Research Abstracts

PANEL 1 - Management and Accounting: A Contemporary Perspective on Trade Policy, Forecast Efficiency, and Transnational Entrepreneurship

Does Managerial Ability Affect Management Forecast Efficiency?

By Eduardo Fuste, *Accounting, Florida State University*

In this paper, I investigate whether managerial ability affects inefficiencies in management forecasts of future earnings. Recent studies find that managerial skill-level is positively associated with higher quality accrual estimation and greater investment efficiency. Consistent with these findings, I find that managerial ability reduces the management forecast errors associated with many previously identified firm-level variables including cash flow volatility and firm growth. However, I find that managerial ability does not improve efficiency with which managers incorporate information in a few firm-level factors such as operating cycle length and earnings surprises. Finally, I find that high ability managers' superior forecasting efficiency is concentrated in the middle and later periods of the fiscal year. My findings should be of interest to market participants and regulators because management forecast efficiency can affect how efficiently analysts and investors form earnings expectations for the allocation of financial resources in the market.

Do Government Incentives Foster or Create Transnational Entrepreneurship Opportunities for the Diaspora From Developing and Emerging Countries?

By Jean-Claude Ndongo, *Management, Florida Atlantic University*

The purpose of this paper is to discuss the growing literature on transnational entrepreneurship and how government policies in immigrant entrepreneurs' host and home countries affect this phenomenon. In the paper, we review the existing literature that defines transnational (or diaspora) entrepreneurship, identifies the individuals who engage in this practice, and provides examples of government incentives. Our conclusion highlights limitations in the literature while identifying future areas for research in transnational entrepreneurship.

Trade Policy in an Integrated Economy

By Enrique Valdes, *Economics, Florida International University*

With more firms offshoring certain segments of their production process and intermediate goods crossing borders multiple times before the final good is completed, the effects of a unilateral trade policy on production location is different than that of the past system where a completed good is traded in one border crossing. This paper studies how a tariff on goods coming from abroad affects where firms open production facilities in a two-country monopolistically competitive framework. The main findings of the paper illustrate the different combinations of transport costs and wages where firms would prefer different production locations. Surprisingly, there exists a case where an increase in a unilateral tariff causes firms to move production abroad rather than increase domestic production.

PANEL 2 - Public Health and Anthropology: An Analysis of Adverse Birth Outcomes, Reproductive Healthcare, and Maternal Mortality

A Forgotten Population: An Ethnographic Study of Experiences of Black Women in Rural Alabama with Reproductive Healthcare

By Trinity Johnson, *Anthropology, University of Central Florida*

In the United States, well-documented disparities in health and healthcare access exist for Black American communities. These disparities are exacerbated in the rural South, since fewer than half of reproductive-aged women in rural towns live within a 30-minute drive to a healthcare center with any form of perinatal services. Analyzing reproductive healthcare accessibility and utilization in the American South through a cultural and medical anthropological lens offers a holistic, integrative understanding of health outcomes for Black American mothers in the region. This presentation initiates the analysis, reviewing preliminary ethnographic research in Atmore, Alabama, to examine three interrelated questions: 1) What forms of reproductive healthcare are women receiving?, 2) What forms of care is accessible to them?, and 3) How does the political economy influence this agency? This ethnographic research is significant because it will contribute to knowledge and discourse regarding how political economy factors impact maternal healthcare accessibility for Black American women.

Racism and Other Biopsychosocial Stressors That Influence Adverse Birth Outcomes: A Qualitative Exploration in Leon County, FL

By Marissa Roberts, *Public Health, Florida A&M University*

Irrespective of socio-economic status, Black women are twice more likely to experience adverse birth outcomes, such as infant mortality, low birth-weight deliveries, and preterm births, compared to white women in the United States. Thus, despite birth outcome improvements over the years, the infant mortality gap between Black and white women persist and has widened in some instances. This study employed an exploratory sequential mixed-methods research design, first collecting qualitative data to aid in developing a quantitative tool for the second phase of the design. Results from phase one will be presented, which include data gathered during face-to-face interviews with 15 Black mothers (18+) in Leon County, FL. Responses were audio-recorded, transcribed, and analyzed using NVivo 12 Plus software. Analysis shows that adverse birth outcome inequities are associated with racism and other biopsychosocial stressors, and interview subjects share their perspectives on the reasons for disparities, discuss their personal experiences with stress over their lifespans, and reveal coping mechanisms.

PANEL 2 - Public Health and Anthropology: An Analysis of Adverse Birth Outcomes, Reproductive Healthcare, and Maternal Mortality

Medicaid Expansion and Maternal Mortality in Black and White Women in the United States: Analysis of Death Certificate Data, 2010-2016

By Vanessa Vassall, *Public Health, Florida International University*

Maternal death is rising in the United States, the country with the highest, and only rising, maternal mortality ratio (MMR) in the developed world. Medicaid expansion (ME) was introduced in 2014 through 2016 as part of the Affordable Care Act. This study compared race-specific MMR (pregnancy-related deaths per 1,000 live births) in 2010 through 2013 to 2016 by whether states adopted ME. For Blacks, MMR pre-ME did not differ significantly by whether states would subsequently adopt or not adopt. However, in 2016, ME was associated with lower MMR due to a nearly sixfold larger MMR increase in Blacks in non-ME states. Among whites pre-ME, states that would adopt ME had lower MMR than states that would not. White MMR rose by 4.57% in ME states and by 5.68% in non-ME states without change in the risk ratio. Racial disparity declined in ME states by 1.5% but rose in non-ME states by 11.7%. This study shows that ME was associated with less increase in Blacks' MMR and decreased racial disparity.

PANEL 3 - Biomedical Sciences: An Examination of the Effects of Streptococcus on Dental Health in Space, the Herpes Simplex Virus, and the Infectivity of a Lyme Disease Pathogen

Defining Herpes Simplex Virus 1 Latency Niches by Single Cell RNA-seq

By Enrico Barrozo, *Biomedical Sciences, University of Florida*

The majority of human beings is infected by herpes simplex virus 1 (HSV-1), the virus that causes cold sores, and there is no cure. Acute infection occurs in mucosal cells and spreads to sensory neurons where it establishes a life-long latency. Periodically, HSV-1 reactivates resulting in the production of new virus. It is unknown why some have herpes reactivation frequently while others never have symptoms. Therefore, we aimed to determine viral and host checkpoints, either promoting or preventing reactivation, using single cell RNA sequencing (scRNA-seq) paired with a new robust model of *in vitro* HSV-1 latency. We infected differentiated Lund human neuronal cells (LUHMES) and harvested and performed scRNA-seq at acute, latent, and reactivation time points. Cluster analysis optimized for virology modeled the HSV-1 lifecycle. We identified biomarkers for rare subpopulations of recrudescent cells ranging from abortive, spontaneous, or induced-reactivation. Perturbation of these biomarkers may elucidate why only some latently infected cells spontaneously reactivate and lead to novel therapeutic strategies restricting reactivation.

PANEL 3 - Biomedical Sciences: An Examination of the Effects of Streptococcus on Dental Health in Space, the Herpes Simplex Virus, and the Infectivity of a Lyme Disease Pathogen

Effects of Simulated Microgravity Growth on *Streptococcus Mutans* Physiology

By Ke Aira Davis, *Microbiology & Cell Science, University of Florida*

Astronauts need to maintain dental health; however long spaceflight conditions differ from Earth; thus, we need to understand how oral bacteria behave in space. *Streptococcus mutans* is a primary contributing factor to dental cavities. To test its behavior in space, we measured growth in low shear modelled gravity (LSMMG) using rotating wall vessels (RWVs). A random positioning machine (RPM) was used to validate the RWV data and to investigate *S. mutans* biofilm. *S. mutans* and *S. gordonii* (an inhabitant of oral biofilms antagonist to *S. mutans*) were engineered to express fluorescence in the RPM model allowing imaging by confocal microscopy. *S. mutans* experienced global changes in gene expression and altered cell aggregation in microgravity. Compact cell clumps previously observed in the RWV model also formed during growth using the RPM model. Future work will investigate phenotypes, acid stress tolerance and global gene expression. These results will help guide future research into preventing dental cavities for astronauts.

