch State Park. Over 20 netting nights, we tested a new mist netting protocol. We set up one mist net over a marine vinyl simulated water source (SWS), one over a SWS made of ceiling light panels, and another net over bare ground functioning as a control. We simultaneously set up a nighttime security camera on a separate SWS made of ceiling light panels and no mist net, in case the bats were attracted to the SWS but aware of the nets. We used this protocol at 10 different netting sites within the park, all at least 100 meters away from any standing water source. During the study, we captured 14 bats, 8 of which were in the bare ground control net. We captured 9 *Antrozous pallidus*, 4 *Parastrellus hesperus*, and 1 *Myotis velifer*. Although the sample is small, the data suggest neither of our SWS lures are effective. The security camera footage is still being reviewed, but thus far doesn’t contradict what the capture data suggests.
The Efficacy Of Acoustic Lures On Bats In The Chihuahuan Desert

Rebecca Harris

Faculty Mentor: Dr. Loren Ammerman, Dr. Ben Skipper, Dr. Robert Dowler

Program: Biology Department

Sponsorship: Head Of The River Research Grant

Declining bat populations increase the need to obtain more accurate surveys to understand changes in abundance. Traditional methods that have been used include mist-netting, roost surveys, and acoustic monitoring but each method has advantages and disadvantages. Variations of broadcast calls have been used to increase the capture rate of many taxa including birds, reptiles, and mammals. Previous mist-netting surveys in the US have increased bat capture rates with the implementation of an acoustic lure but the mechanism by which this occurs is not yet understood. These studies have been conducted in areas with low species diversity. We chose to utilize an acoustic lure in the Chihuahuan Desert of Texas where 22 species of bats are documented to occur. Bat calls were passively recorded with the use of a Pettersson D500 detector from March to July 2021 where bats were known to be actively foraging. After analyzing the calls using Sonobat 4, several echolocation calls were selected to be broadcast at timed intervals using a Binary Acoustics Technology AT-100 lure. On each of 12 sampling nights in August and September we simultaneously documented bat captures at a control net and at a net with the lure deployed. Four AudioMoth detectors also were used to detect acoustic activity at both the lure net and the control net. Overall, more Antrozous pallidus were captured in nets using lures than in control nets and a total of 3,829 bat calls were detected with 2,259 at the lure net and 1,570 at the control net. Our preliminary results suggest that the acoustic lure increased bat activity based on acoustic monitoring and increased the capture rate of Antrozous. Further testing on the best acoustic lure to use for this bat community is needed in order to establish its utility as a survey tool.
Gender Norms Influence On Sexual Consent

Chloe Gibson

Faculty Mentor: Dr. Nicole Lozano
Program: Counseling Psychology

Research has implicated sexual assault derives from masculine norms, with males reporting traits of competitiveness, aggressiveness, and toughness to conform to a masculine persona (Mabry & Turner, 2016). This suggests males are expected to maintain a 'playboy' image because having a lot of sex is idolized among male groups. However, women are expected to be sexually innocent and permissive especially within a serious relationship (Kling, Holmqvist Gattario, & Frisen, 2017). With women expected to submit to sex and males to pursue sex, there's little social encouragement to pursue consent before sex.

Definitions of consent are influenced by societal messages that fail to encourage consent before sex and preventing assault. The research seeks to find how hypersexual ideation among men and sexual innocence among women impact the importance and willingness to ask for consent. Gender diverse results are expected to reveal how young adults perceive consent before sex in respect to gender expectations. The current study explores conformity to male gender norms and female gender norms and how that intersects with rape myth acceptance. Participants will complete the Conformity to Female Norms Inventory and its counterpart for males (Parent & Moradi, 2013), as well as subscales of the Sexual Consent Scale (Humphreys, 2009). It’s predicted the more men conform to playboy norms, the less likely consent is important. The more women conform to fidelity norms, the less important and confident asking for consent is. Data is in the process of being collected via Prolific and will be analyzed for the symposium.
Approximately 20% of university women in the United States will experience sexual assault just during their time in college (Muehlenhard et al., 2017) which has led to many initiatives to prevent sexual assault and promote clear communication regarding sexual consent. There are various factors that influence how likely an individual is to seek consent before a sexual encounter, often defining sexual experiences and consent based upon their own values, perceptions, and previous experiences with sex and consent (Kilimnik & Terry, 2018). While it may be surprising, there is currently no uniformly accepted definition of sexual consent (Shafer et al., 2018). As a result, the ways in which sexual consent is defined and understood can be ambiguous. Research has demonstrated that sexual consent attitudes and intentions predict sexual behaviors related to consent (Richmond & Peterson, 2020). Thus, it is important to explore the ambiguous context in which sexual consent is interpreted as well as the components that contribute to whether or not it is established. This research aims to contribute to the understanding of the ways that the factors of sexual assertiveness, consent norms, and sociosexuality influence consent communication. It will explore the ways in which people consent to sexual experiences, through a lens of understanding how they think about and participate in casual sex. In addition, this research will consider bodily autonomy as part of gender diversity, as well as examine various demographic factors and sexual assault history. The data for this study is currently being collected through Prolific.
Insectivorous bats play an essential role as predators in ecosystems and serve as pest control for imperative agriculture businesses. Knowledge on insect communities is key to understanding how their seasonal patterns impact foraging habits of bats. Identifying prey is difficult to discern using conventional methods that are unable to capture detailed dietary information. In this study, we used molecular techniques to analyze fecal pellets of *Myotis velifer* to provide insight into seasonal variation of diet from a known colony located at Fort Leaton State Historic Site in Presidio, Texas. We found 483 taxa of 11 insect orders in 66 fecal samples collected from March to October. Based on our analyses, *Myotis velifer* are generalist predators that experience seasonal variation of diet consuming mostly prey from the orders Blattodea, Diptera, and Lepidoptera. Important crop pests were identified along with substantial consumption of mosquitoes, from the family Culicidae. June experienced the highest diversity of orders during the peak maternity season. Female capture of *Myotis velifer* was more prevalent than males which may indicate the importance the historic fort serves as a maternity colony.
The White-crowned Sparrow (*Zonotrichia leucophrys*) is a migratory sparrow that occurs throughout North America. The timing of White-crowned Sparrow migration has been extensively documented, but migratory routes, orientation, and the strength of migratory connectivity between distinct breeding areas and distinct wintering areas is lesser understood. Traditional methods, such as banding, provide too low of a recapture rate to trace migratory connectivity. Stable isotope markers in feathers can be used for identifying isotopically distinct regions and for investigating the natal origins of birds. We collected 75 feather samples from migrating sparrows at three different locations in Texas from December 2021 to March 2022. Only hatch year birds (25 per study site) were sampled because the stable isotope values in their feathers reflect the stable isotope values of their natal areas. We used stable isotope analysis of $\delta^2$H in along with an isoscape map to determine breeding origins for White-Crowned Sparrow wintering in Texas. Through this study we were able to geographically assign all individuals to a map and determine the strength of migratory connectivity, thus will providing insight into the migration ecology of this species.
Do you feel what I feel? The Role of Protective Factors in Dealing with Vicarious Trauma as a Clinician

Lauren E. Brooks, B.S. and Nicole M. Lozano, PhD

Faculty Mentor: Crystal M. Kreitler

Program: M.S. Experimental Psychology

Vicarious traumatization refers to the gradual, unique, and negative changes to one’s well-being that is experienced after exposure to trauma (McCann & Pearlman, 1990). While previous studies have identified mitigating factors that can help prevent vicarious trauma in mental health clinicians, there is limited research on the potential barriers that prevent them from engaging in these factors. Thus, this research aims to examine the influence of protective factors on clinicians’ ability to cope with their work and the barriers that hinder their ability to protect their psychological well-being.

Utilizing a mixed-methods approach, the study sampled licensed mental health professionals at various stages of practice within multiple areas of the US. Participants (n=394) were recruited through purchased email lists and APA list serves aimed at clinicians. Of these individuals, 316 identified as female, 67 identified as male, and 7 identified as non-binary. The average age of the sample was 45.15 (SD = 14.10) and the majority of participants identified as White (83.1%).

Participants were administered several scales including the Vicarious Trauma Scale (VTS; Vrklavski & Franklin, 2008), Compassion Fatigue-Short Scale (CFS; Adams et al., 2006), Self Compassion Scale - Short Form (SCS - SF; Adams et al., 2006), and Guilt and Shame Experience Scale (GSES; Malinakova et al., 2019). Additionally, participants were asked to answer open-ended questions about their experiences with supervision, self-care practices, and organizational support as well as potential barriers that affect their ability to preserve their psychological well-being. Data for this study has been collected and is being analyzed.
Applicant'S Eye Direction And Interviewers' Evaluations In Virtual Job Interview: Mediating Role Of Interviewer'S Experience Of Eye Contact

Heewon Jang

Faculty Mentor: Cheryl Stenmark

Program: Industrial & Organizational Psychology

Video-mediated communication has enabled people to communicate over long distances at a low cost. Despite the technical advances, video-mediated communication systems still have challenges, such as a lack of eye contact. Eye contact is considered an essential element in job interviews. It has been shown that the absence of eye contact affects interview outcomes in face-to-face interviews. However, research on the effects of eye contact in video-mediated job interviews is limited. The current study explores whether an applicant's eye contact affects the interviewer's evaluations and how the interviewer's ratings of applicants vary based on the perceived eye contact in a video-mediated job interview. We expect findings to contribute to the growing body of knowledge regarding the effect of eye direction and eye contact in video-mediated job interviews. Potential job candidates may use the findings from this study as a guide to improve their chances of success in job interviews.
Evaluating Potential Glyphosate Resistant Johnsongrass (Sorghum Halepense) Biotypes In Texas

Ryan Matschek

Faculty Mentor: Dr. Cody Scott, Dr. Reagan Noland

Program: Agriculture

Sponsorship: Texas A&M Agrilife Extension, Cotton Incorporated, Texas State Support Committee For Cotton

Johnsongrass (Sorghum halepense) is among the most problematic weeds in Texas croplands. A Johnsongrass biotype with potential glyphosate resistance was identified in the Rolling Plains of Texas. Indoor dose-response trials were coordinated in 2022 and 2023 to verify whether glyphosate resistance is present in rhizome- and seed-propagated plants. Experiments were each arranged as randomized complete block designs with 7 to 10 replications and 7 or 8 treatment doses ranging from 0× to 50× the labeled rate applied to glyphosate-susceptible (GS) and suspected resistant (SR) biotypes. Dose-response relationships were characterized with four-parameter logistic regression. Rhizome-propagated SR Johnsongrass was 17 times less sensitive to glyphosate with an LD50 of 4,102 g a.e. ha-1 compared to the GS biotype at 237 g a.e. ha-1. The SR biotype also exhibited less reduction of biomass due to glyphosate, with an effective dose to reduce biomass by 50% (ED50) of 1,420 g a.e. ha-1, compared to the GS biotype at 433 g a.e. ha-1. Seed-propagated SR plants were also less sensitive with an LD50 2.3 times greater than GS seedlings. Additional trials were initiated in 2023 to screen biotypes with suspected resistance from three other populations in western Texas. Rhizome-propagated plants were treated with 0×, 1×, 2.5×, and 5× the labeled rate of glyphosate (924 g a.e. ha-1) with a minimum of 3 replications. All suspected resistant biotypes exhibited reduced sensitivity (P < 0.05) to glyphosate at the 1× rate (mean = 31.4% damage) compared to the GS biotype (76.3% damage), although all biotypes were equally damaged at the 2.5× rate (P > 0.05). The findings of this work confirm reduced sensitivity and mortality due to glyphosate in multiple Johnsongrass biotypes in western Texas.
Does Emotional Testimony Increase The Probability Of Death Penalty Verdicts In Capital Trials?

Taylor Sherman

Faculty Mentor: Tyler N. Livingston

Program: Counseling Psychology Psy.D.

Introduction
Victim impact statements (VIS) delivered during the sentencing phase of a capital trial help to provide restorative justice to victims' family (Kelly, 1984) but may evoke strong, biasing emotions among jurors (Nuñez et al., 2015). The current study examined whether the affective content of VIS was associated with sentencing decisions.

Method
The sample consisted of 33 VIS from real capital trial transcripts (NSF grant SES-0851004). We coded transcripts according to trial verdict (i.e., death penalty vs. life imprisonment). Linguistic Inquiry and Word Count (LIWC) analysis (Pennebaker et al., 2015) quantified the affective content of each VIS by calculating the percentage of words conveying emotion. We examined the likelihood of a death penalty verdict vs. a life imprisonment verdict as a function of VIS affective content.

