

Lightning Talks and 3MT Competition...*At a glance!*

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Human Sciences

1. MORAL INJURY AND IT'S CORRELATES AMONG MILITARY VETERANS

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Moral injury, which is becoming an increasingly recognized invisible wound of war, may be described as perpetrating, failing to prevent, bearing witness to, or learning about acts that transgress deeply held moral beliefs and expectations. Although moral injury is not a formal diagnosis in the DSM or a component of the formula in the US Department of Veterans Affairs disability rating, research has shown that over one-third of military veterans report experiencing moral injury symptoms (i.e., guilt, shame, anger). This presentation will cover work that I've conducted in the last year concerning moral injury and its correlates. Specifically, I'll characterize the relationship between moral injury and three primary outcomes: overall quality of life, suicidal behavior, and substance use. Implications for policy and practice are discussed in light of the strong association between moral injury severity and adverse outcomes.

2. AN INVESTIGATION OF SOURCES OF EXERCISE SELF-EFFICACY IN VENOUS THROMBOEMBOLISM (VTE) SURVIVORS

Julie Partridge

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One of the most prescribed treatment and recovery techniques following venous thromboembolism (VTE) is physical activity (Kahn et al., 2008). Existing literature suggests that exercise can be beneficial for recovery from existing clots, while also serving as a preventative measure against future clotting events (Rolving et al., 2020; Xu et al., 2020). Bandura's (1997) social cognitive theory which suggests that self-efficacy beliefs

(i.e., derived from four main sources: mastery experiences, vicarious learning/modeling, verbal persuasion, and somatic and affective states), play a critical role in guiding both the initiation of new exercise behaviors and in changing old habits. There currently exists little understanding of the sources of self-efficacy for individuals engaging in physical activity following VTE. There is a lack of understanding of how individuals who have suffered a significant health event such as a blood clot that may render previous mastery experiences as less relevant than a source such as somatic and affective states (e.g., interpreting bodily sensations that may mimic the health symptoms). The purpose of this study was to identify the sources of self-efficacy for VTE survivors. Participants (n=254) reported five unique sources of self-efficacy and implications for practitioners will be discussed.

3. GONE FISHING

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The purpose of the Copi project is to reduce stigma associated with eating carp among college students and to capitalize on college students as early adopters and environmentalists to promote consumption of Copi. Asian carp, rebranded as Copi, are extremely dangerous to the ecosystem. Copi is an invasive species in our inland lakes and rivers causing environmental damage to native fish species and native plants as well as negative economic impacts on communities that rely on fishing, boating, and waterfowl hunting. Nutritionally, Copi is a lean protein source incredibly rich in vitamins, minerals, essential amino acids, and omega-3 fatty acids. The young adults also stand out for their strong sense of social responsibility and high levels of climate change engagement and activism. Eating Copi is good for the environment because removing them helps the native fish populations and habitats recover, and eating them is economically sound and is good for our health.

4. VAPING BEHAVIORS AND CESSATION ATTEMPTS AMONG COLLEGE STUDENTS: INSIGHTS INTO INTERVENTIONS

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Background: E-cigarettes contain nicotine and harmful chemicals, despite the belief that they are less harmful than cigarettes. College vaping has increased by four times during 2017-2019. This study examined vaping behaviors and cessation attempts among SIUC undergraduate students. Methods: Subjects were recruited by emailing to a random sample of undergraduate students in Spring and Summer 2023. Both vapers and non-vapers were invited to complete an anonymous Qualtrics survey, and a subsample had in-depth interviews. Logistic regression and discriminant function analysis were utilized to examine vaping behaviors and cessation attempts, respectively. Results: Of the 543 respondents, 50% had ever vaped; 44% of ever-vapers vape regularly; 72% of regular vapers have attempted to quit. A majority started vaping regularly for buzz/headrush or alleviating stress/anxiety, but rarely to quit smoking. Students who used e-cigarettes as their first substance are now using tobacco and marijuana more compared to vaping. Based on readiness and preferred strategies for quitting, students were categorized into three cessation interventions. Conclusion: Vaping trends may reverse the decades-long progress in reducing tobacco use and related morbidity and mortality. Cessation attempts among youth who are motivated to quit are often unsuccessful, so customized interventions to assist them in cessation are urgently needed.