A Novel sRNA Important for Infectivity of the Lyme Disease Pathogen, Borrelia Burgdorferi

By Darlene Ramos, *Biomedical Sciences, University of Central Florida*

Lyme disease, caused by the bacteria Borrelia burgdorferi, is the leading vector borne disease in the United States. We and others have recently identified putative non-coding RNA transcripts (sRNAs), throughout the B. burgdorferi genome, whose functions are unknown. SR0819 is a putative sRNA located on virulence-associated linear plasmid 36 (lp36). Moreover, our B. burgdorferi in vivo expression technology (BbIVET) screen identified an infection active DNA sequence, Bbive166, that maps directly upstream of SR0819, suggesting that Bbive166 may function as the promoter for SR0819. Using a luciferase reporter system and in vivo live imaging to analyze Bbive166 promoter activity, we found that Bbive166 is specifically active during mouse infection. A ΔSR0819 B. burgdorferi mutant clone demonstrated no defect in infection of mice. In contrast, B. burgdorferi engineered to overexpress SR0819 demonstrated a significant decrease in bacterial load in the blood of mice 6 days post inoculation, suggesting a possible role for this novel transcript in B. burgdorferi mouse infectivity.

Research Abstracts

PANEL 4 - Contemporary Issues in Education

The Effect of Melodic Individuation Training on Children's Outgroup Biases

By Ryan Aguirre, *Education, Florida State University*

Research in child development has highlighted the importance of addressing racial bias in young children. A recent study in China found that implicit racial bias can be reduced through a process called individuation. The Chinese study used individuation in which preschool children were taught to attend to differences between other-race faces. Given that music has been used as a mnemonic device for learning and has the potential for creating an emotional connection, the current study examined the use of music in the individuation process. Thirty-four preschool children (N=34) were trained in three forms of individuation: mere exposure, labeling individuation, and melodic individuation. Using the Implicit Racial Bias Test (IRBT), an explicit racial bias test, and an open-ended question, this study employed mixed-methods. Results from this study may guide early childhood music educators in ways to address racial bias in their classrooms.

In the Trenches: Black Men in Doctoral Education Combating Racial Battle Fatigue

By Jesse Ford, *Education, Florida State University*

Black men graduate at low numbers across all racial and gender groups in doctoral programs. Historically, racial microaggressions and inadequate socialization are highlighted as recurring challenges in graduate student degree attainment. The purpose of this study will explore the influence of racialized stress on the experiences of Black men in graduate education and junior faculty roles. This study is based on qualitative interviews with 32 Black men from 27 four-year Research I predominately white institutions. This study demonstrates a lack of support and role models for Black graduate students and Black junior faculty. Recommendations include improving academic preparation, mentorship, and professional development for these groups.

The Presence of Neoliberalism in Contemporary Higher Education Funding

By Mario Lewis, *Education, Florida International University*

This study not only highlights the varying ways in which additional state-sanctioned funding differently impacts certain types of institutions within the State University System (SUS) of Florida, but also expounds upon the many ways in which the overall apparatus employed to distribute funding to the state's eleven public universities is problematic due to inherit inequities. Correspondingly, the study considers how said funding measures have been compromised and subsumed under the greater economic ideology of neoliberalism via document, genealogical, and general policy analysis. By using these techniques, the study forces to light the multitude of ways that funding inequities persist and lead to further long-term damages and varying forms of stratification among the state's public universities in both material and non-tangible ways. These goals are specifically accomplished by conducting a comparative analysis between two universities belonging to the Florida SUS: Florida Agricultural and Mechanical University (FAMU) and Florida State University (FSU).

PANEL 4 - Contemporary Issues in Education

Student Activism: Constituting Subjects

By Gerson Sanchez, *Education, Florida International University*

In the USA, youth activists have been historically important in shaping youth ideology, the politics of daily life, and also current elections. This paper then, focuses on the relationship between identity and student activism. Specifically, the purpose of this inquiry is to examine how four student activists in South Florida practice race, class, gender, and sexuality. By practice I mean, how do meanings associated with social identities affect and inform student activism. Working from Foucault's understandings of governmentality, this study does not presuppose social classifications (e.g. human, race, class, gender, and sexuality, activist), and or essences. Social identities are not natural, they are brought into existence as objects of inquiry. Thus, government is about the ways in which "the conduct of individuals and institutions is problematized and made the end of techniques seeking to direct that conduct in particular directions and for particular purposes" (Baez, 2014, p. 7). Through this framework, this study seeks to understand how classifications come into being, are rationalized and maintained, and how individuals resist and/or take on classifications and for what purpose.

PANEL 5 - In the Forefront: Significant Research on Breast Cancer

Changes in the Expression Levels of DNAJAs in Triple Negative Breast Cancer Cells Exposed to Cytotoxic Chemotherapy

By Devon Freeny, *Pharmaceutical Sciences, Florida A&M University*

Triple Negative Breast Cancer (TBNC) lacking biological targets results in limited therapeutic options and leads to high mortality rates. The latest therapy is Doxorubicin (Cytotoxic chemotherapeutic drug), an anti-tumor therapeutic alternative, which has bad side effects (cardiotoxicity) due to dose dependence, leading to drug resistance. Research shows that heat shock proteins (HSPs) help protect cells using heat-shock response. Several HSPs have been tested, with limited knowledge of HSP40s (DNAJAs). We will determine which DNAJA assists in the survival response to Doxorubicin by observing the domains and expression of the proteins being exposed to chemotherapy. The J domain has shown to be a critical area for increasing cell sensitivity while reducing cardiotoxicity. Expression levels were analyzed via RT-PCR and Western Blots and relevant domains via COSMIC database. In conclusion, the first step to reducing cardiotoxity with chemotherapeutics is by modifying HSP40 functionality in human cancer cells, providing an alternative to hypersensitization to chemotherapy and allowing for lower dosage with fewer side effects.

PANEL 5 - In the Forefront: Significant Research on Breast Cancer

The Oncogenic Role of USF1 in Breast Tumorigenesis and Progression

By Jessica Lewis, *Biomedical Sciences, University of Florida*

Breast cancer accounts for nearly one-quarter of all cancer diagnoses and is the principal cause of cancer-related mortality in women worldwide. Triple negative breast cancer (TNBC) is a clinically aggressive subtype of breast cancer commonly resistant to therapeutics that have been successful in increasing survival in patients with ER+, PR+ and HER2+ breast cancer subtypes. As such, identifying factors that contribute to poor patient outcomes and mediate the growth and survival of TNBC cells remain important areas of investigation. USF1 (upstream stimulatory factor 1), a gene linked to drive lipogenesis and cellular proliferation, is over-expressed in human malignancies, yet its contribution to cancer remains unclear. In analyzing large number of genomic datasets including The Cancer Genome Atlas, we found that USF1 expression is significantly higher in TNBC tumor samples. Significantly, we found that high expression of USF1 in breast cancer correlates with decreased patient survival. We therefore hypothesize that USF1 promotes breast tumorigenesis and progression by activating lipogenic gene expression.

PANEL 6 - Mechanical and Aerospace Engineering: Jet Impingement Applications and Axially Staged Combustion

Detailed Investigation on Heat Transfer and Fluid Interaction Over Non-Uniform Roughened Surfaces in Jet Impingement Applications

By Andres Curbelo, *Mechanical Engineering, University of Central Florida*

Higher consumer demand for electricity and environmental concerns require power generation companies to maximize the efficiency of power generating turbines. To increase engine efficiency, they can raise the temperature of inlet combustion gases, but these higher temperatures can cause damage. Different cooling mechanisms, for example impinging air jets, can be embedded inside the engine, but current manufacturing (convectional casting) is difficult and expensive. 3D printing (Additive Manufacturing; AM) can print highly complex components, however the surface finish is difficult to control. Surface roughness can negatively affect power output on engines, and it is not well known how roughness affects cooling mechanisms. We experiment with various roughness levels of an impinging air jet using experimental techniques including PIV, LDV, TSP, and PM to measure fluid behavior over the surface finish. Noise generated by the roughness was unable to be accurately captured due to parasitic noise but proved that roughness noise could be used to quantify flow behavior. The presented research promises to lead to more efficient engine design, ultimately increasing turbine efficiency.