Results
A logistic regression model predicted the likelihood of a death penalty verdict (yes vs. no) as a function of VIS affective content. The odds ratio for a death penalty verdict was 0.97 (95% CI [-0.43, 0.39], p > .05). This finding indicated that the affective content of the VIS did not significantly predict the probability of a death penalty verdict.

Discussion
The case facts, rather than the affective content of VIS, likely influenced verdicts. VIS may provide a source of restorative justice for victims without biasing trial outcomes. Future research should examine whether other characteristics of the VIS predict trial outcomes, such as the relationship between the witness and the victim.
The Impact Of Covid-19 Among Minority Populations In Texas

Jordan McKinney

Faculty Mentor: Dr. Babajide Sadiq, Dr. Dinah Cummings

Program: Public Heath

Background: The effect and impact of Covid-19 has been published in various ways. While that still holds true today, there is still not enough information and not enough emphasis on how this disease affected the minority population in the state of Texas alone. This study that I made focuses on that impact and what derived from it in comparison to their counterparts within the same state.

Methods: This study has been conducted using the PRISMA criteria flowgram which is an evidence-based minimum set of items for reporting in systematic reviews and meta-analyses. The articles were grouped together in sections of National/State level conditions and disparities, Minority levels and conditions, racial health inequities and by populations and conditions.

People who are considered minorities are defined as people of color, and that are the subject of oppression and discrimination.

Results: As a result, there were 18 studies that were reviewed. To deem eligible 4 key components were used to fall into the criteria Covid-19, minority populations, health disparities, and health inequalities. No studies that were reviewed had repeated authors. Only 2 studies did not include valuable information regarding Covid-19, two more did not include anything related to the criteria. The final 2 studies that were excluded did not have information on Covid-19 at all.

Conclusions: In depth systematic literature reviews are useful in informing the public of the specific knowledge that they are in search of such as how impactful Covid was on the minority population. Not having this information leaves room for misinterpretation and false data that will be fed to the people who want to know. From what I discovered the effect that Covid-19 had among minorities in Texas was that there is correlation between the disease, inequities, socioeconomic status, and health disparities.

More focus should be put on the disproportionate effect of Covid-19 on communities of color in Texas to understand why and how the disease had such a greater impact on these at-risk citizens.
How Parental Modeling Influences Eating Habits And Practices Among College Students

Julianna Peterson

Faculty Mentor: Dinah Cummings
Program: Master Public Health

Childhood obesity has quadrupled since 1990, and more than 390 million children and adolescents aged 5-19 years were overweight in 2022 (Obesity and overweight). Therefore, children should be encouraged to incorporate nutritious foods within their diet and engage in physical activity. The purpose of this study is to 1) assess Angelo State University students’ physical activity levels and nutritional intake as a child, 2) determine the impacts of modeling physical activity and nutrition habits in the home environment on health behavior and 3) to identify potential ways childhood habits connect to health as an adult. A survey was deployed to Angelo State University students to assess the participants’ health behaviors including age and nutrition. The initial questions asked were self-identifying questions such as age, race, and gender etc. The remaining questions focused on behaviors modeled as a child and current nutritional habits. Using convenience sampling, students were invited to participate in the study via email with a link to the web-based survey.

The descriptive analysis indicated that approximately 50% of participants said that they were not currently satisfied with their health status, nutrition was seldom discussed within the home environment as a child, and less than 10% of participants said that their parent/guardian regularly engaged in physical activity. With this data, we can determine a connection between parental modeling influencing children, how childhood habits connect to health as an adult, and determine ways we can prevent childhood obesity.
Weight Stigma And Appearance Concerns Predict Men's Social Media "Eating Inspiration" Engagement.

Johnny Rodriguez

Faculty Mentor: Ashley Araiza
Program: Counseling Psychology

“Eating-inspiration” social media content is aimed at motivating users to reach or maintain a healthy weight. However, viewing of such content has been linked to several maladaptive health outcomes such as disordered eating (Chatzopoulou et al., 2020). Current research is limited to mostly women’s fitness inspiration studies, but understanding men’s engagement with this content also is important. As such, in this study, undergraduate men \((N = 76)\) from Angelo State University \((M_{\text{age}} = 19.92, SD = 2.40; 34.2\% \text{ European American/White}, 34.2\% \text{ Hispanic/Latino American}, \text{ and } 31.6\% \text{ other})\) completed self-report measures of eating-inspiration engagement (adapted from Araiza, 2021), weight-stigma consciousness (adapted from Pinel 1999), perceived weight discrimination (Wellman et al., 2019), fear of negative appearance evaluation (Lundgren et al., 2004), and body shape concerns (Evans & Dolan, 1993). Four simple regression models showed that men’s likelihood of following eating-inspiration content (i.e., eating pages and specific eating influencers) was significantly, positively predicted by weight-stigma consciousness \((R^2 = .08, F(1, 74) = 6.12; \beta = .28, p = .016)\); perceived weight discrimination \((R^2 = .13, F(1, 74) = 10.61; \beta = .35, p = .002)\); fear of negative appearance evaluation \((R^2 = .05, F(1, 74) = 3.99; \beta = .23, p = .049)\); and body shape concerns \((R^2 = .07, F(1, 74) = 5.42; \beta = .26, p = .023)\). This study suggests that awareness of and experiences with weight stigma, as well as appearance and body shape concerns, predict men’s likelihood of following eating-inspiration content on social media. Implications will be discussed.
Determinants Of Tuberculosis Treatment Completion: A National Retrospective Analysis Of Tuberculosis Surveillance Registry Data 2018-2022 In The Bahamas

Jewel Russell

Faculty Mentor: Dr. Dinah Cummings, Dr. Avis Johnson-Smith
Program: MPH Public Health

Most tuberculosis (TB) infections are curable with proper treatment; however, TB remains a major leading cause of death due to infectious disease. Anti-TB treatment non-completion can result in disease relapse, the development of drug-resistant TB strains, and continued transmission of the disease. It is important to know what factors play a role in the successful completion of TB treatment regimens to mitigate the adverse consequences of non-completion.

Objective

The goal of this study was to investigate the demographic and treatment-related variables associated with the successful completion of anti-TB treatment which include age, sex, island of residence, nationality, and Human Immunodeficiency Virus (HIV) status in The Bahamas.

Methods

A retrospective study using surveillance registry data of active TB cases living in The Bahamas between January 2018 and December 2022 was conducted. Data was analyzed using SPSS to investigate the association of age, sex, island of residence, nationality, and HIV status with treatment completion using multiple logistic regression.

Results

Out of the 216 active TB cases (140 males and 76 females) overall treatment completion rate was 78%. Of the 22% of cases that did not complete treatment, 87.5% died, 7.5% absconded and 5% were lost to follow-up. Being HIV-positive was negatively associated with treatment completion (OR=0.27, 95% CI: 0.13-0.57). No statistically significant correlation between age, sex, nationality, island of residence, and treatment completion was found.

Conclusion

With the decrease in the rate of treatment completion, targeted interventions toward HIV-positive individuals should be carried out.
The Laura W. Bush Mammogram Program; A 12-Year Executive Summary

Katelyn Olive

Faculty Mentor: Dinah Cummings
Program: Public Health

According to the CDC, 1 in 7 women will be diagnosed with breast cancer during their lifetime. Each year there are about 42,000 cases of breast cancer diagnosed in the U.S. The goal of the Laura W. Bush Institute’s mammogram program is to bridge the gap between healthcare providers and the rural community. The program improves access to care by providing free primary prevention services to women in a 10-county radius centering around Tom Green County. With the intent of providing information for the LWB staff to better serve their community, this project provided an executive summary of the program over the last 12 years. The study’s primary goal was to improve the utilization of resources and outreach efforts in order to make impactful changes to improve program outcomes.

The results of this study can also be used to obtain grant funding and provide information to relevant stakeholders. There have been a total of 4,455 women who met the qualifications to be enrolled in the program over the last decade. Key demographics may also be linked to increased risk: 60% of women were Hispanic, 40.5% of women had a live birth under the age of 20, and 80% of those women reside within Tom Green County. Interestingly, 70.3% of women are between the ages of 50-69 years, indicating a gap in care for women under 40. Along with further analysis, the results provide a better understanding of the individuals being served by the program. The data provided by this study demonstrates the importance of prevention efforts and how the Institute can make small but significant changes in their programming efforts.
Examining Workflow And Time Requirements At A D2 Athletic Training Facility As It Relates To Burnout

Kaiden Kirkland

Faculty Mentor: Chelsea Procter-Willman

Program: Masters in Athletic Training

Background:
To determine the level of burnout experienced by Athletic Trainer at the D2 collegiate level due to the long hour requirements of the job. This study consisted of interviews with 6 athletic trainers who all either work or have worked in the college setting at the D2 level. Burnout is a growing issue among athletic trainers in the collegiate setting. Each participant was asked a series of questions to determine if they have experienced burnout and what they believe to be the cause.

Methods: (Demographic; procedure; statistical methods)
The method of data collection and outcome measurement for this study was the use of the EMR system RankOne, which we used to determine the length of time the Athletic Training Facility was being used each day over the last 5 years. Graphs were created to quickly identify the time commitment during this period. Additionally, an interview consisting of 7 questions was used to identify themes regarding work overload and burnout. These responses were recorded via voice memos and Microsoft word dictation mode. The questions focused on burnout and if the long hours were the reason which they experienced this phenomenon. The number of hours worked on average by each participant were discussed, as well as the lack of time off to take care of personal responsibilities. Once all of the interviews were conducted, they were transcribed and analyzed to look for themes amongst the participants.

Results:
The graphs correlate to the extreme hours that the Athletic Training Facility was open and required staffing during and out of season. They were separated by year and helped demonstrate the hours reported to us by the Athletic Trainers during their interviews. Major themes that emerged from the interview portion of this study include lack of work/life balance, experience increasing rate of burnout, increase hours during in-season, and fear of future burnout by younger professionals.

Conclusion:
The high number of hours required by athletic trainers at the D2 level can contribute to burnout or fear of future burnout. Efforts must be made to create better working requirements in order to reduce burnout and increase retention in these types of athletic training positions.
“Fitspiration” is social media content intended to inspire a lifestyle of health and fitness (Holland & Tiggemann, 2017). However, research finds that viewing fitspiration may have adverse consequences for exercise motivation and body image (Fatt et al., 2019). Studies on how engaging with fitspiration content relates to men’s health and body image are still quite limited. To add to this literature, we examined associations of men’s frequency and likelihood of engaging with fitspiration content on social media to exercise intentions and behaviors, as well as to internalization of the muscular body as ideal. A total of $N = 76$ undergraduate men from Angelo State University ($M_{age} = 19.92$, $SD = 2.40$) completed self-report measures of fitspiration engagement (Araiza, 2021; unpublished), exercise intention (Mulgrew et al., 2018), obligatory exercise behaviors (Pasman & Thompson, 1988), and muscular-ideal internalization (Schaefer et al., 2017). We computed Pearson product-moment correlation coefficients among the study variables and found that men’s frequency of engaging with fitspiration content was significantly, positively associated with intentions to exercise over the next week ($r = .31$, $p = .006$), obligatory exercise behaviors ($r = .44$, $p < .001$), and muscular-ideal internalization ($r = .40$, $p < .001$). These findings add to the current research literature, and our results align with previous studies showing that men’s exposure to fitspiration imagery is associated with poorer body image and increases motivation for self-improvement due to a distorted belief of what the ideal male body should be (Yee et al., 2020). Implications will be discussed.
Health Implications Of Perfluoroalkyl And Polyfluoroalkyl Substances (PFAS) : A Systematic Literature Review

