

2021 ANNUAL UNDERGRADUATE RESEARCH CONFERENCE

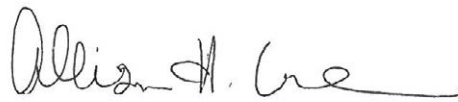


UNIVERSITY of
SOUTH FLORIDA



Dear USF Students, Colleagues, and Guests,

I'm delighted to welcome you to the first-ever OneUSF Undergraduate Research Conference. In a year that has seen great changes, both in terms of our consolidation into one university and the challenges posed by Covid-19, we have been delighted to see continued interest from undergraduate students and their faculty mentors in engaging in research. Known to be a high-impact practice, undergraduate research affords students the chance to create new knowledge in fields they hope to work in someday, generating not only an exciting learning opportunity, but indeed making a real difference in people's lives and the health of our planet. We hope you are as impressed with these 184 projects as we are!



Allison H. Crume, Ph.D.

Dean of Undergraduate Studies

CONFERENCE ORGANIZING COMMITTEE

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ACKNOWLEDGEMENTS

The Undergraduate Research Conference would like to acknowledge all of the individuals who have contributed to mentoring our USF undergraduate scholars. We recognize the desire students have for getting involved in research, and thanks to you, more students are making unique contributions to their field of discipline. We would also like to thank Undergraduate Studies, and all of the USF Departments that have assisted and collaborating with our marketing efforts; You have assisted us in making this virtual conference a huge success.

#GoBulls



Dear Students and Colleagues,

On behalf of the University of South Florida, it is my pleasure to welcome you to USF's annual Undergraduate Research Conference. USF is a top-50 public research university, as designated by U.S. News & World Report. Our research and scholarship, to which students are essential contributors, focuses on the frontiers of new knowledge, in global issues such as environmental sustainability, public health, and other areas.

Our student researchers are at the center of our work to build a better tomorrow. This conference promotes and showcases educational opportunities that help students build the skills they need to be successful, both in the workplace, and as conscientious global citizens.

I could not be more impressed by our students, their peers, and their faculty mentors, who have risen to the occasion of presenting their work under continuing, unprecedented conditions with unique challenges. For their passion for high-level scholarly work, their problem-solving acumen, and their determination to engage in the spirit of collaboration and discovery, I extend my congratulations to our talented students and their teams.

I'd like to extend my gratitude to the Office of Undergraduate Research for organizing and facilitating this meaningful opportunity for students to present their work. I also want to take a moment to recognize our faculty experts, role models, and mentors. Your collaboration and guidance is a testament to the USF mission – providing access for student success – and it will continue to serve our students well.

Finally, I wish to thank our many faculty volunteers and staff who moderate these conference sessions. Your service reinforces both the rigorous, knowledge-making drive of our world-class institution, as well as our commitment to the spirit of collaboration and collegiality. Thank you to our students and faculty for bringing out the best our university has to offer.



Dr. Ralph C. Wilcox

Provost and Executive Vice President

Yoga for Mental Health

Falak Abbasakoor

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

As society has become more advanced an emphasis on mental health and physical health has been seen. Yoga has been the subject of research for many decades but now has been seen as a therapeutic purpose for many diseases like mental stress, anxiety, depression and even heart disease. Yoga is an ancient practice originated in India to the point of around 3000 BCE which was started as a way for spiritual development amongst the Brahmans to train the body and mind, to self-observe, and become aware of their own nature. Yoga involves using one's limbs and own breath to reach the point of self-realization. This project draws on a multitude of published medical literature and accounts of practitioners to assess the impact of yoga practice on conditions such as anxiety and depression. Yoga can act as a holistic way of life leading to a state of healing in a physical, social, mental and spiritual wellbeing to alleviate symptoms of anxiety and depression.