PANEL 6 - Mechanical and Aerospace Engineering: Jet Impingement Applications and Axially Staged Combustion

Pressure Influence on Premixed Reacting Jet Flame Stabilization and NOx Emission in Axially Staged Combustion

By Michelle Otero, *Aerospace Engineering, University of Central Florida*

Today's power generation industry demands for low cost, highly efficient, reliable and clean burning gas turbines. To meet these demands, researchers and original equipment manufacturers (OEM) are continuously integrating intensive engineering designs to achieve higher turbine temperature and lower NOx emissions over a wide load range. Existing efficiency limitations due to temperature and NOx formation dependency have led to a significant growth in research for novel combustion technologies with promises of higher efficiency while simultaneously abating NOx emissions. A novel combustion technology emerging from recent research is axial stage combustion. This combustion technique shows promise in providing elevated turbine inlet temperatures and lower NOx emissions concurrently by separating the combustion process between two stages. Naturally because of its simplicity, jet in crossflow is utilized as a method of fuel injection in various applications including axial stage combustion in gas turbine. The present work studies a premixed methane/air jet injected into a lean vitiated crossflow at various pressures to further understand the effect of pressure on the flame features and flow field of the reacting jet-in-crossflow (RJIC).

PANEL 7 - Public Health and Nutrition Science: A Nutrition Education Intervention, Intuitive Eating, and Dietary Adherence

Interoception and Intuitive Eating

By Shante Earle, *Nutrition Science, Florida International University*

Obesity rates have rapidly increased over the last few decades with over 400 million people considered obese worldwide. Intuitive eating (IE) is a non-diet approach that is reliant on one's body signals to determine whether a person is hungry or satiated, often used for weight management. In order for IE to be effective, individuals must be able to identify and interpret their internal hunger cues. Examining interoception, the quantified measurement of internal signals, can assess the individual's ability to interpret their own sensations; however, few studies have examined the relationship between these variables. Thus, the purpose of this study is to determine the relationship between intuitive eating, interoception, self-regulation and weight in college students. College students will be assessed using questionnaires (intuitive eating, self-regulation) and biometric measures (interoceptive awareness, height/weight). The results of this study are expected to inform future research on the role of interoception on intuitive eating and self-regulation for weight loss.

PANEL 7 - Public Health and Nutrition Science: A Nutrition Education Intervention, Intuitive Eating, and Dietary Adherence

Effects of an Urban Gardening and Nutrition Education Intervention on Food Insecure College Students

By Alison Matthysse, *Dietetics and Nutrition, Florida International University*

High rates of college food insecurity (59% in 2014) is correlated with unhealthy eating, alcohol use, and mental health issues, which can continue into adulthood. Universities have implemented campus food pantries, however, multiple studies have indicated the need for additional programs including nutrition and budgeting knowledge, food provisioning skills, and cooking skills. We ran an 8-session quasi-experimental urban gardening, cooking and nutrition education intervention with food insecure college students. Students were randomly assigned to an intervention (n=60) or control group (n=60). We measured the interventions effect on fruit and vegetable intake, mediators of change (from the Social Cognitive Theory), stress, and life satisfaction. Fruit and vegetable intake, mean scores for mediators of change, mean scores for stress and life satisfaction have been assessed using repeated measures ANOVA. The results from this study will indicate whether supplementary nutrition education programs, in addition to college food pantries, can have positive effect on the health behaviors of food insecure college students.

Exploring the Association Between Temptation, Hunger, and Dietary Adherence

By Umelo Ugwoaba, *Public Health, University of Florida*

Understanding the factors proximally associated with eating habits is critical to the development of personalized (i.e., individually-tailored) weight management programs. The current study investigated the week-to-week impact of hunger and temptation (and their potential interaction) with eating habits during and after a 12-week Internet-based weight management program. Multilevel models were used to assess the association between ratings of hunger and temptation and consistency of eating choices with weight loss goals. Results demonstrated that higher levels of hunger and temptation were independently associated with lower ratings of whether eating choices were consistent with weight loss goals. Further, there was an interaction between hunger and temptation such that higher levels of hunger coupled with higher levels of temptation led to even lower ratings of whether eating choices were consistent with weight loss goals. The current study was the first to establish a proximal association between hunger, temptation, and consistency of eating with weight loss goals during and after a weight management program.

Research Abstracts

PANEL 8 - Public Health Policy and Opioid Use in Justice-Involved Youth in Florida

Juvenile Detention Placements Predict Risk for Opioid Misuse

By William Dixon, *Public Health, University of Florida*

Individuals who have engaged in opioid misuse (OM) are progressively funneled into correctional settings. Most correctional institutions do not provide treatment for substance use disorders. As such, rates of opioid relapse and overdose for adults are higher after release, yet no study has examined juvenile detention placement and past-30 day (P30D) OM among justice-involved children (JIC). This study used logistic regression to analyze 79,960 JIC from the Florida Department of Juvenile Justice (FLDJJ) while adjusting for sociodemographic and mental health characteristics. Findings show that 2.7% met criteria for P30D OM and 64.2% had been placed in a secure detention facility at least once. Over 40% of P30D users had a history of three or more secure detention placements. Compared to JIC who were never placed in detention, those detained once were nearly twice as likely to meet criteria for P30D OM. To combat this epidemic, we need to implement programs that will prevent and treat opioid misuse in JIC.

Impulsivity and Past-30 Day Opioid Misuse in Justice-Involved Children in Florida

By Trey Warren, *Public Health, University of Florida*

To our knowledge, this study was the first to examine the association between impulsivity and opioid misuse (OM) among Justice-involved children (JIC). We hypothesize that higher impulsivity will be associated with a higher likelihood of past-30 days (P30D) OM among Florida JIC. Cross-sectional data on 79,960 JIC from the Florida Department of Juvenile Justice (FLDJJ) were leveraged using multivariate logistic regression. Compared to the control group, impulsive JIC were 1.34 times as likely to misuse opioids in the P30D (aOR: 1.34; 95% CI 1.04,1.73). Highly impulsive JIC were 1.76 times as likely to misuse opioids compared to the control group (aOR: 1.76; 95% CI 1.34,2.31). Results suggest that impulsivity may be an important precursor for OM initiation during adolescence. To mitigate adolescent OM, interventions that address impulsivity, develop self-control, and provide safer alternatives for sensation seeking should receive consideration.

Gender Differences in the Effects of Physical and Sexual Abuse on the Odds of Past 30-Day Opioid Misuse Among Florida Justice-Involved Children

By Farwah Zaidi, *Public Health, University of Florida*

Physical abuse and sexual abuse are prevalent throughout the juvenile justice system and have each been linked to opioid misuse (OM) in justice-involved children (JIC). However, gender differences in the effects of physical and sexual abuse on OM among JIC have not yet been tested. We hypothesize that female JIC who experience abuse will have a higher risk of past 30-day OM (P30D OM) than females who did not experience abuse and males with equivalent abuse profiles. These analyses examine cross-sectional data on 79,960 JIC from the Florida Department of Juvenile Justice (FLDJJ). Results indicate that JIC with a history of both physical and sexual abuse had an increased likelihood of meeting criteria for P30D OM. Females who experienced abuse had a much higher rate of P30D OM than males who reported the same experiences. These results suggest that implementing trauma-informed care to address adverse experiences for females in the justice system may decrease overall opioid misuse.

PANEL 9 - Preparing the Next Generation: An Examination of Math Teacher Education, Academic and Career Readiness in Work Study Students, and the Merger of Socioscientific Issues and Social Justice Curricula

Analyzing the Impact of SB 1720 on Gateway Math Courses Using PERT Scores

By Frank Conic, *Education, University of Florida*

In July 2013 the State of Florida passed Senate Bill 1720 (SB 1720) to reform developmental education in Florida Colleges. The goal of this study is to measure the impact of SB 1720 on student achievement by examining outcomes of students at a large community college enrolled in the gateway mathematics course (Mat 1033) from 2007-2018. The structure of the student data available to us make possible two estimation approaches: regression discontinuity (RD) and difference-in-differences. The RD approach exploits the Pert Score cutoff used to identify who is eligible to proceed to the gateway math course Mat 1033 and who would need to go the Prep math course track. The difference-in-differences approach measures the effects of the Senate Bill 1720 as the change in performance of eligible students over time relative to that of students who did not qualify for the gateway math course Math 1033 but opted to take it.