Chase Averette

Faculty Mentor: Dinah Cummings

Program: MPH

Perfluoroalkyl and polyfluoroalkyl substances (PFAS) pose significant challenges to environmental and human health due to their widespread use and persistence in various industries. This systematic literature review provides a review of the epidemiological evidence regarding the health implications of PFAS exposure through drinking water primarily, alongside other means. Known for their resistance to heat, water, and oil, PFAS has been detected globally in drinking water supplies, raising concerns about adverse health outcomes. Evidence suggests that PFAS exposure may lead to elevated risks of cancer, developmental issues, reproductive complications, and immunological disorders. This systematic literature review highlights gaps in knowledge concerning PFAS detection, exposure assessment, toxicity understanding, and possible removal options from drinking water. Efforts are underway to address these gaps through extensive studies and experiments conducted by environmental scientists and epidemiologists. Recent research has focused on screening methodologies, cohort studies, and animal experiments to evaluate the health effects of PFAS exposure. Studies have shown correlations between PFAS exposure and health issues such as polycystic ovarian syndrome (PCOS), uterine leiomyomas, endometriosis, altered microRNA expression, and type 2 diabetes.
To contribute to existing literature on the connection between weight perceptions and psychological health, we investigated whether a person’s perception of themselves as “overweight” (i.e., perceived overweight status) relates to indicators of distress and well-being. We hypothesized that perceived overweight status would be positively correlated with depression severity, stress, and anxiety, whereas it would be negatively correlated with life satisfaction. As part of a larger study, adults were recruited from the United States via Amazon’s Mechanical Turk data-collection platform. Participants (N = 217) were 56% female, 75% European American/White, and ranged in age from 20 to 75 years old (M = 41.88, SD = 13.12). Participants completed self-report questionnaires assessing perceived overweight status (Wellman et al., 2022), depression severity (Kroenke et al., 2009), perceived stress (Cohen et al., 1983), anxiety (Spitzer et al., 2006), and life satisfaction (Emmons et al., 1985). Pearson product-moment correlation coefficients were computed among the variables of interest. Perceived overweight status was positively correlated with depression severity (r = .32, p < .001), stress (r = .31, p < .001), and anxiety (r = .27, p < .001), as well as negatively correlated with life satisfaction (r = -.22, p = .001). Together, these results suggest that perceiving oneself as higher in weight relates to greater psychological distress and lower well-being. The present findings highlight the need for future research further exploring these associations. Our findings also have potential implications for addressing psychological consequences of negative weight perceptions or poor body image.
Joseph Sheridan Le Fanu’s 1872 short story collection *In a Glass Darkly* features a framing narrative that not only connects the individual stories, but also makes a claim about their scientific “truth.” In framing these stories as the professional correspondence of a Dr. Hesselius being shared by his assistant, Le Fanu ties the supernatural circumstances and events of the stories with a presumed scientific legitimacy. The tales of *In a Glass Darkly* refers to scientist and theologian Emanuel Swedenborg to further break down the barrier between the supernatural and the scientific. Swedenborg’s science and theology removes the barrier between the supernatural world and the natural one by firmly planting the supernatural within the natural. By reading the collection and its context through the lens of the history and philosophy of science, I argue that this collection, through its use of Swedenborg and Hesselius’s assistant, invites the supernatural to take part in the scientific. For example, *Carmilla* allows its supernatural creature, the vampire Carmilla, to attempt to utilize science to explain away the victims of her feedings as victims of a disease such as malaria. Carmilla references popular scientists to argue against the supernatural beliefs of the men that oppose her. In exploring this connection between the scientific and the supernatural that Le Fanu presents, we can begin to have a deeper understanding of how Victorian authors understood the connections between the two and how that may have informed the interplay of science and superstition that still informs our culture today.
Examining Self-Diagnosis In The Era Of Destigmatizing Mental Health.

Lillian Scheffel, Austin Trevino, Layden Hogue

Faculty Mentor: Leslie Kelley

Program: Counseling Psychology

Our hypotheses were to determine a difference between groups with and without the belief that the individual has a mental disorder and hours spent on social media, and to find a potential relationship between social media usage and the strength of participants' belief in having a mental disorder. Participants included 184 adults (131 women, 51 men, 1 intersex, and 1 Prefer Not to Say). Participants completed a survey designed to assess prior diagnosis, whether they believe they had a mental disorder, what disorder they believe they have, how strongly they believe they have the disorder, and the number of hours they spend on social media. Two independent-samples t-tests were run and found there was no statistically significant difference in hours spent on social media per week between those who do believe they have a mental disorder and those who do not believe they have a mental disorder for either group with no prior diagnosis (M = -1.525, SE = 3.991, t(82.307) = -0.382, p = 0.703), and with a prior diagnosis (M = 6.07, SE = 3.58, t(48.387) = 1.698, p = 0.096). A Pearson’s correlation showed there was no statistically significant correlation between the number of hours spent per week on social media and the strength in which individuals believed they had a mental disorder r(38) = 0.116, p = 0.475, r(47) = 0.156, p = 0.284. The results did not support our hypothesis. Refining the survey provides an avenue for further exploration.
Examining Workflow And Time Requirements At A D2 Athletic Training Facility As It Relates To Burnout

Kaiden Kirkland

Faculty Mentor: Chelsea Procter-Willman
Program: Masters of Athletic Training

Background:
To determine the level of burnout experienced by Athletic Trainer at the D2 collegiate level due to the long hour requirements of the job. Burnout is a growing issue among athletic trainers in the collegiate setting.

Methods: *(Demographic; procedure; statistical methods)*

Data collection consisted of pulling time stamps from the EMR system Rankone to identify when the athletic training facility was being used over the past five years. Additionally, an interview consisting of 7 questions was used to identify themes regarding work overload and burnout. These responses were recorded via voice memos and Microsoft word dictation mode. The number of hours worked on average by each participant were discussed, as well as the lack of time off to take care of personal responsibilities. Once all of the interviews were conducted, they were transcribed and analyzed to look for themes amongst the participants.

Results:
The graphs correlate to the extreme hours that were reported to us by the Athletic Trainers during their interviews. Major themes that emerged from the interview portion of this study include lack of work/life balance, experience increasing rate of burnout, increase hours during in-season, and fear of future burnout by younger professionals.

Conclusion:
The high number of hours required by athletic trainers at the D2 level can contribute to burn out or fear of future burnout. Efforts must be made to create better working requirements in order to reduce burnout and increase retention in these types of athletic training positions.
Differences In Stress Coping Strategies Between Student Athletes And Other College Students

Cindy Cabrera

Faculty Mentor: Dr. Kristi White

Program: Master's of Athletic Training

Background:

The purpose of this study is to compare how college student-athletes and other college students cope with stress.

Methods: The 427 participants were Angelo State University students (109 Males, 312 Females. Of the participants, 26 were NCAA student-athletes and 401 were other college students. The electronic survey administered via Qualtrics collected demographic information about the participant including age, gender, whether or not they are a collegiate athlete, their classification in school, the number of enrolled credits, work hours per week, and their number of children. The final question asked them to rank their top five coping mechanisms for stress.

Results: A Chi-Square test for Independence found a significance of \( p=0.000 \) \((r<0.05)\) between collegiate athletes and other students with three stress coping mechanisms. Results indicate the student-athletes used cleaning, shopping, and alcohol consumption significantly less than other college students. A Chi-Square test for Independence found a significance \((r>0.05)\) between genders in regard using the gym \((p=0.004)\) and meditation \((p=0.013)\) as a coping mechanism. Descriptive analysis also revealed the top five strategies chosen by participants included: Listening to music; Spending time with family and friends; Sleeping; Watching television; and Going to the gym.

Conclusion: There was a significant difference between the NCAA student-athletes and the non-student athletes in the use of cleaning, shopping, and alcohol as coping mechanisms for stress.

Clinical Relevance: This study helps identify different coping mechanisms implemented by students on campus when dealing with stress.
Gender Differences In The Perception Of Consent

MaKayla Allen B.S, Lauren Brooks B.S, Lillie Stephens

Faculty Mentor: Nicole Lozano

Program: Counseling Psychology

Sexual assault can be defined as nonconsensual sexual activity obtained through means of force/threats, verbal coercion, or intoxication, with 15-38% of US women reporting sexual assault during their lifetime (Jozkowski et al., 2013). For college students, 83-90% of sexual assaults were committed by someone known to the victim (e.g., a friend) (Abbey, 2002). When partners communicate consent, that communication often follows a sexual script where the verbalization of consent may be lost (Beres, 2007). In the context of a traditional sexual script, men are expected to always want sex and serve as sexual initiators, whereas women are expected to not be as sexually motivated and to take the responsibility as sexual gatekeepers (Jozkowski et al., 2013). Thus, women’s role in the context of the traditional sexual script is to be opposed, initially, to sex to avoid developing a negative reputation. This poster examines how men determine consent versus how women determine consent when presented with an ambiguous sexual encounter. Participants (n=104) were recruited through Prolific, with 62 women and 39 men and average age 29.26 years old (SD = 9.19). To assess their perceptions of sexual consent, participants were presented with a vignette describing a sexual encounter. Vignettes were randomly assigned and designed to depict either an ambiguous or consensual situation (Humphrey et. al. 2007). After reading the vignette, participants were asked to decide if the encounter was consensual (32.7%) or non-consensual (67.3%). Data indicated that men were more likely to perceive an ambiguous encounter as more consensual the women did.
The Diagnostic Accuracy Analysis Of The Lower Quarter Y-Balance Test In Men'S Dii Collegiate Football Athletes

Leigh Anne Dycus

Faculty Mentor: Dr. Yo-Rong Chen

Program: Master of Athletic Training

Background: The Lower Quarter Y-Balance Test (LQ-YBT) is a tool to identify injury risk factors. To our knowledge, there is limited evidence showing diagnostic accuracy of this test for male Division II collegiate football athletes. Our goals were to determine the diagnostic accuracy and cut-off score between injured individuals and healthy athletes throughout the season.

Methods: Ninety-two athletes voluntarily participated in this study by performing the LQ-YBT (age: 19.85±1.69, height: 184.7±6.68 cm; weight: 102.15±25.27kg) during the pre-participation physical examination. The test included single-leg standing to reach 3 directions (anterior, posteromedial, and posterolateral), and each direction required 3 completed trials. Standardized reach distances for each testing direction (normalized by individuals’ leg lengths), asymmetries, variability, and test composite scores for each leg were calculated as outcome variables. The LQ-YBT interrater correlation coefficient for reliability was 0.99 (95% confidence interval: 0.997-1). The injury group (n=15) was defined by non-contact lower back and limb injuries. Diagnostic accuracy analysis and receiver operator characteristic curves (ROC) were used.

Results: Injury prevalence was 16.3%. The ROC under curve areas among all the outcome variables were between 0.369-0.563 (p values > 0.05). Therefore, reliable cut-off points and diagnostic accuracy reports were unable to be determined for each outcome variable.

Conclusions: According to the current data, using the LQ-YBT to identify at-risk individuals for lower-quarter non-contact injuries may not be reliable in collegiate American football athletes.
The Effect Of Parental Roles, Work Status, And Settings On Work-Family Conflict In Certified Athletic Trainers.

Fatima Perez

Faculty Mentor: Yo-Rong Chen

Program: Maters of Athletic Training

**Background:** The purpose of this study was to explore the correlation between the Work-Family Conflict (WFC) scores of certified athletic trainers (ATCs) with parental roles, various work status demographics, and settings across secondary schools, collegiate, and professional sports.

**Methods:** A month-long Qualtric email survey with four reminders was sent. Thirty-nine out of the 58 recruited ATCs were parents and completed the survey (secondary school: 13, collegiate: 23, and professional: 3). Independent t-test was conducted to differentiate with/without children and working setting effects on WFC scores. We only considered two work settings comparisons because of the smaller enrollment in the professional setting. Spearman correlations were used to determine the relationships between WFC scores with the number of years of certification, serving years in the current employment site, and the age of the youngest child.

**Results:**
There were no significant differences in WFC between individuals with/without children and between 2 working settings (p>0.05). No significant correlations were found between WFC scores with years of certification, and years at the current employment site among all subjects. Within parental subjects, the WFC scores and the age of the youngest child were not significantly correlated (p=-0.235, r=0.15).

**Conclusion:**
Due to the small sample size and power, there were no significant differences in WFC scores with/without parental roles among ATCs and working setting differences. The WFC scores were not associated with the years of certification or at the current employment, and age of the youngest child.
Grit Score Comparison Between D2 Collegiate Athletic Population And General Student Population

Christina Borgne

Faculty Mentor: Chelsea Procter-William

Program: Masters of Athletic Training

**Background:** The purpose of this research study was to investigate the differences in perseverance and passion (i.e. GRIT) between students and student-athletes.