Aviation

5. EXPLORING MENTAL HEALTH DISORDERS AMONG AIR TRAFFIC CONTROLLERS

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Air traffic control facilities nationwide are currently at 81% staffing (Duncan, 2023). Further, the number of fully certified air traffic controllers has decreased by 1,200 over the past ten years, and 6% of current controllers are eligible for retirement (Santa, 2023). Despite staffing shortages, air traffic control remains a safety-critical environment where controllers must continue to perform while shouldering intensive cognitive demands and high levels of responsibility (Zoer et al., 2011). With studies showing that high stress levels can result in mental health disorders, including anxiety and depression (Elgendi & Menon, 2019), the mental health status of air traffic controllers should be evaluated to ensure the continued safety of the National Airspace System. There is a lack of research related to controller mental health disorders; this study aims to fill the gap in recent research and provide possible recommendations for improving controller mental health disorders and reducing controller attrition rates.

6. THE USE OF INDUSTRY ADVISORY BOARDS IN SUPPORT OF COLLEGIATE AVIATION PROGRAMS: AN EXPLORATORY REVIEW

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The Aviation Accreditation Board International (AABI), the organization that accredits aviation degree programs, requires that programs seeking accreditation work with aviation industry professionals in the development and assessment of their programs. There is no formal directive regarding how aviation programs and industry partners must work together, however, and no best practices relating to the use of industry advisory boards have been researched for aviation degree programs like they have been in other academic fields. Research questions: (1) How do aviation degree programs incorporate industry feedback? (2) What is the current makeup of the individuals and organizations in which aviation degree programs seek this feedback? Literature in other fields regarding the use of advisory boards in the development and assessment of academic programs has offered insights into stakeholder benefits and suggested best practices, but research on the use of industry advisory boards in collegiate aviation programs is significantly lacking. This study offers a beginning framework in learning how industry partners and aviation programs are currently working together and suggests areas of additional needed research in order to identify best practices.

7. DIGITAL COPILOT – COLLEGIATE FLIGHT TRAINING AT SOUTHERN ILLINOIS UNIVERSITY & ARIZONA STATE UNIVERSITY

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Research Objectives

1. Does the Digital Copilot provide safety benefits during flight training in a collegiate aviation program?
2. Does the Digital Copilot increase task efficiency and reduce pilot workload?
3. If the Digital Copilot reduces pilot workload, does this cause a decrease in pilot errors, resulting in the avoidance of accidents?

Approach

1. Participants, in various phases of flight training, will be selected from the flight training programs at SIU and ASU.
2. Flights will be conducted in the flight simulators at SIU and ASU.
3. Simulation scenarios will incorporate aspects of flight training that are determined to be common and problematic by the flight training programs.
4. Measures to be considered include time to react and complete tasks, the number of errors made, and eye tracking

Key Considerations

1. Participants will complete the flight scenarios in the simulators without the Digital Copilot to establish a baseline for performance measures.
2. Participants will complete the flight scenarios in the simulators with the Digital Copilot.
3. The Digital Copilot will give the right information at the right time. Then the Digital Copilot will give incorrect information to participants.
4. Research should do no harm. Will the research study harm pilots by degrading their skills?

8. FROM THERE TO HERE: DEVELOPING AN INTERVENTION FOR AT-RISK STUDENTS

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Retention in higher education is a national problem. At SIU we are not unique from this problem with a 4-year graduation rate of 54% and a 6-year graduation rate of 58%. To improve student success, and by extension our graduation metrics, we need to develop interventions that are tailored to the risks presented by individual students. Based on knowledge gained in a research career spent assessing risk and developing interventions to help people reduce their risk for negative outcomes, I will present a model for reducing risk for student attrition at SIU.

9. EARLY-LIFE ADVERSITY AND IMPULSIVE-RISKY BEHAVIOR IN RATS

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Early-life trauma increases the risk for psychological disorders in adult humans (e.g., mood, anxiety, and substance use disorders; Opendak et al., 2017). Maternal separation and limited bedding/nesting are rodent models widely implemented to study early-life adversity (ELA) and its effects on behavioral and neurological processes (Murthy & Gould, 2018). Few studies have tested the effect of ELA on decision-making, especially delay-discounting (DD) phenomena (Orsini & Simon, 2020). DD refers to the tendency for outcomes to be devalued as they occur more remotely in the future (Odum, 2011). DD is a trans-disease process because of its association with numerous health behaviors and psychiatric illnesses (e.g., DD predicts poor health behaviors including smoking, risky sexual behavior, gambling, sedentarism, and success of substance-use treatment; Bickel et al., 2019). Discounting of negative outcomes (punishment) has received limited attention (Liley et al., 2019; Orsini & Simon, 2020), including its relationship to ELA. An

ongoing study in my lab is testing the effects of maternal separation and limited bedding/nesting on female and male rats' discounting of rewards and punishers. Data of a first experiment indicate that rats exposed to ELA show steeper discounting of rewards (i.e., more impulsive preference as delay to reinforcers increase). This effect was exacerbated in a 6-week retest.