Mathematics Teacher Educators' Perspectives and Decision Making Related to Preparing the Next Generation of Equitable Teachers of Mathematics

By Lakesia Dupree, *Education, University of South Florida*

Equipping teachers with the knowledge and practices deemed necessary to work with students from diverse populations is a documented need that plagues teacher preparation. The influx of students from diverse backgrounds enrolled in the United States schools intensifies the need to prepare the future generation of teachers to be equipped to provide equitable learning opportunities for each and every student in their classrooms. Currently, limited research investigates the knowledge and practices of mathematics teacher educators and how they incorporate equity into their work with teacher candidates. With the recent release of the Association of Mathematics Teacher Educators' Standards for Preparing Teachers of Mathematics, additional research is needed to support mathematics teacher educators with preparing teacher candidates using equity. This study will highlight the challenges and constraints faced by mathematics teacher educators engaged in the work of integrating equity into their work with teacher candidates. Findings of this research will add to the research on mathematics teacher educators' knowledge and practices.

Development and Initial Validation of a Measure of Academic and Career Readiness for Community-Based Federal Work Study Students

By Mazi Ferguson, *Education, University of South Florida*

In higher education, the success of all students is paramount. Research however, highlights disparities in students' financial status which requires some students to work during college, further stressing their academic performance. This study explores the impact of an off-campus, community based Federal Work Study (FWS) program on students' essential skills for employability after graduation. The research will produce and initially validate an academic and career readiness survey for Federal Work Study students that will be administered to 50 students working in community FWS positions. This study tentatively supports the hypothesis that, while working during college, FWS students can increase skills (such as critical thinking, oral and written communication, and teamwork) that are essential for both academia and future employment.

PANEL 9 - Preparing the Next Generation: An Examination of Math Teacher Education, Academic and Career Readiness in Work Study Students, and the Merger of Socioscientific Issues and Social Justice Curricula

Science for Social Responsibility: The Merger of Socioscientific Issues and Social Justice Curricula

By Selene Willis, *Education, University of South Florida*

Science education reform has indirectly focused on preparing students to be active citizens who are socially responsible. Ramsey (1993) inferred that science education should assist students in becoming informed citizens who can effectively deal with and propose solutions to science-related social issues. This perspective supports social responsibility as a more useful end of science education that would allow citizens to use scientific knowledge to take civic action. Using a critical pedagogy lens, this position aims to explore the distinct yet similar goals of socioscientific issues (SSI) and social justice education frameworks in order to promote a merger of the two concepts to support functional scientific literacy and social responsibility. This position paper explores the following question: To what extent can socioscientific focused curriculum be merged with social justice tenets to promote scientific literacy and social responsibility? The theoretical and conceptual frameworks used to inform this exploration include critical pedagogy, social justice and socioscientific issues.

PANEL 10 - Significant Challenges Confronting Collegiate Athletes

The Melanin Mask: The Emotional and Psychological Experience of Black Female Athletes

By Marlene Holmes, *Social Work, Barry University*

The experience of black female athletes in America often goes unseen, unheard, and generalized in the realm of athletics. This presentation will discuss the past and present experiences of systemic oppression which contributes to psychological and emotional challenges for black female athletes. This researcher will highlight the significance of protective factors that are often unknown or minimized by the athlete, coaches, teammates, or parents. The presentation will increase awareness of how key individuals contribute to the challenges, but also provide solutions on how to overcome them.

Athlete Limbo: Collegiate Athletes' Experiences Transitioning Out of Sport(s)

By Sherrina Lofton, *Education, Florida State University*

Research on athlete's transition out of sport experiences has grown in recent years. However, there are still many unknown nuances of the transition. In this phenomenological study, three former collegiate student athletes are interviewed to assess their transition out of collegiate sports and encounters with Athlete Limbo. Furthermore, their experiences are assessed using Schlossberg's Transition theory, specifically the 4S's of transitioning. It is hypothesized that athletes who are not, or slightly, prepared for the transition process will undergo a period of Athlete Limbo, a new athlete transition concept. Results from the study support findings within the current literature on transition and Athlete Limbo. This study also offers some future research directions to explore athlete's transition experiences.

PANEL 11 - Biomedical and Industrial Engineering: Exploring Optochemical C02 Sensors, Copolymer Films, and Human Factors in Austere Environments

Optochemical CO2 Sensor for Subcutaneous Capnography

By Teshaun Francis, *Biomedical Engineering, Florida International University*

Carbon dioxide is a powerful metric when treating patients with acute or chronic Respiratory Failure (RF) in the ICU. It provides diagnostic information about a person's metabolic activity, blood acidity, circulation, and ventilation status. However, arterial carbon dioxide partial pressure (PaCO2) is notoriously difficult to monitor in real time. With capnometry, arterial blood samples can be analyzed with mass spectrometry for highly accurate measurements. However, this does not provide real-time information. On the other hand, a minimally-invasive technique, subcutaneous capnography (scCO2), may have the potential to achieve the reliability and accuracy that physicians need. Sampling from interstitial fluids may provide a pathway for a reliable estimate of PaCO2. Recently developed implantable biosensors have demonstrated that interstitial fluids are representative of arterial blood. Similar implants have shown accurate, reliable measurements for up to a year with no negative side-effects. In this Ph.D. research, technology will be developed to investigate this novel modality.

The Effect of Crystallization and Glass Transition Temperature in Thin Poly(D,L-lactic acid) Copolymer Films for Controlling Osteoblast Recruitment and Adhesion

By Ufuoma Ikoba, *Biomedical Engineering, University of South Florida*

Polylactic acid copolymer thin films have significant potential as bioresorbable coatings. The film thickness is known to affect the transition temperature and crystalline morphology and was the focus of study in this work. Herein, poly(D,L-lactic-co-glycolic acid) (PLGA) was spin-coated to yield amorphous films with thicknesses ranging from 30 to 200nm. The amorphous PLGA thin films were annealed at 100˚C for 24 hours, 48 hours, and five days and were compared to similar non-annealed samples. Atomic force microscopy (AFM) was used to analyze the morphology of the thin films for indications of crystallization. AFM confirmed that crystallization was apparent on the surface of the film. The thickness and glass transition temperature were characterized using ellipsometry. Results reveal that the glass transition and melt temperature in thin PLDG films were lower than in bulk samples. Future work will investigate the effect of crystallization on the degradation of thin films.

Female Urination in Austere Environments: A Quantitative Analysis

By Andrea Peters, *Industrial Engineering FOS Human Factors, University of Miami*

December 2015 marked the Army's historic decision of branch gender integration. Thus, the physiological aspect of female urination and how traditional means limit Army women and their ability to expediently and safely execute in austere environments compelled my pursuit. I employed human factors engineering on commercial devices (Shewee and Freshette) and the interactions with operational camouflage (OCP) trousers. 15 out of 20 interested women between 18-22 from the Fall Sandhurst Competition at the United States Military Academy (USMA) participated in the product review. These women received both devices and one OCP trouser. Asked to practice on the devices during the 24-hour period prior, the women then chose their favorite device to use during Sandhurst. Turn-in revealed 80% selection of Freshettes and the survey discovered hopefulness of a future with urinary aids. We conclude that a urinary aid will enhance the female experience, but device redesign must occur to meet customer operational needs and Army force health protection.