**Methods:** (Demographic; procedure; statistical methods) A convenience sample of students and student-athletes from Angelo State University were used for this study. 47 participants completed the survey (27 student-athletes & 20 students). The GRIT survey consisted of 12 questions with a Likert Scale response of very much like me, mostly like me, somewhat like me, not much like me, and not like me at all. The maximum score on this scale was 5 (extremely gritty), and the lowest score on this scale was 1 (not at all gritty). A Mann-Whitney U Test was used to determine any significance between groups.

**Results:** (Answer by the results of your statistical methods) The Mann-Whitney U test showed no significance in GRIT level between groups. The results of the Mann-Whitney U test were as follows: Student Athletes vs. General Students p=0.170, Male vs. Female p=0.766, and First-Generation Students vs. Non-First-Generation Students p=0.179. Surprisingly, the general student participants scored an average of 2.71 vs. the student athlete participants who scored an average of 2.17 on the GRIT scale. First generation students scored an average score of 2.81 vs. non-first-generation students who averaged 2.22 on the GRIT scale.

**Conclusion:** No significant results were discovered between student and student athletes. Both groups displayed similar levels of GRIT. Further research can continue to investigate differences in GRIT levels between age, sport, and credit hours achieved.
Financial Stability In Pursuing An Advanced Healthcare Degree

Brandon Dusek

Faculty Mentor: Jesse McIntyre
Program: Master in Athletic Training

Background: To investigate and compare the differences of stress in advanced healthcare degrees. The study includes Nursing, Department of Physical Therapy (DPT), Master’s in Athletic Training (MAT), Social Work, Psychology, Public Health, Medical (MED), and Other degrees. There is no research conducted on financial stress in obtaining an advanced degree in healthcare. Subjects are given the Financial Stress Scale College Version (FSS-CV) survey to assess their level of financial stress while obtaining an advanced healthcare degree.

Methods: The method of data collection and outcome measurement for this study was the use of the Financial Stress Scale College Version (FSS-CV). This assessment consisted of 22 Likert-scale questions asking subjects to critically think about their financial standing and stress level and rate themselves 1-4. (1=never, 2=sometimes, 3=often, 4=always). Once the user has completed the questionnaire, answers are summed to create a financial stress score. 92 total subjects participated in the survey (22 male, 70 female). Of these, 21 were nursing majors, 15 DPT, 11 athletic training, 11 social work, 7 psychology, 8 public health, 7 medical, and the remaining 12 identified as “Other”. After surveys were completed, the researchers analyzed the information and ran statistical methods to determine whether the data supported the study’s hypothesis or null hypothesis. The Kruskal-Wallis test was performed to emphasize the difference between majors and how much stress they experienced while obtaining their degrees.

Results: The mean rank of the Kruskal Wallis test on the eight groups are listed: Nursing 49.95, DPT 34.87, MAT 55.59, Social Work 62.50, Psychology 35.00, Public Health 30.13, Med 20.25, and Other 64.79 were significant, \( H(7, n=92) = 25.024, p=.001 \).

Conclusion: The study concludes with the presented data that there is a significant difference in the stress level of advanced healthcare degrees between the eight groups. The following degrees are ranked from the most stressed to the least stressed: “Other,” Social Work, MAT, Nursing, Psychology, DPT, Public Health, and MED.
Leptonycteris nivalis (Greater Long-nosed bat) is an endangered species of nectivorous bat which spends about half the year occupying caves in the southwestern United States. The endangered status of this species necessitates regular monitoring of known roost sites, but it has been shown that disturbing these sites may cause harm to bat species and many caves utilized by bats are inaccessible to humans. One promising yet untested method for passive monitoring is the collection of environmental DNA (eDNA) from the air. This method has been successfully deployed in controlled settings and has been used once to confirm the presence of bats in wild roosts, but many questions still remain about the viability of airborne eDNA as a tool for monitoring wild bat populations. My objective was to optimize the method of extracting DNA from air filters, which can then be used to determine if it is possible to detect migratory species in their absence, whether the location of samplers effects the amount of DNA collected, and if the concentration of DNA collected from the air is correlated to population size. I collected air samples from Emory cave, a cave known to be inhabited seasonally by L. nivalis and optimized the protocol for extracting DNA from air filters. To date, I have performed 10 test extractions and extracted 11 samples from Emory cave which yielded between 0.340 and 46 ng/μL of double-stranded DNA. Our optimized protocol has greatly increased the amount of DNA recovered from air filters.
Systematic Literature Review Of Opt-Out Syphilis Testing

Paulette Rogers

Faculty Mentor: Dr. Dinah Cummings

Program: Master of Public Health, Behavioral Health and Health Education

BACKGROUND: After historically low syphilis rates in the early 2000s, the United States now reports record high rates of both syphilis and congenital syphilis. Congenital syphilis is the vertical transmission of the Treponema pallidum bacteria from mother to newborn. The most recent Centers for Disease Control and Prevention report ranked Texas first in case counts of congenital syphilis and fourth in case rates. The only way to prevent congenital syphilis is to identify and adequately treat pregnant women. Current testing protocols in Texas have proven insufficient. For this reason, a systematic literature review was conducted to evaluate opt-out testing protocols.

METHODS: A search of the Cochrane Database of Systematic Reviews yielded only one relevant product. Subsequent searches were conducted in applicable databases to identify empirically based literature. Results were selected for inclusion and analysis based on prespecified criteria.

RESULTS: The lack of available and relevant literature identified a knowledge gap in this area of study. However, there may be lessons to be learned from the large amount of data surrounding opt-out testing protocols for HIV.

CONCLUSIONS: To prevent congenital syphilis, pregnant women need to be tested at any available opportunity. Due to a lack of or late prenatal care, mandated testing intervals are often missed. Opt-out testing, especially in emergency rooms, can help to identify those most at risk of delivering a newborn with congenital syphilis.
Classifying Malware Using LLMs

Suraj Thapa

Faculty Mentor: Prof. ErdoÄŸan DoÄŸdu

Program: Computer Science

We explore the potential of large language models (LLMs) for malware classification, focusing on the capabilities of one of the open source LLM models, Mistral 7B. As traditional signature-based methods struggle with novel threats and machine learning approaches face limitations, LLMs offer a new avenue. By analyzing textual malware code and behavior, LLMs can identify malicious patterns that might evade other methods. This project lays the groundwork for further discussion on using LLMs for malware classification, including training strategies, data requirements, and potential challenges.
Design And Implementation Of Unified Cybersecurity Knowledge Graph (Uckg)

Diego Sanchez, Adam Boyer, Bryce Rich, Joshua Lewis, Alexander Ametu, Turkhuu Bayasgalan

Faculty Mentor: Erdogan Dogdu, Roya Choupani

Program: Computer Science

The cybersecurity landscape is complex, due to the continuous expansion of the digital realm and the explosion of data generated within the field. Addressing the security challenges manually has become increasingly impractical due to the volume of data. Automation and intelligent solutions are promising avenues for mitigating common security risks.

Knowledge graphs (KGs) are versatile structures that have gained widespread adoption across various domains. Knowledge Graphs are databases that represent data and relationships between data points using a graph structure model. Prior attempts at unifying cybersecurity knowledge through common ontologies/KGs have fallen short of providing a comprehensive solution to the diverse challenges faced by the field.

A novel approach in this investigation is the creation of a Unified Cybersecurity Knowledge Graph (UCKG) using the Unified Cybersecurity Ontology (UCO). The UCO serves as a foundational framework, encompassing a set of concepts and relationships that capture the information regarding cybersecurity domains. The goal of this investigation is to further expand the construction of the UCKG, enabling the analysis of cybersecurity information from structured and unstructured data sources.

The UCKG’s architecture includes Common Platform/Vulnerability/Weakness Enumerations (CPEs, CVEs, and CWEs). CPEs play a crucial role in the UCO, serving as standardized identifiers for hardware, software, and operating systems, while CVEs and CWEs characterize the vulnerabilities and weaknesses associated with the platforms. Incorporating these enumerations into the UCKG enhance its ability to represent and contextualize cybersecurity data, enabling a more granular and accurate analysis of vulnerabilities, threats, and attack patterns across cybersecurity environments.
A Comparative Analysis Of Soils At Texas Poppy-Mallow Sites

Alix Kosmala

Faculty Mentor: Dr. Ben Skipper

Program: M.S. Biology

Texas poppy-mallow (*Callirhoe scabriuscula* B. L. Rob., Malvaceae) is a rare and endangered plant occupying a highly specific edaphic niche consisting of deep, sandy soils within the upper Colorado River valley, north of San Angelo. Soil type appears to be the single most reliable indicator of suitable habitat for the species, with all known populations occurring on either the Tivoli or Heatly fine sands soil series. Field observations have suggested that Texas poppy-mallow is not equitably distributed within or between these two soils. Tivoli soils seemingly support a higher abundance of Texas poppy-mallow compared to Heatly, and across both soil types, individuals display a sparse, clumped distribution. This study attempts to discern the unseen differences below the surface which may be responsible for the apparent inequitable distribution at a finer level of detail than standard soil classifications can provide. Thirty-two soil samples were collected according to soil series (Tivoli or Heatly) and presence/absence of Texas poppy-mallow, resulting in eight replicates for four unique sample types across two populations. Samples will be analyzed in a laboratory to determine the soil texture as well as pH, salinity, conductivity, nitrates, and levels of the primary plant nutrients. Resultant data will be analyzed using a series of logistic regression models with the presence/absence of Texas poppy-mallow as the response variable and soil characteristics as independent variables.
A Survey For The Novel Poxvirus Brazospox In The Asnhc

Hannah Duhon

Faculty Mentor: Dr. Laurel Fohn

Program: Biology

Poxviruses are a common source of zoonotic disease in individuals with occupational exposure. Novel poxviruses with potential for human health consequences must be monitored to ensure effective preventative measures can be taken by those who may be at risk. In 2018, a novel poxvirus was identified and sequenced by Hodo et al. at A&M University. The lesions characteristic to this virus were identified on 3 species of rodent by that research team, one being Sigmodon hispidus, a rat species that is very common in this area of Texas. This research project intends to investigate whether and to what extent brazospoxvirus has spread thus far into West Texas. 877 skin specimens of Sigmodon hispidus in the Angelo State Natural History Collection were visually examined for abnormalities in the skin that had the appearance of the characteristic proliferative lesions of brazospoxvirus. 27 individuals were identified with skin abnormalities suspicious for brazospoxvirus. Another 82 Sigmodon hispidus with frozen spleen tissues have been identified in the collection. Currently, PCR testing methodology for Brazospox is being established. Once established, identified lesions will be swabbed and frozen tissue samples will undergo PCR testing for poxvirus.
Caffeine Consumption Among Collegiate Athletes

Brady Greenlee

Faculty Mentor: Dr. Jesse McIntyre
Program: Master of Athletic Training

Background:
To investigate if collegiate athletes consume more, less, or the same amount caffeine compared to regular college students, and to see if they may be at an increased risk for medical conditions associated with excessive caffeine consumption.

Methods:
Collegiate student athletes were emailed a link to a 13-question survey based on surveys of similar, previously conducted studies that asked what sport they played, classification, age, gender, number of days per week they consume caffeine, how many times per day caffeine was consumed, amount of caffeine consumed per day, sources of caffeine, and reasons for consuming caffeine. Priori power analysis was performed to determine effective sample size. Chi Square analysis was performed (p<0.05) to find differences between caffeine consumption between genders and classification at the ends of each range of caffeine consumed. A Kruskal-Wallis Test was done to compare the means between gender and classification.

Results:
32 participants responded to the survey. The power analysis had power of 0.64 with an effect size of 0.043 (p<0.05). Chi Square (p<0.05) was 0.85 (minimum) and 33.877 (maximum) for gender and 11.541 (minimum) and 44.901 (maximum) for classification. Kruskal-Wallis Test determined the distribution was similar between gender and classification. Athletes consumed an average range of 128.125-228.125 mg of caffeine per day, with a median of 178.125 mg.

Conclusion: Collegiate athletes do not consume more or less caffeine than regular college students. College athletes should still be educated about safe caffeine consumption, adverse effects of caffeine, and implications for drug testing for the athletic association their institution is affiliated with.
Do You Feel What I Feel? The Role Of Protective Factors In Dealing With Vicarious Trauma As A Clinician

Lauren Brooks

Faculty Mentor: Nicole Lozano

Program: MS in Counseling Psychology

Vicarious traumatization refers to the gradual, unique, and negative changes to one’s well-being that is experienced after exposure to trauma (McCann & Pearlman, 1990). While previous studies have identified mitigating factors that can help prevent vicarious trauma in mental health clinicians, there is limited research on the potential barriers that prevent them from engaging in these factors. Thus, this research aims to examine the influence of protective factors on clinicians’ ability to cope with their work and the barriers that hinder their ability to protect their psychological well-being.