10. IMPROVING BEHAVIOR AND NEUROPATHOLOGY FOLLOWING EARLY LIFE TRAUMA

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Throughout development, children are subject to a variety of experiences that impact the growth-related trajectory of the nervous system. While some events are beneficial, incidents such as psychological stress and brain trauma are particularly devastating when they occur early in life. Juvenile traumatic brain injury is one of the leading causes of death and disability in children. Furthermore, brain injury early in life can intersect with other experiences. The effects are often long-withstanding, resulting in behavioral deficits impacting the ongoing process of development. Consequently, it will often leave the child with impairments that can last an entire lifetime. Because the developing brain is not static, it is not completely understood how injury impacts ongoing neural growth throughout development. The aim of this talk will be to highlight research from our lab that has focused on identifying the behavioral and pathological mechanisms that surround injury during immature periods of development, as well as current strategies being utilized in treating the behavioral deficits that follow. By developing a better knowledge of the mechanisms that surround brain injury early in life it will be possible to advance treatments that will improve function.

11. POLICING UNREST: ON THE FRONT LINES OF THE FERGUSON PROTESTS

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Policing Unrest: On the Front Lines of the Ferguson Protests has won the 2023 Outstanding Book Award for the Policing Division, American Society of Criminology. The book shares the frontline protest policing experiences of officers standing on the skirmish line in Ferguson and how nearby residents viewed those racially tense events. In rich detail, the book describes officers' surprise at the public reaction to Michael Brown's death, the confusion brought on by the intensity of the public and police response, along with shifting command and policing tactics. The book examines officers' interpretation of events through the lens of the police occupational culture and Black officers' social identity clash—wrestling with the complex implications for their racial and occupational identities, framed against the long-standing reform call to hire more minority officers. Residents' experiences with police and protests are examined against accumulated experiences and lack of faith in the cogency of the justice system. Policing and reform in the aftermath of Ferguson is also a major topic, addressing the cynicism and de-policing rampant in the year following Ferguson alongside strategies to restore police-community relations and police legitimacy by increasing transparency, accountability, and procedural justice. *Policing Unrest* reveals how the Ferguson protests instigated an era of police reform that reconsiders the role of police in a racially diverse, twenty-first century, democratic society.

12. IS DEATH DIFFERENT? THE ROLES OF SALIENT FACTORS AND SENTENCING OPTIONS IN SENTENCING RECOMMENDATIONS

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In several of the foundational U.S. Supreme Court cases which have shaped contemporary death penalty jurisprudence, Justices expressed the sentiment that “death is different” from other punishments. Yet, capital case law is now frequently cited as precedent in cases focused on other types of punishment, most especially life without parole. Similarly, statute regulating life without parole sentences mimics death penalty statute. Under this scheme, jurors and/or judges weigh aggravating and mitigating circumstances to determine the appropriate sentence. Using an experimental design, this study examined how sentencing options and salient case factors influence mock jurors' sentencing recommendations, sentencing justifications, and affective reactions. Results showed that sentencing options do influence sentencing recommendations, but do not moderate the impact of salient aggravating and mitigating circumstances. This suggests that death is different in the sense that it might not be considered on the same spectrum as sentences of imprisonment, but not different in the sense that the underlying reasoning process is similar whether the death penalty is a possible sentence or not.

13. CONSTRAINING CARNAGE: CIVIL SOCIETY’S INFLUENCE ON THE LAWS OF WAR

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War has always had elaborate rules governing its beginning, ending, and conduct. For much of history these rules would be seen as norms or mores, with little surviving written records about what those norms are. We can make inferences through reading the Greek historians, but it is not until the Roman republic that we get the first surviving military manual. While Roman army composition and doctrine changed over the centuries, there was a core of military norms that survived throughout the period. These rules were created entirely within the military for military use. In the 9th and 10th centuries, the European church began to place heavy pressure on political and military rulers for limitations on their soldier’s behaviors. This evolved into the cultural and literary traditions of chivalry, which laid a groundwork for later legal changes. It did change the attitudes, values, and behaviors of noble soldiers and military commanders. This talk will examine the differences in values expressed in pure military law as devised by the Romans and the High Medieval law that was heavily influenced by institutions in civil society. The consequences for rules about civilian treatment are drastic.

three cessation interventions. Conclusion: Vaping trends may reverse the decades-long progress in reducing tobacco use and related morbidity and mortality. Cessation attempts among youth who are motivated to quit are often unsuccessful, so customized interventions to assist them in cessation are urgently needed.