PANEL 12 - Public Health and the Pharmaceutical Sciences: Prevention of Type 2 Diabetes and Controlling Sickle Cell Disease

Etiology and Prevention of Type 2 Diabetes Mellitus in Children and Adolescents: A Review of Literature

By Tienna Fenton, *Public Health, Florida International University*

A review of literature was conducted to advance understanding of etiology and prevention methods of type 2 diabetes in children and adolescents in hopes of decreasing prevalence. PubMed, Google Scholar, and ScienceDirect were used to identify articles pertaining to pediatric type 2 diabetes, excluding articles that focused on type 1 diabetes, adult-onset diabetes, or diabetes treatment. This review indicated that there are gaps of information in recent research publications: type 2 diabetes is still considered an adult disease even though more children are being diagnosed. Children need to be further educated to increase knowledge of risk factors and prevention methods and more efficient screening techniques are necessary. In addition, future research is needed to examine the benefits of incorporating more intervention programs to decrease the incidence of type 2 diabetes in this age group.

Trends in Hydroxyurea Utilization Among Commercially Insured Adults with Sickle Cell Disease, 2005 - 2018

By Motomori Lewis, *Pharmaceutical Sciences, University of Florida*

Prior to 2017, hydroxyurea was the sole treatment to prevent vaso-occlusive crises (VOC) in patients with sickle cell disease (SCD). Yet, limited data exists on recent trends in hydroxyurea uptake. This study aims to determine the prevalence, trend, and determinants of hydroxyurea use among adults with SCD. We conducted a cross-sectional study using administrative claims to identify adults aged 18 to 64 with SCD. Hydroxyurea use during follow-up was evaluated with modified Poisson regression. We identified 12,155 adults with SCD. Of this sample, 20.1% received hydroxyurea and utilization increased significantly from 2005 to 2018 (PRR = 1.39; 95% CI = 1.19, 1.62). Females were less likely to use hydroxyurea than males (PRR = 0.79; 95% CI = 0.73, 0.85), and those with at least one VOC hospitalization during baseline period were more likely to use hydroxyurea (PRR = 1.99; 95% CI = 1.87, 2.11). Among U.S. adults with SCD, hydroxyurea use increased over time, but its prevalence remains suboptimal.

PANEL 13 - Sociological and Anthropological Perspectives on Immigration, Sexual Orientation and Race

The Importance of Personal Contact with LGBTQI+ Patients

By Bee Ben Khallouq, *Sociology, University of Central Florida*

Previous studies among physicians have shown that contact with LGBTQI+ communities increases physicians' comfort level and improves the physician-patient interaction when treating LGBTQI+ patients. This study assessed the role that contact with LGBTQI+ people had on medical students' perspectives about LGBTQI+ communities. Eighty-nine medical students completed a survey and were divided into high-contact and low-contact groups. Differences in acceptance, comfort, equal rights and origins of sexuality of LGBTQI+ people were compared. High-contact students reported higher levels of acceptance and higher levels of comfort, than the low-contact group. High-contact students were more receptive to equal rights for LGBTQI+ people, more comfortable interacting with BTI+ people and more knowledgeable about sexuality (i.e., recognizing one can be born bisexual), than the low-contact group. Results indicate that medical educators should increase contact with LGBTQI+ communities through integration of standardized clinical encounters and simulations that integrate LGBTQI+ patient care content into medical curriculum.

Racialized Emotions Among Undocumented Immigrants

By Girsea Martinez-Rosas, *Sociology, University of South Florida*

U.S. industries largely rely on undocumented people of color who are willing and able to meet their labor needs. This is especially true in the South. Florida, for instance, is a new destination for Mexican migrants who fulfill less desirable labor intensive and low wage positions in the agriculture and hospitality industries. Yet, in the wake of the Trump administration's demonizing rhetoric and resulting racial tensions, undocumented workers of color are targets of racializing discourse that affects their mental, emotional and physical health. Thus, understanding when, how, and why racist ideology affects the lives of undocumented people of color is imperative if not for moral, then for economic reasons. Previous studies focus on the East and West coasts, and these regions do not necessarily represent the racial and legal context of the South. Central Florida's varied racial and ethnic make-up and its highly segregated neighborhoods present a better opportunity to explore how racial violence impacts undocumented immigrants of color living and working in rural areas. Based on 50 interviews with undocumented youth and over two years of field work in Florida, this project uses a layered ethnographic approach, combining qualitative interviews, participant observations, and autoethnographic reflections, with quantitative self-reported measures of skin-tone and wellbeing. Initial findings reveal that prevalent routine encounters with racializing discourse from peers, strangers, and teachers are emotionally harmful and shift educational and professional growth trajectories. Findings suggest that systems meant to support people of color, such as a teacher group, are failing.

PANEL 13 - Sociological and Anthropological Perspectives on Immigration, Sexual Orientation and Race

Tres Leches, Café con Leche, and Chocolat: Reflections on Shades of Whiteness in Miami's Latino-Dominant, Restaurant industry from the Perspective of an Afro-Anglo-Caribbean Researcher

By Judith Williams, *Anthropology, Florida International University*

In Miami, a city of immigrants, whiteness is complicated. Light skinned Latinos from Cuba and South America are increasingly included in the racial category of white, while dark-skinned Latinos from Honduras, Nicaragua and Guatemala are generally considered to be non-white and aligned with the racial category of Black. Drawing from an ethnographic study of Miami's restaurant workers, this paper examines some of the intersectional identity politics that determine complicated racial hierarchies in a "diverse" and "multicultural", Latino-dominant workforce. Using the framework of critical race theory and contemporary whiteness theories, this paper advances conversations about the fluidity of race and the intersectional complications of varied identities in an immigrant-dominant, cosmopolitan city.

PANEL 14 - Biological Sciences and Environmental Engineering: Nitrogen Removal, Methane Emissions, Wastewater Treatment, and Cetacean Bone Mechanical Properties

Development and Implementation of SiMER, a Methane Emissions Model with Broad Applications

By Carla Alonso Contes, *Soil Science, University of Florida*

One of the largest sources of methane are wetlands, contributing about 20 to 40 % to global sources. We developed a simple methane model for tropical and subtropical forests following the approaches used in more complex global biogeochemical emission models. The model was designed to replace model formulations with data streams for 2 essential drivers: plant productivity and hydrology. This design allows us to directly focus on the central processes of methane production, consumption and transport. One of our long-term goals is to make the model available to scientists interested in including methane modeling in their location of study. Another goal is to evaluate the model with field soil moisture and soil temperature data against field emissions in the Ordway-Swisher Biological Station field site. Results show that parameters related to water table behavior, carbon input and rooting depth affect simulated methane emissions the most. Other models have found that parameters influencing methane production, oxidation, and aerenchyma area caused the most variability.

PANEL 14 - Biological Sciences and Environmental Engineering: Nitrogen Removal, Methane Emissions, Wastewater Treatment, and Cetacean Bone Mechanical Properties

Application of Sulfur-Bearing Minerals for Nitrogen Removal From Contaminated Water Supplies

By Erica Dasi, *Environmental Science Engineering, University of South Florida*

Excess nitrogen in surface and drinking water supplies can diminish water quality and lead to blue baby syndrome (a potentially fatal illness). This project harnesses biological nitrogen removal (i.e., denitrification) to develop a novel technology that is low-cost and simple for treating nutrients. We tested two common electron-donor minerals; pyrite (FeS) and sphalerite (Zn,Fe)S in microcosm studies containing oyster shells (an inexpensive buffer). The combined shells and minerals led to high nitrate removal efficiencies of 78% (pyrite) and 90% (sphalerite). After 19 days, phosphate decreased from 10 to <1 mg/L PO43--P in microcosms containing sphalerite. These results indicate that (1) sphalerite and oyster shells are promising substrates for removing nitrate from contaminated water and (2) simultaneous phosphorus removal can be achieved as well.

An Onsite Wastewater Treatment System Performance Evaluation and Life Cycle Assessment

By Michelle Henderson, *Environmental Science Engineering, University of South Florida*

Water scarcity is a growing issue locally and around the world, and water reuse provides a solution to this complex problem. A pilot scale onsite wastewater treatment system was constructed with varying treatment stages and configurations to develop a system for irrigation reuse. E. coli and chlorine concentrations, concentrations, turbidity, pH and conductivity were monitored. Results showed that, with one stage of nitrification treatment and chlorination, the onsite wastewater system could be configured for environmental and non-food agricultural irrigation reuse. A life cycle assessment will be conducted to determine the environmental and health impacts of the system.