Utilizing a mixed-methods approach, the study sampled licensed mental health professionals at various stages of practice within multiple areas of the US. Participants (n=394) were recruited through purchased email lists and APA list serves aimed at clinicians. Of these individuals, 316 identified as female, 67 identified as male, and 7 identified as non-binary. The average age of the sample was 45.15 (SD = 14.10) and the majority of participants identified as White (83.1%).

Participants were administered several scales including the Vicarious Trauma Scale (VTS; Vrklevski & Franklin, 2008), Compassion Fatigue-Short Scale (CFS; Adams et al., 2006), Self Compassion Scale - Short Form (SCS - SF; Adams et al., 2006), and Guilt and Shame Experience Scale (GSES; Malinakova et al., 2019). Additionally, participants were asked to answer open-ended questions about their experiences with supervision, self-care practices, and organizational support as well as potential barriers that affect their ability to preserve their psychological well-being. Data for this study has been collected and is being analyzed.
Rat Basketball
Jonathan Castaneda, Lillie Stephens, Makayla Allen, Calista Dickey, & Hemma Rangel

Faculty Mentor: Dr. Steven Brewer
Program: Counseling Psychology

Rat basketball is a hands-on experiment to help students understand concepts of operant conditioning. The process involves teaching rats how to play basketball through differential reinforcement of successive approximations. Through providing continuous positive reinforcement during each step, the resulting target behavior is for rats to have the ability to pick up a ball, carry it to a hoop, and drop the ball through the hoop. The current rat basketball study investigates how behaviors are influenced by the valence of rewards, specifically affection versus treats. The effectiveness of shaping behaviors depends upon a variety of factors, such as the cognitive capacity of the organism being shaped (Pomerantz, 2009), the reinforcement schedule used (Palya & Powell, 2000), and the valence of the reward (Vroom, 1964). The valence of a reward depends on both affective and sensory factors (Murray, 2007). The effectiveness of shaping behaviors could also depend upon the experimenters themselves (Rosenthal, Rober, Jacobson & Lenore, 1992; Mitchell, Terence, Daniels & Denise, 2003). Experimenter cognitions are often unconscious and uncontrollable (Bohnet, 2016) and are hard to control when double blind methodologies are not feasible. Experimenter observations during recent similar studies conducted by this lab drew our interest to the influence experimenters have on studies themselves. It was hypothesized that experimenter affection could serve as reward valence as effective as traditional food-based rewards. To our knowledge, research on the effects reward preferences have on behavioral learning is scarce. According to similar research done last year, we examined sweet treats to be more effective than savory treats. This has drawn our interest to evaluate effectiveness of reward differences overall.

Methods
Rats (N=10) will be divided into two groups, an affection group and a food-based group (each condition will contain 5 rats). Each group will be conditioned for a period of two months utilizing a stage-based model of training. Training will consist of the successive reward for exhibiting trainer defined goal behaviors. The desired behavior will change based on the following stage based criteria: (1) touching the ball, (2) learning to interact with the ball, (3) moving the ball toward the hoop, (4) placing the ball toward the lip of the hoop, and (5) dropping the ball through the hoop.
Results
Progress to goal will be measured for each stage with a dichotomous yes/no as to whether the rat successfully exhibited the target behavior and the time spent in each stage. It is expected that affection will be equal or superior to traditional food reward.

Discussion
This study explored the valence of affection as reward compared to traditional reward and is part of an ongoing series of studies that aims to invigorate students, conserve animal use in research and provide a means for positive public outreach on non-human animal research in general.
Corpus Juris: Non-Medical Drivers Of Health Policies In Older Adults

Carina Sturgeon

Faculty Mentor: Dinah Cummings
Program: Master of Public Health

The COVID-19 Public Health Emergency declaration has ended. The remnants of COVID-19 pandemic devastation will persist in American consciousness for generations. For as long as there is attrition of: life, social connectivity, financial stability, and health non-medical drivers of health will impact populations as they age. Texas has the third-largest population of older adults in the United States. The studies I evaluate will examine how COVID-19 disproportionally impacted the most vulnerable within American populations against the evolving public policy terrain before aging older Texans.

My study centers on the experiences of low-income older adults. The articles I introduce examine what made and continues to make the older adult population disproportionally disadvantaged, isolated, and experiencing resource deficits. I will juxtapose studies of vulnerable older adults against public policy enacted during the COVID-19 fog of war fugue. The great strides in equity and access under COVID-19 public policy enacted are at an end. As the United States of America, Texas, thaws and transition to a post pandemic stance emergency funding and protections for safety net programs are ceasing while the conditions vulnerable low-income older adults subsist in persist. My post COVID-19 study will examine the implications of public policy shifts meted out on the aging well potential of low-income older adults.
Applicant's Eye Direction and Interviewers' Evaluations in Virtual Job Interview

Heewon Jang

Faculty Mentor: Cheryl Stenmark
Program: Industrial & Organizational Psychology

Video-mediated communication has enabled people to communicate over long distances at a low cost. Despite the technical advances, video-mediated communication systems still have challenges, such as a lack of eye contact. Eye contact is considered an essential element in job interviews. It has been shown that the absence of eye contact affects interview outcomes in face-to-face interviews. However, research on the effects of eye contact in video-mediated job interviews is limited. The current study explores whether an applicant’s eye contact affects the interviewer’s evaluations and how the interviewer’s ratings of applicants vary based on the perceived eye contact in a video-mediated job interview. We expect findings to contribute to the growing body of knowledge regarding the effect of eye direction and eye contact in video-mediated job interviews. Potential job candidates may use the findings from this study as a guide to improve their chances of success in job interviews.
Evaluating Potential Glyphosate Resistant Johnsongrass (Sorghum Halepense) Biotypes in Texas

Ryan Matschek

Faculty Mentor: Dr. Cody Scott, Dr. Reagan Noland
Program: Agriculture
Sponsorship: Texas A& AgriLife Extension, Cotton Incorporated, Texas State Support Committee for Cotton

Johnsongrass (Sorghum halepense) is among the most problematic weeds in Texas croplands. A Johnsongrass biotype with potential glyphosate resistance was identified in the Rolling Plains of Texas. Indoor dose-response trials were coordinated in 2022 and 2023 to verify whether glyphosate resistance is present in rhizome- and seed-propagated plants. Experiments were each arranged as randomized complete block designs with 7 to 10 replications and 7 or 8 treatment doses ranging from 0× to 50× the labeled rate applied to glyphosate-susceptible (GS) and suspected resistant (SR) biotypes. Dose-response relationships were characterized with four-parameter logistic regression. Rhizome-propagated SR Johnsongrass was 17 times less sensitive to glyphosate with an LD50 of 4,102 g a.e. ha-1 compared to the GS biotype at 237 g a.e. ha-1. The SR biotype also exhibited less reduction of biomass due to glyphosate, with an effective dose to reduce biomass by 50% (ED50) of 1,420 g a.e. ha-1, compared to the GS biotype at 433 g a.e. ha-1. Seed-propagated SR plants were also less sensitive with an LD50 2.3 times greater than GS seedlings. Additional trials were initiated in 2023 to screen biotypes with suspected resistance from three other populations in western Texas. Rhizome-propagated plants were treated with 0×, 1×, 2.5×, and 5× the labeled rate of glyphosate (924 g a.e. ha-1) with a minimum of 3 replications. All suspected resistant biotypes exhibited reduced sensitivity (P < 0.05) to glyphosate at the 1× rate (mean = 31.4% damage) compared to the GS biotype (76.3% damage), although all biotypes were equally damaged at the 2.5× rate (P > 0.05). The findings of this work confirm reduced sensitivity and mortality due to glyphosate in multiple Johnsongrass biotypes in western Texas.
Does emotional testimony increase the probability of death penalty verdicts in capital trials?

Taylor Sherman

Faculty Mentor: Tyler N. Livingston
Program: Counseling Psychology Psy.D.

Introduction

Victim impact statements (VIS) delivered during the sentencing phase of a capital trial help to provide restorative justice to victims' family (Kelly, 1984) but may evoke strong, biasing emotions among jurors (Nuñez et al., 2015). The current study examined whether the affective content of VIS was associated with sentencing decisions.

Method

The sample consisted of 33 VIS from real capital trial transcripts (NSF grant SES-0851004). We coded transcripts according to trial verdict (i.e., death penalty vs. life imprisonment). Linguistic Inquiry and Word Count (LIWC) analysis (Pennebaker et al., 2015) quantified the affective content of each VIS by calculating the percentage of words conveying emotion. We examined the likelihood of a death penalty verdict vs. a life imprisonment verdict as a function of VIS affective content.

Results

A logistic regression model predicted the likelihood of a death penalty verdict (yes vs. no) as a function of VIS affective content. The odds ratio for a death penalty verdict was 0.97 (95% CI [-0.43, 0.39], p > .05). This finding indicated that the affective content of the VIS did not significantly predict the probability of a death penalty verdict.

Discussion

The case facts, rather than the affective content of VIS, likely influenced verdicts. VIS may provide a source of restorative justice for victims without biasing trial outcomes. Future research should examine whether other characteristics of the VIS predict trial outcomes, such as the relationship between the witness and the victim.
The Impact of Covid-19 Among Minority Populations in Texas

Jordan McKinney

Faculty Mentor: Dr. Babajide Sadiq, Dr. Dinah Cummings
Program: Public Health

Background: The effect and impact of Covid-19 has been published in various ways. While that still holds true today, there is still not enough information and not enough emphasis on how this disease affected the minority population in the state of Texas alone. This study that I made focuses on that impact and what derived from it in comparison to their counterparts within the same state.

Methods: This study has been conducted using the PRISMA criteria flowgram which is an evidence-based minimum set of items for reporting in systematic reviews and meta-analyses. The articles were grouped together in sections of National/State level conditions and disparities, Minority levels and conditions, racial health inequities and by populations and conditions. People who are considered minorities are defined as people of color, and that are the subject of oppression and discrimination.

Results: As a result, there were 18 studies that were reviewed. To deem eligible 4 key components were used to fall into the criteria Covid-19, minority populations, health disparities, and health inequalities. No studies that were reviewed had repeated authors. Only 2 studies did not include valuable information regarding Covid-19, two more did not include anything related to the criteria. The final 2 studies that were excluded did not have information on Covid-19 at all.

Conclusions: In depth systematic literature reviews are useful in informing the public of the specific knowledge that they are in search of such as how impactful Covid was on the minority population. Not having this information leaves room for misinterpretation and false data that will be fed to the people who want to know. From what I discovered the effect that Covid-19 had among minorities in Texas was that there is correlation between the disease, inequities, socioeconomic status, and health disparities. More focus should be put on the disproportionate effect of Covid-19 on communities of color in Texas to understand why and how the disease had such a greater impact on these at-risk citizens.
How Parental Modeling Influences Eating Habits and Practices among College Students

Julianna Peterson

Faculty Mentor: Dinah Cummings
Program: Master Public Health

Childhood obesity has quadrupled since 1990, and more than 390 million children and adolescents aged 5-19 years were overweight in 2022 (Obesity and overweight). Therefore, children should be encouraged to incorporate nutritious foods within their diet and engage in physical activity. The purpose of this study is to 1) assess Angelo State University students’ physical activity levels and nutritional intake as a child, 2) determine the impacts of modeling physical activity and nutrition habits in the home environment on health behavior and 3) to identify potential ways childhood habits connect to health as an adult. A survey was deployed to Angelo State University students to assess the participants’ health behaviors including age and nutrition. The initial questions asked were self-identifying questions such as age, race, and gender etc. The remaining questions focused on behaviors modeled as a child and current nutritional habits. Using convenience sampling, students were invited to participate in the study via email with a link to the web-based survey.

The descriptive analysis indicated that approximately 50% of participants said that they were not currently satisfied with their health status, nutrition was seldom discussed within the home environment as a child, and less than 10% of participants said that their parent/guardian regularly engaged in physical activity. With this data, we can determine a connection between parental modeling influencing children, how childhood habits connect to health as an adult, and determine ways we can prevent childhood obesity.
Weight stigma and appearance concerns predict men's social media "eating inspiration" engagement.