Health Sciences

14. INVESTIGATING SPEECH MOTOR CONTROL IN APHASIA

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The human capacity for speech production involves intricate coordination of motor functions in the brain, yet our understanding of the neural mechanisms underlying this process has remained limited. Stroke-induced aphasia often disrupts the intricate neural networks that underlie language production, impairing speech fluency. In recent years, electroencephalography (EEG) has offered an accessible non-invasive approach to investigate the neural dynamics of speech motor control, and transcranial direct current stimulation (tDCS) has emerged as a promising neuromodulation technique for enhancing speech motor control neural connections. The research in Aphasia Recovery with Technology Lab revolves around the utilization of EEG to capture the temporal dynamics of neural activity associated with speech production. Our research is centered on detecting neural activity using EEG at the moment when individuals, both healthy participants and those with aphasia, are about to speak. tDCS, as a neurorehabilitative tool, offers an innovative approach to facilitate the recovery of speech motor control. By promoting neural plasticity and aiding in the reestablishment of disrupted neural pathways, tDCS may improve speech fluency, and language comprehension in post-stroke aphasia. Our study will focus on using tDCS to improve the specific neural activity related to speech production identified by EEG in individuals with aphasia.

15. IMPROVING THE LIFE OF PERSONS WITH DISABILITIES IN SOUTHERN ILLINOIS

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The SIUC Evaluation and Developmental Center is the only facility in the state that provides services for people with disabilities in the areas of: Job Seeking Skills Training, Transitional Independent Living Center Program and Driver Rehabilitation. They also provide Community Employment Services. Information will be provided regarding the evidence-based practices that are being implemented to maintain the effectiveness of client services and improving the quality of life of their clients. Current areas of major challenge will be discussed.

16. COMMUNITY BASED ACTION RESEARCH

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The purpose of this study is to discover the challenges that hinder the full integration of individuals in recovery from substance abuse into the SIU-C campus and the surrounding community. The study is currently ongoing, and the presentation will focus on the researcher's initial experience with Community-based Action Research (CBPAR), which is a multi-level qualitative research approach. The presentation will also provide an in-depth analysis of the insights gained through this process.

17. “DO IT ANY WAY” RESIDENT-DRIVEN ENGAGEMENT TO MAINTAIN MEANINGFUL LIFE IN CONTINUING CARE RETIREMENT COMMUNITIES

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As the aging population continues to grow, the demand for Continuing Care Retirement Communities (CCRCs) is increasing. However, residents in CCRCs often face social isolation and loneliness, which can negatively impact their health and well-being. To combat these issues, activities and engagement have been proposed as potential solutions. However, the voices of those vulnerable to social isolation are seldom heard. This study aimed to explore the perspective of residents on how resident-driven engagement in CCRCs may maintain a meaningful life. A qualitative research approach was used, consisting of semi-structured interviews with 26 residents in CCRC. Thematic analysis identified five key themes related to resident-driven engagement: a sense of community, turning lemons into lemonade, doing it anyway, pink letters, and committees and clubs. The "do it anyway" attitude emerged as a prevalent theme, emphasizing the importance of pushing past challenges and limitations to pursue activities that bring joy and meaning to residents' lives. The findings suggest that resident-driven engagement can lead to a sense of purpose, belonging, and fulfillment in CCRCs. The research provides insights into how communities can foster an environment that supports such engagement. By prioritizing resident-driven activities and empowering residents to take control of their lives, CCRCs can promote the well-being and quality of life of their residents.

18. ELDERLY SOCIAL ISOLATION AND THE MODERATING IMPACT OF INFORMATION COMMUNICATION TECHNOLOGY

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Co-presenter: Xialoi Li

The purpose of this study is to investigate the efficacy of information communication technology (ICT) in moderating feelings of social isolation among older adults.

Questions the study attempted to investigate:

1. What is the usage of ICT among the older adult population?
2. What ICT applications do older adults use?

H0: There is no difference in social isolation scores among older adults who utilize information communication technology and those who don't.