Benefits and Methods of Integrating Social Studies into Early Childhood Education

Jessica Ahwash & Jordan Bracewell

Faculty Mentor: Ilene Berson (College of Education)

Integrating social studies instruction is beneficial for students for a number of reasons, but predominantly due to the fact that it gives students the knowledge needed to be informed citizens in the classroom community as well as their broader community. This teacher inquiry project further focuses on how social studies can be incorporated into the classroom, with a specific focus on its integration within Language Arts. The question guiding this inquiry is: How can I ensure that social studies is not lost in instruction? Data collection included anecdotal notes, audio recordings, and student work samples. Each of these methods allowed us to notate short, brief comments as well as more descriptive and in depth data from the integration process. The data were coded to identify trends. Our findings identify strategies to integrate social studies into language arts instruction, note the benefits for students when they are introduced to social studies concepts and skill development, and highlight students' reactions when engaged in learning experiences that integrate social studies into instruction. Research about the methods of integrating social studies into a public-school curriculum where it is often omitted is advantageous because it introduces students to background knowledge that is essential in order to succeed in other academic disciplines.

Reduction of Behavioral Manifestation of Tinnitus Through the Utilization of BK Channel Opener

Manisha Antony & Aarti Patel

Faculty Mentor: Joseph Walton (Department of Communication Sciences and Disorders)

Tinnitus, or "ringing in the ears", is a prevalent hearing disorder. This study evaluates the effect of the drug candidate, CS0022, on the behavior of male CBA/CaJ mice with acoustic trauma (AT)-induced tinnitus. This compound is known to target the large-conductance calcium and voltage-activated potassium channel, or BK channel. This channel regulates neuronal excitability in the peripheral and central nervous system. Our hypothesis is that positive modulation of BK channel function mitigates changes in central auditory system activity that support the tinnitus percept. Behavioral evidence of tinnitus in mice models can be assessed through the quantification of the acoustic startle reflex and prepulse inhibition.

This study used Gap-Prepulse-Inhibition of the Acoustic Startle Response (GPIAS) to determine the presence and extent of tinnitus in the subjects. The GPIAS assay was first conducted on each mouse for baseline readings prior to AT with a 16 kHz narrowband noise. Post-AT behavioral assessments were conducted 7 to 9 weeks after trauma to select mice that developed tinnitus, while effect was assessed 10 to 11 weeks after trauma. Consecutively, Auditory Brainstem Responses (ABR) were collected to determine hearing thresholds of the subjects and helped evaluate the severity of threshold shifts. The findings suggest that treatment with CS0022 can improve AT-induced tinnitus in mice by modifying BK channels. The GPIAS results were statistically analyzed using a computational approach called Gstar. The ongoing analysis will focus on determining the relationship between the presence of tinnitus and the influence of treatment on permanent hearing loss.

A Systematic Review of Studies on Applied Behavior Analytic Social Interaction Skills Interventions for Young Children with Autism Spectrum Disorder

Selina Arvelo & Danielle Russo

Faculty Mentor: Kwang-Sun Blair (Child & Family Studies)

Children with autism spectrum disorder (ASD) have difficulties developing social interaction skills. Interventions in the early school years are more likely to have noticeable positive effects on later skills and school success for these children. The purpose of this review was to summarize the current literature on school-based social interaction skills interventions for young children with autism spectrum disorder (ASD). A systematic literature search was conducted to identify studies that used applied behavior analytic (ABA) interventions to improve the social interaction skills of children with ASD aged 4 to 8 in school settings. Using systematic procedures, studies that met established inclusion criteria were reviewed to examine the characteristics of the studies and to identify the ABA interventions that are most cost-effective and efficient in increasing social interaction skills in young children with ASD served in school settings. The findings of the current review suggest the following implications for practice and future research: (a) proving implementation support to teachers to improve treatment fidelity, (b) evaluating social validity of the ABA interventions that require the shortest duration and the least number of training sessions for both teachers and children, and (c) promoting intervention maintenance and generalization effects.