Johnny Rodriguez

Faculty Mentor: Ashley Araiza
Program: Counseling Psychology

"Eating-inspiration" social media content is aimed at motivating users to reach or maintain a healthy weight. However, viewing of such content has been linked to several maladaptive health outcomes such as disordered eating (Chatzopoulou et al., 2020). Current research is limited to mostly women’s fitness inspiration studies, but understanding men’s engagement with this content also is important. As such, in this study, undergraduate men (N = 76) from Angelo State University (M_age = 19.92, SD = 2.40; 34.2% European American/White, 34.2% Hispanic/Latino American, and 31.6% other) completed self-report measures of eating-inspiration engagement (adapted from Araiza, 2021), weight-stigma consciousness (adapted from Pinel 1999), perceived weight discrimination (Wellman et al., 2019), fear of negative appearance evaluation (Lundgren et al., 2004), and body shape concerns (Evans & Dolan, 1993). Four simple regression models showed that men’s likelihood of following eating-inspiration content (i.e., eating pages and specific eating influencers) was significantly, positively predicted by weight-stigma consciousness (R^2 = .08, F(1, 74) = 6.12; β = .28, p = .016); perceived weight discrimination (R^2 = .13, F(1, 74) = 10.61; β = .35, p = .002); fear of negative appearance evaluation (R^2 = .05, F(1, 74) = 3.99; β = .23, p = .049); and body shape concerns (R^2 = .07, F(1, 74) = 5.42; β = .26, p = .023). This study suggests that awareness of and experiences with weight stigma, as well as appearance and body shape concerns, predict men’s likelihood of following eating-inspiration content on social media. Implications will be discussed.
Determinants of tuberculosis treatment completion: A national retrospective analysis of tuberculosis surveillance registry data 2018-2022 in The Bahamas

Jewel Russell

Faculty Mentor: Dr. Dinah Cummings, Dr. Avis Johnson-Smith
Program: MPH Public Health

**Background** Most tuberculosis (TB) infections are curable with proper treatment; however, TB remains a major leading cause of death due to infectious disease. Anti-TB treatment non-completion can result in disease relapse, the development of drug-resistant TB strains, and continued transmission of the disease. It is important to know what factors play a role in the successful completion of TB treatment regimens to mitigate the adverse consequences of non-completion.

**Objective** The goal of this study was to investigate the demographic and treatment-related variables associated with the successful completion of anti-TB treatment which include age, sex, island of residence, nationality, and Human Immunodeficiency Virus (HIV) status in The Bahamas.

**Methods** A retrospective study using surveillance registry data of active TB cases living in The Bahamas between January 2018 and December 2022 was conducted. Data was analyzed using SPSS to investigate the association of age, sex, island of residence, nationality, and HIV status with treatment completion using multiple logistic regression.

**Results** Out of the 216 active TB cases (140 males and 76 females) overall treatment completion rate was 78%. Of the 22% of cases that did not complete treatment, 87.5% died, 7.5% absconded and 5% were lost to follow-up. Being HIV-positive was negatively associated with treatment completion (OR=0.27, 95% CI: 0.13- 0.57). No statistically significant correlation between age, sex, nationality, island of residence, and treatment completion was found.

**Conclusion** With the decrease in the rate of treatment completion, targeted interventions toward HIV-positive individuals should be carried out.
The Laura W. Bush Mammogram Program; A 12-year Executive Summary

Katelyn Olive

Faculty Mentor: Dinah Cummings
Program: Public Health

According to the CDC, 1 in 7 women will be diagnosed with breast cancer during their lifetime. Each year there are about 42,000 cases of breast cancer diagnosed in the U.S. The goal of the Laura W. Bush Institute’s mammogram program is to bridge the gap between healthcare providers and the rural community. The program improves access to care by providing free primary prevention services to women in a 10-county radius centering around Tom Green County. With the intent of providing information for the LWB staff to better serve their community, this project provided an executive summary of the program over the last 12 years. The study’s primary goal was to improve the utilization of resources and outreach efforts in order to make impactful changes to improve program outcomes. The results of this study can also be used to obtain grant funding and provide information to relevant stakeholders. There have been a total of 4,455 women who met the qualifications to be enrolled in the program over the last decade. Key demographics may also be linked to increased risk: 60% of women were Hispanic, 40.5% of women had a live birth under the age of 20, and 80% of those women reside within Tom Green County. Interestingly, 70.3% of women are between the ages of 50-69 years, indicating a gap in care for women under 40. Along with further analysis, the results provide a better understanding of the individuals being served by the program. The data provided by this study demonstrates the importance of prevention efforts and how the Institute can make small but significant changes in their programming efforts.
Examining Workflow and Time Requirements at a D2 Athletic Training Facility as it Relates to Burnout

Kaiden Kirkland

Faculty Mentor: Chelsea Procter-Willman
Program: Masters in Athletic Training

**Background:** To determine the level of burnout experienced by Athletic Trainer at the D2 collegiate level due to the long hour requirements of the job. This study consisted of interviews with 6 athletic trainers who all either work or have worked in the college setting at the D2 level. Burnout is a growing issue among athletic trainers in the collegiate setting. Each participant was asked a series of questions to determine if they have experienced burnout and what they believe to be the cause.

**Methods:** (Demographic; procedure; statistical methods) The method of data collection and outcome measurement for this study was the use of the EMR system RankOne, which we used to determine the length of time the Athletic Training Facility was being used each day over the last 5 years. Graphs were created to quickly identify the time commitment during this period. Additionally, an interview consisting of 7 questions was used to identify themes regarding work overload and burnout. These responses were recorded via voice memos and Microsoft word dictation mode. The questions focused on burnout and if the long hours were the reason which they experienced this phenomenon. The number of hours worked on average by each participant were discussed, as well as the lack of time off to take care of personal responsibilities. Once all of the interviews were conducted, they were transcribed and analyzed to look for themes amongst the participants.

**Results:** The graphs correlate to the extreme hours that the Athletic Training Facility was open and required staffing during and out of season. They were separated by year and helped demonstrate the hours reported to us by the Athletic Trainers during their interviews. Major themes that emerged from the interview portion of this study include lack of work/life balance, experience increasing rate of burnout, increase hours during in-season, and fear of future burnout by younger professionals.

**Conclusion:** The high number of hours required by athletic trainers at the D2 level can contribute to burn out or fear of future burnout. Efforts must be made to create better working requirements in order to reduce burnout and increase retention in these types of athletic training positions.
Men's social media "fitspiration" engagement relates to obligatory exercise and muscular-Ideal internalization.

Taylor Sherman, Johnny Rodriguez
Faculty Mentor: Ashley Araiza
Program: Psy.D, Doctorate of Psychology in Counseling Psychology

“Fitspiration” is social media content intended to inspire a lifestyle of health and fitness (Holland & Tiggemann, 2017). However, research finds that viewing fitspiration may have adverse consequences for exercise motivation and body image (Fatt et al., 2019). Studies on how engaging with fitspiration content relates to men's health and body image are still quite limited. To add to this literature, we examined associations of men's frequency and likelihood of engaging with fitspiration content on social media to exercise intentions and behaviors, as well as to internalization of the muscular body as ideal. A total of $N = 76$ undergraduate men from Angelo State University ($M_{\text{age}} = 19.92$, $SD = 2.40$) completed self-report measures of fitspiration engagement (Araiza, 2021; unpublished), exercise intention (Mulgrew et al., 2018), obligatory exercise behaviors (Pasman & Thompson, 1988), and muscular-ideal internalization (Schaefer et al., 2017). We computed Pearson product-moment correlation coefficients among the study variables and found that men's frequency of engaging with fitspiration content was significantly, positively associated with intentions to exercise over the next week ($r = .31$, $p = .006$), obligatory exercise behaviors ($r = .44$, $p < .001$), and muscular-ideal internalization ($r = .40$, $p < .001$). These findings add to the current research literature, and our results align with previous studies showing that men's exposure to fitspiration imagery is associated with poorer body image and increases motivation for self-improvement due to a distorted belief of what the ideal male body should be (Yee et al., 2020). Implications will be discussed.
Perfluoroalkyl and polyfluoroalkyl substances (PFAS) pose significant challenges to environmental and human health due to their widespread use and persistence in various industries. This systematic literature review provides a review of the epidemiological evidence regarding the health implications of PFAS exposure through drinking water primarily, alongside other means. Known for their resistance to heat, water, and oil, PFAS has been detected globally in drinking water supplies, raising concerns about adverse health outcomes. Evidence suggests that PFAS exposure may lead to elevated risks of cancer, developmental issues, reproductive complications, and immunological disorders.

This systematic literature review highlights gaps in knowledge concerning PFAS detection, exposure assessment, toxicity understanding, and possible removal options from drinking water. Efforts are underway to address these gaps through extensive studies and experiments conducted by environmental scientists and epidemiologists. Recent research has focused on screening methodologies, cohort studies, and animal experiments to evaluate the health effects of PFAS exposure. Studies have shown correlations between PFAS exposure and health issues such as polycystic ovarian syndrome (PCOS), uterine leiomyomas, endometriosis, altered microRNA expression, and type 2 diabetes.
Weight perceptions and well-being: Perceiving oneself as "overweight" relates to psychological distress

Lillian Scheffel

Faculty Mentor: Ashley Araiza
Program: Counseling Psychology

To contribute to existing literature on the connection between weight perceptions and psychological health, we investigated whether a person's perception of themselves as "overweight" (i.e., perceived overweight status) relates to indicators of distress and well-being. We hypothesized that perceived overweight status would be positively correlated with depression severity, stress, and anxiety, whereas it would be negatively correlated with life satisfaction. As part of a larger study, adults were recruited from the United States via Amazon's Mechanical Turk data-collection platform. Participants (N = 217) were 56% female, 75% European American/White, and ranged in age from 20 to 75 years old (M = 41.88, SD = 13.12). Participants completed self-report questionnaires assessing perceived overweight status (Wellman et al., 2022), depression severity (Kroenke et al., 2009), perceived stress (Cohen et al., 1983), anxiety (Spitzer et al., 2006), and life satisfaction (Emmons et al., 1985). Pearson product-moment correlation coefficients were computed among the variables of interest. Perceived overweight status was positively correlated with depression severity (r = .32, p < .001), stress (r = .31, p < .001), and anxiety (r = .27, p < .001), as well as negatively correlated with life satisfaction (r = -.22, p = .001). Together, these results suggest that perceiving oneself as higher in weight relates to greater psychological distress and lower well-being. The present findings highlight the need for future research further exploring these associations. Our findings also have potential implications for addressing psychological consequences of negative weight perceptions or poor body image.
The Science of the Supernatural in Le Fanu's In a Glass Darkly

Autumn Cleveland

Faculty Mentor: Dr. Allison Dushane
Program: English and Modern Languages Masters

Joseph Sheridan Le Fanu’s 1872 short story collection In a Glass Darkly features a framing narrative that not only connects the individual stories, but also makes a claim about their scientific “truth.” In framing these stories as the professional correspondence of a Dr. Hesselius being shared by his assistant, Le Fanu ties the supernatural circumstances and events of the stories with a presumed scientific legitimacy. The tales of In a Glass Darkly refers to scientist and theologian Emanuel Swedenborg to further break down the barrier between the supernatural and the scientific. Swedenborg’s science and theology removes the barrier between the supernatural world and the natural one by firmly planting the supernatural within the natural. By reading the collection and its context through the lens of the history and philosophy of science, I argue that this collection, through its use of Swedenborg and Hesselius’s assistant, invites the supernatural to take part in the scientific. For example, Carmilla allows its supernatural creature, the vampire Carmilla, to attempt to utilize science to explain away the victims of her feedings as victims of a disease such as malaria. Carmilla references popular scientists to argue against the supernatural beliefs of the men that oppose her. In exploring this connection between the scientific and the supernatural that Le Fanu presents, we can begin to have a deeper understanding of how Victorian authors understood the connections between the two and how that may have informed the interplay of science and superstition that still informs our culture today.
Examining self-diagnosis in the era of destigmatizing mental health.