Cetacean Bone Mechanical Properties Vary Among Swimming Modes and Diving Behaviors

By Danielle Ingle, *Biomedical Sciences, Florida Atlantic University*

Cetacean axial bending varies along the length of the body during swimming. To better understand loading on the axial body, our goal was to quantify bone mechanical properties among regions of the cetacean vertebral column. We categorized 10 species based on functional groups determined by swimming modes (rigid vs. flexible torso) and diving behavior (shallow vs. deep). We predicted that mechanical properties would be greatest in shallow-dwelling, rigid-torso swimmers and in the tail region of the vertebral column. Vertebrae were dissected from four regions of the vertebral column and cut into 6 mm3 cubes that were compressed at a rate of 2mm/min using a material tester. Stiffness and yield strength were calculated from stress-strain curves. We found that rigid-torso, shallow-diving cetaceans had the greatest stiffness and strength compared to flexible-torso, deep-diving animals. These data suggest that animals habitually overcoming surface drag and wave turbulence have increased skeletal loading compared with species that incorporate prolonged glides during deep dives.

PANEL 15 - Significant Research in Psychology: Understanding Shared Cognate Knowledge, the Impact of Age on Depression, Well Being and Job Demand, and Loneliness and Companionship

Impact of Age at OnSet on the Phenomenology of Depression in Treatment-Seeking Adults in the STAR*D Trial

By Lara Baez, *Psychology, University of Miami*

Adolescence is a vulnerable time in the development of the brain and mind. Onset of depression in adolescence confers specific psychosocial, psychiatric, and medical risks in adulthood. While onset of depression in adolescence does not necessarily increase the likelihood of a major depressive episode in adulthood, adolescent-onset depression may be associated with unique symptom-level phenomenology in adulthood. The goal of the present study was to examine the extent to which the developmental timing of depression onset impacts adult symptomatology. 11 depression items in 3,184 adults from the STAR*D trial were analyzed. Partial correlation networks were estimated in each group to examine unique associations between symptoms. The adolescent symptom network was significantly different from the young adult and middle age networks in both total strength (young adult p=.028; middle age p=.017) and global structure (young adult p=.014; middle age p=.005). These phenomenological differences shed light on the impact of developmental timing of depression and suggest important implications for pathophysiology treatment.

The Relationship Between Job Demand, Control, Support, and Well-Being Outcomes in Japan

By Roxanne Lawrence, *Psychology, University of South Florida*

Studies regarding the psychosocial conditions of the workplace have drawn extensively from Karasek's Job Demand-Control-Support (JDCS) model. The JDCS model suggests that working conditions characterized by high demand in addition to low control (high-strain jobs) have the highest risk for illness and psychological distress. Though the additive of high job demand, low control and low support work on health and psychological well-being is unquestioned, there is a debate about the ability of control and/or support in buffering the negative effect of demand on strain. In a sample of 159 Japanese employees, the current study examined the correlation between study variables and health outcomes (anxiety, depression, cortisol, and blood pressure) in Japan. Data were collected across two timepoints (2009-2010 and 2013-2014). Results revealed a negative relationship between control, depression, and anxiety at timepoint 1. Furthermore, coworker support showed a negative relationship with depression and anxiety across time. Implications and future directions are further discussed.

Robots as Companions to the Lonely: Social Presence and Perceived Companionship

By Fernando Montalvo, *Psychology, University of Central Florida*

Social robots are suggested as an alternative to human companionship in socially isolated or lonely older adults. While previous research has explored perceived social presence and sense of companionship on robots with simple interactive functions, little research has been done with the current group of social robots. These social robots offer advanced communication capabilities opening new avenues for perceived companionship. The present research, composed of three interconnected studies, examines perceived social presence and perceived companionship when 423 participants interact with other people, intelligent personal assistants, or social robots. Differences between lonely and non-lonely participants, as well as young and older users, are explored. Results indicate that lonely or socially isolated participants are significantly more likely to desire a robot as a social companion. Additionally, while previous research showed that lonely individuals ascribed higher social presence to robots, this effect appears to disappear as robots become more humanlike. This research informs future robot design and loneliness therapy planning.

PANEL 15 - Significant Research in Psychology: Understanding Shared Cognate Knowledge, the Impact of Age on Depression, Well Being and Job Demand, and Loneliness and Companionship

Bilinguals' Orthographic Representations: How Does Shared Cognate Knowledge Contribute to Accurate English Word Spelling?

By Valeria Rigobon, *Psychology, Florida State University*

Compared to the reading literature, little work has been published on predictors of spelling ability. This study examined the role of word-level predictors (frequency, presence of Spanish cognate) and person-level predictors in monolingual (English) and bilingual (Spanish-English) university students. Using random assignment, we closely examined whether bilingual participants showed higher spelling accuracy of complex English words with Spanish cognates when prompted to consider Spanish spelling as compared to unprompted participants. Crossed-random effects models helped explain both person (N=120) and word (N=40) level predictors related to spelling. The target words varied in morphological complexity, word length, frequency, and age-appropriate spelling difficulty. Results indicate that prompted bilingual participants had a higher probability of spelling complex words more accurately than participants who were not prompted. Additionally, bilingual participants were more likely to spell words with shared cognates correctly than monolingual peers. Presence of cognates and active consideration of spelling may be valuable predictors for the strength of word representations, especially among bilingual students.

PANEL 16 - The Uses of Forensic Science, Chemistry and Anthropology in Identifying Criminal Suspects, Subjects and Decedents

Forensic Identification: An Investigation to Corroborate Volatile and Biological Profiles for Subject Identification

By Chantrell Frazier, *Chemistry, Florida International University*

In forensics, fingerprints and DNA are biometrics utilized to identify a suspect or victim of a crime. Often human evidence at the crime scene is degraded or found only as trace amounts. Recent research on the human microbiome has produced evidence that each person harbors unique microbial communities—a fact that can be forensically exploited to produce a microbial profile that can be matched to an individual even if a human DNA profile is lacking. Touch interactions deposit microbiota (including bacteria) on everyday objects that can be targeted for collection. Microbiota are closely linked to the "scent" exuded from the palms of hands created through bacterially produced Volatile Organic Compounds (VOCs). By combining both VOCs detected by Gas Chromatography-Mass Spectrometry (GCMS) and an initial assessment of the bacterial community's diversity by Length-Heterogeneity-PCR, we aim to determine the relationship between the microbiome and VOCs profile for forensic identification.

PANEL 16 - The Uses of Forensic Science, Chemistry and Anthropology in Identifying Criminal Suspects, Subjects and Decedents

The Use of Multi-Isotope Analysis to Assist in Geoprofiling Unidentified Decedents Within the Tampa Bay Region

By Liotta Noche-Dowdy, *Anthropology, University of South Florida*

Forensic anthropologists utilize standard methods to create a biological profile for the unidentified decedent, involving skeletal analysis to estimate age, gender, and ancestry. The application of isotope analyses of remains has also aided in establishing context of the victim. This study will include a donated collection of teeth (n=97) from a local Hillsborough County dentist with basic demographic information from the participant (i.e., birth year, birth place). The chemical isotope analyses will include the radiogenic isotopes, strontium and lead, and stable isotopes, oxygen and carbon. These specific isotopes have a strong association with geographic regions and the chemical signature remains imprinted in the enamel tissue. This research seeks to answer the following questions: what are the isotopic ranges for a baseline signature in Florida and how different are the isotope values among the Florida regions. When information is very limited, isotope analyses of remains may facilitate the redirection of law enforcement agency efforts to contact other outside agencies and further leads.

Investigation of DNA Methylation Markers Indicative of Diet or Body Mass Index of Unknown Suspects

By Nicole Fernandez Tejero, *Criminology, Florida International University*

The aim of this study is to assist forensic scientists to create a more detailed epigenetic profile. In this project we will investigate and develop a DNA methylation marker capable of approximating an individual's Body Mass Index (BMI) and give insight into the individual's diet. Body dimensions are particularly important is they can give a greater insight into how the suspect looks when developing a profile. Body Mass Index is a weight-to-height ratio used for categorizing underweight, normal or healthy weight, overweight, and obesity. On the other hand, understanding the individual's diet can be forensically relevant when the person has a special diet or when specific foods consumed can be related to geography or religion. This study will allow us to provide a deeper understanding of how food affects epigenetics and thereby to probe a suspect's lifestyle. This is why we envision using DNA methylation, one of several epigenetic modifications, studied extensively for the determination of body fluids, age, and various lifestyle traits such as alcohol consumption and tobacco and drug use. We are currently identifying exclusive markers related to specific CpG sites and samples are being collected. Afterwards, experiments will be run to correlate BMI and diet to DNA methylation.