Biomechanical Modeling and Analysis of NASA CIF Lunar Surface Operations

Ryan Austin & Niraliben Patel

Faculty Mentor: Stephanie Carey (College of Engineering)

In microgravity conditions, the general orientation of the body can be easily altered, resulting in astronauts facing several challenges. From past lunar missions, it has been observed that astronauts can potentially fall due to this alteration caused by decreased gravity levels, as humans need at least 15% of the gravitational force present on Earth to properly orient themselves. Due to difficulties in maintaining balance, as well as other factors such as lack of proper nutrition, muscle and bone loss, a shift in body fluid distribution, and inadequate amounts of sleep, astronauts often struggle to complete tasks due to high fatigue levels, even with the amounts of countermeasures in place. To better understand the feasibility of these and provide an in-depth analysis of the movement involved in these tasks, a simulation of the task itself can be conducted in the lab, with force and motion data being collected using the Vicon motion capture system. The motion capture system allows for a clear view of the body's mechanisms as different tasks such as walking, digging, lifting, and climbing stairs are completed. After motion and force data is collected, Vicon Nexus can be used to analyze the kinetics and kinematics

involved in the tasks. With this representation of the human body, a deeper understanding of the movement of astronauts in a lunar environment can be recognized. The analyzed data and results from the completion of these lunar tasks can serve as a precursor to further in-depth work for biomechanical modeling for NASA.

KNOW Health, No COVID

Mark Amir Awad, Kirolos Youssef, Paul Adel Mikhail, & Victoria Maddex

Faculty Mentor: Donna Ettel-Gambino (Judy Genshaft Honors College)

Compliance with CDC guidelines by the public may impact the extent that COVID-19 may be damaging to our community. Due to the lack of data in the literature on this devastating virus, much electronic information is being released by various sources, many of which are unreliable, not peer reviewed, and may possibly include false information regarding the virus. This study is focused to determine the extent that college-level students from the University of South Florida, in the Judy Genshaft Honors College have a clear understanding of the COVID-19 virus. The population consisted of survey responses from students enrolled within the Judy Genshaft Honors College. A quantitative causal comparative approach was utilized. Initially a MANOVA was conducted to identify .038 significant trends across groups. The independent variable was the insurance status of the participants. The dependent variables were the participant responses to the survey questions regarding: compliance with social distancing, handwashing knowledge, cough/sneeze etiquette, mask compliance, and compliance with handwashing in public. There was one statistically significant finding as evidence by Wilk's Lambda 0.96 (8,804) $p < 0.038$. Overall, 99% of participants knew about handwashing for at least 20 seconds or cleaning hands thoroughly. The presence of insurance may potentially offer an insight into the understanding of COVID-19 precautionary measures as well as a method to potentially avoid the virus. This study implies that the Judy Genshaft Honors college students understand the COVID-19 guidelines as well as the extent that their compliance will keep the students at the university free from COVID-19.

Memory Care and Medicaid in Rural Florida

Joey Ayala

Faculty Mentor: Lindsay Peterson (School of Aging Studies)

Background: Older adults in rural areas experience greater risk for Alzheimer's disease, which increases the need for long-term care (LTC) facilities that can accommodate their needs. Older adults seeking memory care in rural Florida face a significant disparity in access to assisted living communities (ALCs) compared to urban areas. Additionally, those in rural areas tend to have less access to ALCs that accept state subsidized health care. The purpose of this research is to investigate access to ALCs with memory care in Florida in relation to Medicaid acceptance. Methods: The two most rural and two most urban Managed Medical Assistance (Medicaid service) regions were selected for analyses, comprising 21 counties and 6 counties, respectively. Data on ALCs were obtained from Florida's Agency for Healthcare Administration. This information included present memory care services, acceptance of Medicaid through the state supplemental payment assisted living waiver (ALW) and acceptance of optional state supplement (OSS). Results: Only 4 of the 21 counties in the two rural regions had at least one ALC that provided memory care. All six counties in the two urban regions had multiple ALCs with memory care. Rural ALCs that offered memory care had a lower Medicaid acceptance rate and roughly equal rates for OSS acceptance when compared to urban regions.