Lillian Scheffel, Austin Trevino, Layden Hogue

Faculty Mentor: Leslie Kelley
Program: Counseling Psychology

Our hypotheses were to determine a difference between groups with and without the belief that the individual has a mental disorder and hours spent on social media, and to find a potential relationship between social media usage and the strength of participants' belief in having a mental disorder. Participants included 184 adults (131 women, 51 men, 1 intersex, and 1 Prefer Not to Say). Participants completed a survey designed to assess prior diagnosis, whether they believe they had a mental disorder, what disorder they believe they have, how strongly they believe they have the disorder, and the number of hours they spend on social media. Two independent-samples t-tests were run and found there was no statistically significant difference in hours spent on social media per week between those who do believe they have a mental disorder and those who do not believe they have a mental disorder for either group with no prior diagnosis (M = -1.525, SE = 3.991, t(82.307) = -0.382, p = 0.703), and with a prior diagnosis (M= 6.07, SE = 3.58, t(48.387) = 1.698, p = 0.096). A Pearson's correlation showed there was no statistically significant correlation between the number of hours spent per week on social media and the strength in which individuals believed they had a mental disorder r(38) = 0.116, p = 0.475, r(47) = 0.156, p = 0.284. The results did not support our hypothesis. Refining the survey provides an avenue for further exploration.
Examining Workflow and Time Requirements at a D2 Athletic Training Facility as it Relates to Burnout

Kaiden Kirkland

Faculty Mentor: Chelsea Procter-Willman
Program: Masters of Athletic Training

Background:
To determine the level of burnout experienced by Athletic Trainer at the D2 collegiate level due to the long hour requirements of the job. Burnout is a growing issue among athletic trainers in the collegiate setting.

Methods: (Demographic; procedure; statistical methods)
Data collection consisted of pulling time stamps from the EMR system Rankone to identify when the athletic training facility was being used over the past five years. Additionally, an interview consisting of 7 questions was used to identify themes regarding work overload and burnout. These responses were recorded via voice memos and Microsoft word dictation mode. The number of hours worked on average by each participant were discussed, as well as the lack of time off to take care of personal responsibilities. Once all of the interviews were conducted, they were transcribed and analyzed to look for themes amongst the participants.

Results:
The graphs correlate to the extreme hours that were reported to us by the Athletic Trainers during their interviews. Major themes that emerged from the interview portion of this study include lack of work/life balance, experience increasing rate of burnout, increase hours during in-season, and fear of future burnout by younger professionals.

Conclusion:
The high number of hours required by athletic trainers at the D2 level can contribute to burn out or fear of future burnout. Efforts must be made to create better working requirements in order to reduce burnout and increase retention in these types of athletic training positions.

Keywords: RankOne, Burnout, EMR
Differences in Stress Coping Strategies between Student Athletes and other College Students

Cindy Cabrera

Faculty Mentor: Dr. Kristi White
Program: Master's of Athletic Training

Background:
To determine the level of burnout experienced by Athletic Trainer at the D2 collegiate level due to the long hour requirements of the job. Burnout is a growing issue among athletic trainers in the collegiate setting.

Methods: (Demographic; procedure; statistical methods)
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Keywords: RankOne, Burnout, EMR
Gender Differences in the Perception of Consent

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Faculty Mentor: Nicole Lozano
Program: Counseling Psychology

Sexual assault can be defined as nonconsensual sexual activity obtained through means of force/threats, verbal coercion, or intoxication, with 15-38% of US women reporting sexual assault during their lifetime (Jozkowski et al., 2013). For college students, 83-90% of sexual assaults were committed by someone known to the victim (e.g., a friend) (Abbey, 2002). When partners communicate consent, that communication often follows a sexual script where the verbalization of consent may be lost (Beres, 2007). In the context of a traditional sexual script, men are expected to always want sex and serve as sexual initiators, whereas women are expected to not be as sexually motivated and to take the responsibility as sexual gatekeepers (Jozkowski et al., 2013). Thus, women’s role in the context of the traditional sexual script is to be opposed, initially, to sex to avoid developing a negative reputation. This poster examines how men determine consent versus how women determine consent when presented with an ambiguous sexual encounter. Participants (n=104) were recruited through Prolific, with 62 women and 39 men and average age 29.26 years old (SD = 9.19). To assess their perceptions of sexual consent, participants were presented with a vignette describing a sexual encounter. Vignettes were randomly assigned and designed to depict either an ambiguous or consensual situation (Humphrey et. al. 2007). After reading the vignette, participants were asked to decide if the encounter was consensual (32.7%) or non-consensual (67.3%). Data indicated that men were more likely to perceive an ambiguous encounter as more consensual the women did.
The Diagnostic Accuracy Analysis of the Lower Quarter Y-Balance Test in Men's DII Collegiate Football Athletes

Leigh Anne Dycus

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Program: Master of Athletic Training

Background: The Lower Quarter Y-Balance Test (LQ-YBT) is a tool to identify injury risk factors. To our knowledge, there is limited evidence showing diagnostic accuracy of this test for male Division II collegiate football athletes. Our goals were to determine the diagnostic accuracy and cut-off score between injured individuals and healthy athletes throughout the season.

Methods: Ninety-two athletes voluntarily participated in this study by performing the LQ-YBT (age: 19.85±1.69, height: 184.7±6.68 cm; weight: 102.15±25.27kg) during the pre-participation physical examination. The test included single-leg standing to reach 3 directions (anterior, posteromedial, and posterolateral), and each direction required 3 completed trials. Standardized reach distances for each testing direction (normalized by individuals’ leg lengths), asymmetries, variability, and test composite scores for each leg were calculated as outcome variables. The LQ-YBT interrater correlation coefficient for reliability was 0.99 (95% confidence interval: 0.997-1). The injury group (n=15) was defined by non-contact lower back and limb injuries. Diagnostic accuracy analysis and receiver operator characteristic curves (ROC) were used.

Results: Injury prevalence was 16.3%. The ROC under curve areas among all the outcome variables were between 0.369-0.563 (p values > 0.05). Therefore, reliable cut-off points and diagnostic accuracy reports were unable to be determined for each outcome variable.

Conclusions: According to the current data, using the LQ-YBT to identify at-risk individuals for lower-quarter non-contact injuries may not be reliable in collegiate American football athletes.

Keywords: proprioception, single-leg standing, non-contact injury.
The Effect of Parental Roles, Work Status, and Settings on Work-Family Conflict in Certified Athletic Trainers.

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Program: Masters of Athletic Training

Background: The purpose of this study was to explore the correlation between the Work-Family Conflict (WFC) scores of certified athletic trainers (ATCs) with parental roles, various work status demographics, and settings across secondary schools, collegiate, and professional sports.

Methods: A month-long Qualtric email survey with four reminders was sent. Thirty-nine out of the 58 recruited ATCs were parents and completed the survey (secondary school: 13, collegiate: 23, and professional: 3). Independent t-test was conducted to differentiate with/without children and working setting effects on WFC scores. We only considered two work settings comparisons because of the smaller enrollment in the professional setting. Spearman correlations were used to determine the relationships between WFC scores with the number of years of certification, serving years in the current employment site, and the age of the youngest child.

Results: There were no significant differences in WFC between individuals with/without children and between 2 working settings (p>0.05). No significant correlations were found between WFC scores with years of certification, and years at the current employment site among all subjects. Within parental subjects, the WFC scores and the age of the youngest child were not significantly correlated (p=-0.235, r=0.15).

Conclusion: Due to the small sample size and power, there were no significant differences in WFC scores with/without parental roles among ATCs and working setting differences. The WFC scores were not associated with the years of certification or at the current employment, and age of the youngest child.

Keywords: work balance, athletic training, parental roles
GRIT Score Comparison Between D2 Collegiate Athletic Population and General Student Population

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Program: Masters of Athletic Training

Background:
The purpose of this research study was to investigate the differences in perseverance and passion (i.e. GRIT) between students and student-athletes.

Methods: (Demographic; procedure; statistical methods)
A convenience sample of students and student-athletes from Angelo State University were used for this study. 47 participants completed the survey (27 student-athletes & 20 students). The GRIT survey consisted of 12 questions with a Likert Scale response of very much like me, mostly like me, somewhat like me, not much like me, and not like me at all. The maximum score on this scale was 5 (extremely gritty), and the lowest score on this scale was 1 (not at all gritty). A Mann-Whitney U Test was used to determine any significance between groups.

Results: (Answer by the results of your statistical methods)
The Mann-Whitney U test showed no significance in GRIT level between groups. The results of the Mann-Whitney U test were as follows: Student Athletes vs. General Students p=0.170, Male vs. Female p=0.766, and First-Generation Students vs. Non-First-Generation Students p=0.179. Surprisingly, the general student participants scored an average of 2.71 vs. the student athlete participants who scored an average of 2.17 on the GRIT scale. First generation students scored an average score of 2.81 vs. non-first-generation students who averaged 2.22 on the GRIT scale.

Conclusion:
No significant results were discovered between student and student athletes. Both groups displayed similar levels of GRIT. Further research can continue to investigate differences in GRIT levels between age, sport, and credit hours achieved.

Keywords: Grit Score, Students, Student-Athletes, DII
Financial Stability in Pursuing an Advanced Healthcare Degree

Brandon Dusek

Faculty Mentor: Jesse McIntyre
Program: Master in Athletic Training

**Background:** To investigate and compare the differences of stress in advanced healthcare degrees. The study includes Nursing, Department of Physical Therapy (DPT), Master’s in Athletic Training (MAT), Social Work, Psychology, Public Health, Medical (MED), and Other degrees. There is no research conducted on financial stress in obtaining an advanced degree in healthcare. Subjects are given the Financial Stress Scale College Version (FSS-CV) survey to assess their level of financial stress while obtaining an advanced healthcare degree.

**Methods:** The method of data collection and outcome measurement for this study was the use of the Financial Stress Scale College Version (FSS-CV). This assessment consisted of 22 Likert-scale questions asking subjects to critically think about their financial standing and stress level and rate themselves 1-4. (1=never, 2=sometimes, 3=often, 4=always). Once the user has completed the questionnaire, answers are summed to create a financial stress score. 92 total subjects participated in the survey (22 male, 70 female). Of these, 21 were nursing majors, 15 DPT, 11 athletic training, 11 social work, 7 psychology, 8 public health, 7 medical, and the remaining 12 identified as “Other”. After surveys were completed, the researchers analyzed the information and ran statistical methods to determine whether the data supported the study’s hypothesis or null hypothesis. The Kruskal-Wallis test was performed to emphasize the difference between majors and how much stress they experienced while obtaining their degrees.

**Results:** The mean rank of the Kruskal Wallis test on the eight groups are listed: Nursing 49.95, DPT 34.87, MAT 55.59, Social Work 62.50, Psychology 35.00, Public Health 30.13, Med 20.25, and Other 64.79 were significant, $H(7, n=92) = 25.024 \ p=.001$.

**Conclusion:** The study concludes with the presented data that there is a significant difference in the stress level of advanced healthcare degrees between the eight groups. The following degrees are ranked from the most stressed to the least stressed: “Other,” Social Work, MAT, Nursing, Psychology, DPT, Public Health, and MED.

**Keywords:** Kruskal Wallis, DPT, MAT, MED, FSS-CV
Developing a protocol for detecting Leptonycteris nivalis in caves using airborne eDNA

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Program: Master of Biology
Sponsorship: Head of the River Ranch, Texas Academy of Science

*Leptonycteris nivalis* (Greater Long-nosed bat) is an endangered species of nectivorous bat which spends about half the year occupying caves in the southwestern United States. The endangered status of this species necessitates regular monitoring of known roost sites, but it has been shown that disturbing these sites may cause harm to bat species and many caves utilized by bats are inaccessible to humans. One promising yet untested method for passive monitoring is the collection of environmental DNA (eDNA) from the air. This method has been successfully deployed in controlled settings and has been used once to confirm the presence of bats in wild roosts, but many questions still remain about the viability of airborne eDNA as a tool for monitoring wild bat populations. My objective was to optimize the method of extracting DNA from air filters, which can then be used to determine if it is possible to detect migratory species in their absence, whether the location of samplers effects the amount of DNA collected, and if the concentration of DNA collected from the air is correlated to population size. I collected air samples from Emory cave, a cave known to be inhabited seasonally by *L. nivalis* and optimized the protocol for extracting DNA from air filters. To date, I have performed 10 test extractions and extracted 11 samples from Emory cave which yielded between 0.340 and 46 ng/μL of double-stranded DNA. Our optimized protocol has greatly increased the amount of DNA recovered from air filters.
Systematic Literature Review of Opt-out Syphilis Testing

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Program: Master of Public Health, Behavioral Health and Health Education
Sponsorship: None

BACKGROUND: After historically low syphilis rates in the early 2000s, the United States now reports record high rates of both syphilis and congenital syphilis. Congenital syphilis is the vertical transmission of the Treponema pallidum bacteria from mother to newborn. The most recent Centers for Disease Control and Prevention report ranked Texas first in case counts of congenital syphilis and fourth in case rates. The only way to prevent congenital syphilis is to identify and adequately treat pregnant women. Current testing protocols in Texas have proven insufficient. For this reason, a systematic literature review was conducted to evaluate opt-out testing protocols.