PANEL 17 - Education, Public Health and Communication Sciences and Disorders: Models for Creating Positive School Culture Through Social Emotional Learning and for Effective Literacy Instruction

More Than School Grades: An Exploration of Creating Opportunities for a Positive School Culture Through the Adoption of Psychological and Social Supports

By Sade Collins, *Public Health, Florida A&M University*

The Whole School, Whole Community, Whole Child approach demonstrates the connection between health and academic achievement. Studies suggest that healthy students are better learners. Youth mental health has gained increasing amount of attention in Florida over the past year. The preventive side to promoting mental health is comprehensive social emotional learning (SEL) instruction. Research shows SEL is associated with a positive impact on important mental health variables that increase children's attachment to school and motivation to learn and reduce risky behaviors. Telehealth has also been used as an access point for intervention for students who demonstrate the need for mental health services. The purpose of this mixed-methods dissertation research is to gain an understanding of the perceptions, knowledge and practices of Social and Emotional Learning (SEL) and telehealth among school professionals in Florida. The results of the study will help inform future resources to help school professionals identify opportunities for SEL implementation and yield more concrete conversations about school-based telehealth.

Examining the Effectiveness of Letter-Sound Instruction

By Lauren McKeever, *Communication Sciences and Disorders, University of South Florida*

Researchers have determined alphabet knowledge to be a significant component of early literacy and a key predictor for later literacy achievement. Moreover, many state curricula encompass early learning standards for preschool children that include alphabet knowledge, but vary in their specificity. Although recent research suggests setting a goal of knowing some upper and lowercase letters, clear expectations are not provided for instruction. While the interest in letter-sound knowledge is steadily growing, inconsistent implementation and limited directives or evidence of varying approaches continue to impact whether one specified method of letter sound instruction is more effective than another method. This synthesis of the literature aims to identify letter-sound interventions and summarize their effects on the development of early literacy skills.

PANEL 18 - Advances in Electrical Engineering and Computer Science: Robotic Control Through Parametric Gait Modeling, Power Harvesting Systems, and Sensor Measurement Models

Assistive Robotics Control Through High-Level Parametric Gait Modeling

By Rodrigo Ramon, *Electrical Engineering, Florida International University*

Through a myriad of physiological ailments, many people find themselves with gait pathologies which affect their daily lives. Using gait assistance robotics, those affected may regain balance, strength, and, ultimately, confidence in their own volition. To assist, exoskeleton devices have been in development for some time now. However, an adaptive control algorithm is required to allow for dynamic usage. Direct motor control using bio-signals has been implemented in research and clinical studies with success. In bio-signals such as electromyography (EMG), however, current technologies dissuade implementation of these signals in direct motor control, primarily due to the high level of variance, non-stationary nature of the signals, and sensitivity of electrodes to external disturbances such as sweat and friction. This study looks to bypass motor control and perform high-level gait parameter estimation to allow for a gait assistance device that would be adaptive to the user and, at the same time, robust enough for use in real life applications and end-user products.

A 2.45 GHz RF Power Harvesting System Using Textile-Based Single-Diode Rectennas

By Dieff Vital, *Electrical Engineering, Florida International University*

In this paper, a fully-flexible, low-cost and lightweight rectenna arrays suitable for wearable applications is presented. Textile-based antenna and rectifier were optimized to operate at 2.45 GHz. The latter exhibited an RF-to-DC conversion efficiency of 70% at 8 dBm input power. Arrays of single elements resulting from the integration of antenna and rectifiers were implemented on shirts for power transfer applications. The measurement results demonstrate up to 600μW of DC-power that was extracted from the array, allowing powering of low-power wearable electronics devices. A validation of the proof-of-concept was realized by lighting up three LEDs connected in parallel at distances of up to 60 cm from the source.

Learning State-Dependent, Sensor Measurement Models for Localization

By Troi Williams, *Computer Science, University of South Florida*

A robot typically relies on sensor measurements to infer its state and the state of its environment. Unfortunately, sensor measurements are noisy, and the amount of noise can vary with state. The literature provides a collection of methods that estimate and adapt measurement noise over time. However, many methods do not assume that measurement noise is stochastic, or they do not estimate sensor measurement bias and noise based on state. We propose a novel method called state-dependent, sensor measurement models (SDSMMs). This method: 1) learns to estimate measurement probability density functions directly from sensor measurements and 2) stochastically estimates an expected measurement (which includes measurement bias) and a measurement noise, both of which are conditioned upon the states of a robot and its environment. Throughout this paper, we discuss how to learn an SDSMM and use it with the Extended Kalman Filter (EKF). We then apply our method to solve a localization problem using a real robot dataset.

PANEL 19 - Physical Medicine and Neuroscience: Supervision Needs After Traumatic Brain Injury and Early Indicators of Mild Cognitive Impairment Among Older Adults

Balance Function: A Potential Early Indicator of Mild Cognitive Impairment Among Older Adults

By Karen Bell, *Neuroscience, University of South Florida*

Alzheimer's Disease (AD), the most common form of dementia, continues to lack a cost-effective, widely accessible approach to early detection. It is known that there are declines in sensory (i.e., hearing, balance) and motor systems several years before a formal diagnosis of dementia is confirmed, however, it is unclear which system(s) clinically distinguish between older adults with and without cognitive decline. There is evidence in support of a link between balance function and cognitive function, suggesting that changes in balance function may be a potential early indicator for changes in cognitive function or cognitive decline. This study examines balance function in older adults with and without mild cognitive impairment.

Supervision Needs Through the First 5 Years Post-TBI: A VA TBI Model Systems Study

By Deveney Chung, *Physical Medicine and Rehabilitation, University of South Florida*

Traumatic brain injury (TBI) can cause a wide range of cognitive, behavioral, and functional challenges that vary in severity and can have long-term effects on an individual's quality of life. The designation of traumatic brain injury as a chronic, lifelong condition has raised questions about the long-term needs of individuals as they recover and reintegrate into their communities after they leave rehabilitation. A large component of this is supervision needs or the requirement that adult caregivers be close by to provide assistance with activities of daily living and for safety. This dissertation will utilize a longitudinal data set of veterans and service members who have sustained a moderate to severe TBI to evaluate the supervision needs at 2- and 5-years post-injury and use growth curve analysis to model change over time for the first 5 years after TBI.

PANEL 20 - Current Topics in Political Science and Urban & Regional Planning

From Co-Production to Implementation: Bridging the Knowledge Management Gap Through Landscape Conservation Collaboratives

By Shanice Jones, *Urban & Regional Planning, Florida State University*

Large scale-collaboratives co-produce knowledge about ecological challenges that occur across multiple jurisdictional boundaries. The usefulness of these co-produced resources is limited, however, unless transferred and implemented into management practices. Despite the substantial literature on the collaborative process, the process for implementing co-produced knowledge into management practices remains unclear. This study seeks to determine how knowledge co-produced in large-scale collaborative groups influences implementation of natural resource management. The study explores this question in three large-scale collaborative cases using qualitative methods to identify similarities and differences between the participating actors' perceptions and behaviors toward the process of using scientific projects and tools. This work increases our understanding of the extent to which and how large-scale collaborative arrangements use scientific knowledge through implementation to manage natural resources.