H1: Older adults who utilize ICT will score higher social engagement as reported by the Lubben Social Network Scale.

The aging population present providers of care with unique challenges. The lack of socialization with loved ones has been noted to increase responses to stress, depression

and anxiety and even decrease the overall life expectancy of individuals (Feraji & Metz, 2021). Although there is not one specific method or approach for addressing the concerns associated with social isolation and/or loneliness of the aging population (Faraji, 2021;), there have been some successes noted through the use of technology, such as smart-phones (Lindsay, EK., et.al., 2019). This study is designed to observe how information communication technology might impact the social isolation and/or the loneliness of the elderly population.

Student 3M Presentation

19. EFFECTS OF MATCHING IMAGES OF BUILT AND NATURAL ENVIRONMENTS ON DELAY DISCOUNTING: A SYSTEMATIC REPLICATION OF BERRY ET AL. (2014)

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Berry et al. (2014) found that exposure to images of natural environments reduced impulsive choice during a monetary delay discounting task, as compared to images of built environments or geometric figures. Differential attention emerged as a possible explanation in that study. We hypothesized that matching samples within the images could increase attention to them and thus increase differential responding, so we replicated that study and added two conditions: matching plus nature and matching plus built. We found that the matching plus built condition discounted faster than the built condition, but the matching plus nature condition did not decrease discounting. The nature condition discounted faster than the original nature condition. Self-reports of time spent in natural and built environments did not predict the discounting rates in our study. Previous studies had failed to reproduce Berry et al.'s findings (Johnson et al., 2017, 2018, 2019). Exposure to aversive images has shown to increase impulsive choices (Flora et al. 1992, 2003; Hurtado-Parrado et al., 2023). If the images of built environments were perceived as aversive due to higher complexity, it could explain faster discounting in that condition. Future research should measure matching rates and latencies as controlling variables and explore the mechanisms of choice related to visual stimulation with natural and built environments.

20. BEHAVIORAL PATTERNS OF SIGN-TRACKER AND GOAL-TRACKERS IN A DELAY DISCOUNTING TASK

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Autoshaping procedures in rats typically produce sign-tracking (e.g., lever pressing) and goal-tracking (e.g., nose poking in the feeder) responses. Individual differences predict addiction-like behaviors. It has been suggested that sign-tracking responses are initially conditioned responses, which later become controlled by operant-reinforcement contingencies. Previous studies have shown that sign-tracker rats have steeper delay discounting performances; however, it is unclear if the same behavioral mechanisms are involved in both. The present study explored the behavioral patterns of rats during an autoshaping procedure and a delay discounting task. Results show three patterns of behavior during autoshaping: (a) sign-trackers predominantly lever-pressed towards the end of the trial, (b) goal-trackers' predominantly nose-poked towards the end of the trial, and (c) indifferent rats (i.e., no clear preference goal- or sign-tracking) nose-poked and lever-pressed throughout the trial. Response allocation in autoshaping for sign-trackers and goal-trackers resembles fixed-interval schedule performance, where the probability of responding increases near the time of reinforcer availability. During the delay-discounting task, goal-trackers overall had higher preference for delayed reinforcers than sign-trackers and indifferent rats. The fact that behavioral patterns during autoshaping differentiate responding during the delay discounting task suggests that similar behavioral mechanisms might be responsible for individual differences across these tasks.

21. AN EXAMINATION OF THE EFFECTS OF COMBINED CHRONIC EARLY LIFE STRESS DURING ADOLESCENCE

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Stress is pervasive across species, and while acute stressors allow for the healthy adaptability of an organism, chronic stressors lead to worsened overall health and long-

term prognosis. The current study attempts to examine the effects of combined chronic early life stressors of maternal separation and limited bedding/nesting during adolescence. The pups were tested during adolescence in the Elevated Plus Maze (EPM) and Open Field Maze (OF) for anxiety-like behavior, as well as in the Morris Water Maze (MWM) for learning and memory behaviors. It was expected that the combined stressed subjects would display more overall anxiety-like behavior in the EPM and OF, and in the MWM, it was expected that they would display learning and memory impairments. Following brain extractions, it was additionally expected that the combined stress group would have increased inflammatory markers in the hippocampus. Generally, combined stress subjects were expected to perform worse on tests of memory and display higher overall anxiety-like behavior, both of which were expected to correspond with physiological and neurological measures taken. Results suggest resiliency for females and vulnerability for males on memory.