METHODS: A search of the Cochrane Database of Systematic Reviews yielded only one relevant product. Subsequent searches were conducted in applicable databases to identify empirically based literature. Results were selected for inclusion and analysis based on prespecified criteria.

RESULTS: The lack of available and relevant literature identified a knowledge gap in this area of study. However, there may be lessons to be learned from the large amount of data surrounding opt-out testing protocols for HIV.

CONCLUSIONS: To prevent congenital syphilis, pregnant women need to be tested at any available opportunity. Due to a lack of or late prenatal care, mandated testing intervals are often missed. Opt-out testing, especially in emergency rooms, can help to identify those most at risk of delivering a newborn with congenital syphilis.
Classifying Malware using LLMs

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Program: Computer Science

We explore the potential of large language models (LLMs) for malware classification, focusing on the capabilities of one of the open source LLM models, Mistral 7B. As traditional signature-based methods struggle with novel threats and machine learning approaches face limitations, LLMs offer a new avenue. By analyzing textual malware code and behavior, LLMs can identify malicious patterns that might evade other methods. This project lays the groundwork for further discussion on using LLMs for malware classification, including training strategies, data requirements, and potential challenges.
Design and Implementation of Unified Cybersecurity Knowledge Graph (UCKG)

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Program: Computer Science

The cybersecurity landscape is complex, due to the continuous expansion of the digital realm and the explosion of data generated within the field. Addressing the security challenges manually has become increasingly impractical due to the volume of data. Automation and intelligent solutions are promising avenues for mitigating common security risks.

Knowledge graphs (KGs) are versatile structures that have gained widespread adoption across various domains. Knowledge Graphs are databases that represent data and relationships between data points using a graph structure model. Prior attempts at unifying cybersecurity knowledge through common ontologies/KGs have fallen short of providing a comprehensive solution to the diverse challenges faced by the field.

A novel approach in this investigation is the creation of a Unified Cybersecurity Knowledge Graph (UCKG) using the Unified Cybersecurity Ontology (UCO). The UCO serves as a foundational framework, encompassing a set of concepts and relationships that capture the information regarding cybersecurity domains. The goal of this investigation is to further expand the construction of the UCKG, enabling the analysis of cybersecurity information from structured and unstructured data sources.

The UCKG’s architecture includes Common Platform/Vulnerability/Weakness Enumerations (CPEs, CVEs, and CWEs). CPEs play a crucial role in the UCO, serving as standardized identifiers for hardware, software, and operating systems, while CVEs and CWEs characterize the vulnerabilities and weaknesses associated with the platforms. Incorporating these enumerations into the UCKG enhance its ability to represent and contextualize cybersecurity data, enabling a more granular and accurate analysis of vulnerabilities, threats, and attack patterns across cybersecurity environments.
A comparative analysis of soils at Texas poppy-mallow sites

Alix Kosmala

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Program: M.S. Biology

Texas poppy-mallow (Callirhoe scabriuscula B. L. Rob., Malvaceae) is a rare and endangered plant occupying a highly specific edaphic niche consisting of deep, sandy soils within the upper Colorado River valley, north of San Angelo. Soil type appears to be the single most reliable indicator of suitable habitat for the species, with all known populations occurring on either the Tivoli or Heatly fine sands soil series. Field observations have suggested that Texas poppy-mallow is not equitably distributed within or between these two soils. Tivoli soils seemingly support a higher abundance of Texas poppy-mallow compared to Heatly, and across both soil types, individuals display a sparse, clumped distribution. This study attempts to discern the unseen differences below the surface which may be responsible for the apparent inequitable distribution at a finer level of detail than standard soil classifications can provide. Thirty-two soil samples were collected according to soil series (Tivoli or Heatly) and presence/absence of Texas poppy-mallow, resulting in eight replicates for four unique sample types across two populations. Samples will be analyzed in a laboratory to determine the soil texture as well as pH, salinity, conductivity, nitrates, and levels of the primary plant nutrients. Resultant data will be analyzed using a series of logistic regression models with the presence/absence of Texas poppy-mallow as the response variable and soil characteristics as independent variables.
A survey for the novel poxvirus Brazospox in the ASNHC

Hannah Duhon

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Program: Biology

Poxviruses are a common source of zoonotic disease in individuals with occupational exposure. Novel poxviruses with potential for human health consequences must be monitored to ensure effective preventative measures can be taken by those who may be at risk. In 2018, a novel poxvirus was identified and sequenced by Hodo et al. at A&M University. The lesions characteristic to this virus were identified on 3 species of rodent by that research team, one being *Sigmodon hispidus*, a rat species that is very common in this area of Texas. This research project intends to investigate whether and to what extent brazospoxvirus has spread thus far into West Texas. 877 skin specimens of *Sigmodon hispidus* in the Angelo State Natural History Collection were visually examined for abnormalities in the skin that had the appearance of the characteristic proliferative lesions of brazospoxvirus. 27 individuals were identified with skin abnormalities suspicious for brazospoxvirus. Another 82 *Sigmodon hispidus* with frozen spleen tissues have been identified in the collection. Currently, PCR testing methodology for Brazospox is being established. Once established, identified lesions will be swabbed and frozen tissue samples will undergo PCR testing for poxvirus.
Caffeine Consumption Among Collegiate Athletes

Brady Greenlee

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Program: Master of Athletic Training

Background:
To investigate if collegiate athletes consume more, less, or the same amount caffeine compared to regular college students, and to see if they may be at an increased risk for medical conditions associated with excessive caffeine consumption.

Methods:
Collegiate student athletes were emailed a link to a 13-question survey based on surveys of similar, previously conducted studies that asked what sport they played, classification, age, gender, number of days per week they consume caffeine, how many times per day caffeine was consumed, amount of caffeine consumed per day, sources of caffeine, and reasons for consuming caffeine. Priori power analysis was performed to determine effective sample size. Chi Square analysis was performed (p<0.05) to find differences between caffeine consumption between genders and classification at the ends of each range of caffeine consumed. A Kruskal-Wallis Test was done to compare the means between gender and classification.

Results:
32 participants responded to the survey. The power analysis had power of 0.64 with an effect size of 0.043 (p<0.05). Chi Square (p<0.05) was 0.85 (minimum) and 33.877 (maximum) for gender and 11.541 (minimum) and 44.901 (maximum) for classification. Kruskal-Wallis Test determined the distribution was similar between gender and classification. Athletes consumed an average range of 128.125-228.125 mg of caffeine per day, with a median of 178.125 mg.

Conclusion: Collegiate athletes do not consume more or less caffeine than regular college students. College athletes should still be educated about safe caffeine consumption, adverse effects of caffeine, and implications for drug testing for the athletic association their institution is affiliated with.
Do you feel what I feel? The Role of Protective Factors in Dealing with Vicarious Trauma as a Clinician

Lauren Brooks

Faculty Mentor: Nicole Lozano
Program: MS in Counseling Psychology

Vicarious traumatization refers to the gradual, unique, and negative changes to one’s well-being that is experienced after exposure to trauma (McCann & Pearlman, 1990). While previous studies have identified mitigating factors that can help prevent vicarious trauma in mental health clinicians, there is limited research on the potential barriers that prevent them from engaging in these factors. Thus, this research aims to examine the influence of protective factors on clinicians’ ability to cope with their work and the barriers that hinder their ability to protect their psychological well-being.

Utilizing a mixed-methods approach, the study sampled licensed mental health professionals at various stages of practice within multiple areas of the US. Participants (n=394) were recruited through purchased email lists and APA list servs aimed at clinicians. Of these individuals, 316 identified as female, 67 identified as male, and 7 identified as non-binary. The average age of the sample was 45.15 (SD = 14.10) and the majority of participants identified as White (83.1%).

Participants were administered several scales including the Vicarious Trauma Scale (VTS; Vrklevski & Franklin, 2008), Compassion Fatigue-Short Scale (CFS; Adams et al., 2006), Self Compassion Scale - Short Form (SCS - SF; Adams et al., 2006), and Guilt and Shame Experience Scale (GSES; Malinakova et al., 2019). Additionally, participants were asked to answer open-ended questions about their experiences with supervision, self-care practices, and organizational support as well as potential barriers that affect their ability to preserve their psychological well-being. Data for this study has been collected and is being analyzed.
Rat Basketball

Jonathan Castaneda, Lillie Stephens, Makayla Allen, Calista Dickey, & Hemma Rangel

Faculty Mentor: Dr. Steven Brewer
Program: Counseling Psychology

Rat basketball is a hands-on experiment to help students understand concepts of operant conditioning. The process involves teaching rats how to play basketball through differential reinforcement of successive approximations. Through providing continuous positive reinforcement during each step, the resulting target behavior is for rats to have the ability to pick up a ball, carry it to a hoop, and drop the ball through the hoop. The current rat basketball study investigates how behaviors are influenced by the valence of rewards, specifically affection versus treats. The effectiveness of shaping behaviors depends upon a variety of factors, such as the cognitive capacity of the organism being shaped (Pomerantz, 2009), the reinforcement schedule used (Palya & Powell, 2000), and the valence of the reward (Vroom, 1964). The valence of a reward depends on both affective and sensory factors (Murray, 2007). The effectiveness of shaping behaviors could also depend upon the experimenters themselves (Rosenthal, Rober, Jacobson & Lenore, 1992; Mitchell, Terence, Daniels & Denise, 2003). Experimenter cognitions are often unconscious and uncontrollable (Bohnet, 2016) and are hard to control when double blind methodologies are not feasible. Experimenter observations during recent similar studies conducted by this lab drew our interest to the influence experimenters have on studies themselves. It was hypothesized that experimenter affection could serve as reward valence as effective as traditional food-based rewards. To our knowledge, research on the effects reward preferences have on behavioral learning is scarce. According to similar research done last year, we examined sweet treats to be more effective than savory treats. This has drawn our interest to evaluate effectiveness of reward differences overall.

Methods Rats (N=10) will be divided into two groups, an affection group and a food-based group (each condition will contain 5 rats). Each group will be conditioned for a period of two months utilizing a stage-based model of training. Training will consist of the successive reward for exhibiting trainer defined goal behaviors. The desired behavior will change based on the following stage based criteria: (1) touching the ball, (2) learning to interact with the ball, (3) moving the ball toward the hoop, (4) placing the ball toward the lip of the hoop, and (5) dropping the ball through the hoop.

Results Progress to goal will be measured for each stage with a dichotomous yes/no as to whether the rat successfully exhibited the target behavior and the time spent in each stage. It is expected that affection will be equal or superior to traditional food reward.

Discussion This study explored the valence of affection as reward compared to traditional reward and is part of an ongoing series of studies that aims to invigorate students, conserve animal use in research and provide a means for positive public outreach on non-human animal research in general.
Corpus Juris: Non-Medical Drivers of Health Policies in Older Adults

Carina Sturgeon

Faculty Mentor: Dinah Cummings
Program: Master of Public Health

The COVID-19 Public Health Emergency declaration has ended. The remnants of COVID-19 pandemic devastation will persist in American consciousness for generations. For as long as there is attrition of: life, social connectivity, financial stability, and health non-medical drivers of health will impact populations as they age. Texas has the third-largest population of older adults in the United States. The studies I evaluate will examine how COVID-19 disproportionately impacted the most vulnerable within American populations against the evolving public policy terrain before aging older Texans.

My study centers on the experiences of low-income older adults. The articles I introduce examine what made and continues to make the older adult population disproportionally disadvantaged, isolated, and experiencing resource deficits. I will juxtapose studies of vulnerable older adults against public policy enacted during the COVID-19 fog of war fugue. The great strides in equity and access under COVID-19 public policy enacted are at an end. As the United States of America, Texas, thaws and transition to a post pandemic stance emergency funding and protections for safety net programs are ceasing while the conditions vulnerable low-income older adults subsist in persist. My post COVID-19 study will examine the implications of public policy shifts meted out on the aging well potential of low-income older adults.