Causes and Consequences of Oversight: Interbranch Power Equilibrium Theory

By Torrian Pace, *Political Science, University of Florida*

Highlighting multiple theoretical approaches is essential to clearly illustrating the micro and macro perspectives of the restructuring of an organization that is complex. What is transpiring is an institutional change dynamic driven by the principal agent model distinctively highlighted by punctuations and critical junctures. To understand the implementation and evolution of a transformative policy, we have to understand the politics at the moment to differentiate periods in time. The theoretical discussion between principal-agent and bounded rationality offers a micro perspective on oversight and institutional battles. Principal-agent offers a level of insight of the relational nature regarding agenda control and agent expertise between Congress and its members, the executive, and the FBI. Bounded rationality is useful when actors are not rational and choose to place more attention on one issue than another. Theoretical discussion of the macro perspective will focus on path dependence-junctures and punctuations of events or contractual discussions of the micro view.

A Change is Gonna Come: A Brief Look into the Voter Education Project

By LaRaven Temoney, *Political Science, University of Florida*

The Voting Rights Act of 1965 opened the door for many Americans to have a fair chance at voting for the first time in their lives. This was a huge victory in the Civil Rights Movement and beyond, but it was not the first victory, nor did it secure the marathon win. In 1962, the Kennedy administration established the Voter Education Project (VEP) to combat the rise in protests across the country. The VEP funded grassroots efforts for voter mobilization in target areas throughout the southern United States. Although it reached its height in 1968, the VEP did not officially end until 1992. The VEP was influential in the election of minority officials on all levels, as well as officials who represented the views of former disenfranchised voters. This paper will analyze whether or not the VEP's goals were fulfilled throughout the southern United States. Early findings may indicate that the VEP helped ensure voting rights throughout the south.

PANEL 21 - Industrial Manufacturing Engineering: Advanced Usage of Virtual Simulations and Analytics

Using Engineering Analytics to Investigate Attention in Virtual Worlds

By Fahad Alasim, *Industrial Manufacturing Engineering, University of Central Florida*

The objective of this research is to use advanced engineering analytics and technology to investigate attention in virtual worlds. It will examine 30 to 60 healthy participants' brainwaves in order to find which of the five brainwaves, delta, theta, alpha, beta, or gamma, is responsible for attention. Different hardware apparatuses will be used in this research, EMOTIV EPOC+ and Oculus Rift. The EMOTIV EPOC+ will collect and record brain signal, while Oculus Rift will allow participants to be fully immersed in the virtual world. The outcome of this study will improve the capability of learners to measure their performance and brain attention, which would enhance their learning outcomes.

Using Systems Engineering and Virtual Simulation To Develop Engineering Leadership Skills

By Charles Davis, *Industrial Manufacturing Engineering, University of Central Florida*

In order to create an authentic, practical and sound leadership training program, this research focused on examining and evaluating the undergraduate engineering student's leadership skills to realize their potential leadership strengths and weaknesses. By surveying engineering student leaders and finding their leadership styles, the results of this effort will be utilized as an input to a system engineering process to develop requirements for a sophisticated engineering leadership enhancement game. We hypothesize that, by understanding the current leadership style, we can build engineering leadership enhancement systems utilizing system engineering, cognitive assessment, and situational leadership and case studies displayed as games (using Virtual Reality). Our initial findings are documented in this paper.

PANEL 22 - Public Health and the Social Sciences: Responding to the Opioid Crisis Among Justice-Involved Juveniles

School Dropout Predicts Past-30 Day Opioid Misuse Among Juveniles

By Skye Bristol, *Social Science, University of Florida*

Research indicates that adolescent and young adults misuse opioids more than other age groups. Risk of opioid-related relapse, overdose and death spike after former inmates enter their communities. Thus, stakeholders concerned with the opioid misuse (OM) crisis have begun to pay closer attention to justice-involved children (JIC) to understand OM initiation and progression among justice-involved populations. Studies show that adolescents who are not enrolled in school have a higher risk of substance abuse and justice-involvement. This study hypothesizes that those dropouts who become involved in the juvenile justice system are particularly vulnerable to OM. The study analyzed 79,960 participants from the Florida Department of Juvenile Justice (FLDJJ). The independent variable was school dropout based on current enrollment status at first screen, and the dependent variable was past-30-day OM at final screen. To test the hypothesis, bivariate and multivariate logistic regression analyses were employed. Nearly 3% of the statewide sample met criteria for P30D OM; and nearly 62% of P30D users were middle or high school dropouts. P30D users were more likely to be male, White and within the $15,000 to $34,999 household income bracket.

PANEL 22 - Public Health and the Social Sciences: Responding to the Opioid Crisis Among Justice-Involved Juveniles

The Association Between Somatic Complaints and Past-30 Day Opioid Misuse Among Justice-Involved Children

By Sarah Clerjuste, *Social and Behavioral Sciences, University of Florida*

Individuals in the criminal justice system are especially vulnerable to the adverse effects of opioid misuse. Research on justice-involved children (JIC) is needed to uncover the variables that predict opioid misuse initiation to prevent misuse or reduce harm in this population. The study examined statewide data on 79,960 JIC in the Florida Department of Juvenile Justice database. Logistic regression was employed to investigate an ordinal measure of somatic complaints at first screen. Compared to those with no history of somatic complaints, JIC with a history of one or two somatic complaints were 1.23 times more likely to misuse opioids in the past 30 days and those with three or four somatic complaints were 1.5 times more likely to meet criteria for past-30-day opioid misuse. Results show that these individuals may consume illicit or nonmedical prescription opioids to manage somatic symptoms, indicating that increased access to healthcare may reduce misuse.

The Association Between Drug Education Programs in the Juvenile Justice System and Opioid Misuse Among Justice-Involved Children

By Lara Gesen, *Public Health, University of Florida*

Limited research has been conducted in the United States that explains how different factors directly or indirectly contribute to opioid misuse (OM) among justice-involved children (JIC). The aim of this study is to determine who is likely to receive drug education as their primary drug treatment within the juvenile justice system and hypothesizes that drug education will be ineffective in the context of deviating JIC from OM. The study leverages statewide data from FLDJJ to study the relationship between drug education among JIC who have tested for opioid misuse within the Florida justice system. The data is categorical, and the outcome is binary where the dependent variable is the attendance of drug education classes split into 5 categories. This research is the first to examine the association between drug education and past 30-day opioid misuse among JIC.

PANEL 23 - Social Work and Sociology: Pathways to Treatment for Victims of Intimate Partner Violence and to Raising Grandchildren

Pathways to Raising Grandchildren: Parenting a Second Time Around or Twice at the Same Time?

By Julia Arroyo, *Sociology, University of Florida*

Three million children in the United State are raised by grandparents at a given time, largely due to parental adversities. Supporting grandparents while transitioning into raising grandchildren can promote well-being of vulnerable children. To craft supportive policies, we must first understand the nature of this phenomenon. Although ¼ of U.S. children raised by grandparents are Latinx, no study describes why. To address this gap, I interviewed 12 Latinx grandmothers raising grandchildren. Half described a swift transition into raising their grandchildren following a mother's incarceration (n=2) or another crisis that led a parent to request care (n=4). The other half described an extended transition that began with babysitting a grandchild whose mother never fully resumed care (n=2) or caring for grandchildren due to growing concerns about parental substance abuse (n=4). Results show that many Latinxs come to raise grandchildren through extended transitions that are quite strenuous, suggesting that targeting supports for this overlooked group can protect the well-being of grandparents and grandchildren.

Evaluating Treatment for Trauma Bonding Among Female Victims of Intimate Partner Violence: A Single-Case Design Study

By Cherelle Carrington, *Social Work, Florida International University*

Many victims find it difficult to separate from an abusive partner and are therefore prone to a high rate of reunion and subsequent renewed violence. The purpose of the proposed study is to assess the efficacy of Traumatic Incident Reduction and Trauma Bonding Protocol in (1) decreasing traumatic bonding; (2) increasing the victim's propensity for change; (3) decreasing the victim's anxiety and depression; and (4) increasing the victim's safety-seeking behaviors. A single-case, nonconcurrent multiple-baseline design will be employed to evaluate the effects of treatment. A convenience sample of 24 participants will be selected from women seeking treatment at the Trauma Resolution Center in Miami, Florida. After random assignment to baselines of various lengths and the completion of those baseline phases, intimate partner violence victims will participate in treatment. The results of the proposed study will provide information on whether these interventions have beneficial impact on a victim's attachment to her abuser, propensity for change, affective states, and safety-seeking behaviors.