Understanding the Benefits of Ayurvedic Focused Integrative Medicine

Nidhi Bangalore

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

Ayurvedic medicine is considered an alternative practice of healing that focuses on the interconnectedness of the body, mind, and life forces. Ayurveda is most commonly practiced in India, and has been practiced successfully for thousands of years. Integrative medicine is the combination of both modern allopathic practice and alternative healing, such as Ayurveda. The purpose of this systematic review is to understand if Integrative Medicine using Ayurveda is more beneficial than the conventional methods of modern medicine. Since the integrative approach includes the healing of the physical, mental, spiritual, and emotional aspects of a person, it is hypothesized that this approach will show faster and complete recovery compared to modern medicinal practices. The articles and studies that were analyzed revealed that Ayurvedic Integrative Medicine is not only faster and more successful in healing diseases, but this approach is able to obtain healing results that modern medicine alone cannot achieve.

The Effectiveness of Antiseptics on Protein Synthesis of Escherichia Coli

Helena Beltran & Veronica Daoud

Faculty Mentor: James Riordan (Department of Cell Biology, Microbiology, and Molecular Biology)

Escherichia coli is a gram-negative bacterial organism that is found in the intestines of humans and animals, and is an important part in digestion. However, there are pathogenic strains of E. coli that can cause illness within or outside the intestinal tract. For example, a common infection of the intestines is gastroenteritis, which results in abdominal pain when pathogenic strains of E. coli enter the intestinal tract. These types of infections can be detrimental to one's health, and it is imperative to understand how these infections from this particular bacteria can be prevented; therefore, this study focuses on understanding why and which antiseptics are most effective. The different antiseptics were hydrogen peroxide, isopropyl alcohol, ethanol and povidone-iodine, in which chads were dipped into these solutions, then placed on the petri dishes with E. coli. As antiseptics prevent bacterial growth, the chads produced a zone of inhibition, thus, the height and width of these zones were measured to analyze the results. The data confirmed the hypothesis that there would be a statistically significant difference between each antiseptic and control group. The isopropyl alcohol had the largest zone of inhibition, displaying that this antiseptic is most effective in preventing the protein synthesis of the E. coli to inhibit growth. These findings are significant because it enhances our knowledge on the most effective type of antiseptic that can be used to prevent an E. coli infection when soap and water are not available.

The Onset of Human Trafficking in Africa through Medical Perspectives

Xoe Bergman, Julia Girgis, Feross Habib, & Aarti Patel

Faculty Mentor: Lindy Davidson (Judy Genshaft Honors College)

Due to globalization, interactions between Africa and the rest of the world have expanded beyond its continent. As a result, native-Africans scattered all over the world due to forced and voluntary migrations- a phenomenon known as the African Diaspora. Exploitation of the African Diaspora networks have paved the way for recruitment and transportation of the victims of human trafficking due to language barriers, vulnerability, and lack of knowledge of procedure for the migrants involved. In fact, much of today's human trafficking would not be possible without these diaspora networks.

Human trafficking is defined as the exchange of human beings for the price of forced labor, sex or other means of commercial acts. The increase of human trafficking chains caused victims to experience severe psychological and physical health complications, including PTSD, trauma, substance abuse, and genital mutilation, as well as physical, mental and emotional abuse. Consequently, victims are more susceptible to other diseases and psychological effects. In order to fully understand and observe the consequences of human trafficking and what the victims experience, retrospective analysis of past data and current statistical data reveal the severity of the situation, as well as the vulnerability of the victims involved. This research seeks to personalize the victims of human trafficking in Africa to raise awareness to the surrounding communities and organizations in order to emphasize the importance of resolving this issue.

Ready, Set, Grow! Using ORCA Food Digester Fluid to Support Sprouting and Growth of *Spinacia oleracea* (spinach)

Megan Black

Faculty Mentor: John Osegovic (Chemistry)

Food waste has many fates including being sent to landfills where it can potentially turn into methane, a potent greenhouse gas. The ORCA food digester is an alternative to landfills in which food waste is turned into an environmentally safe liquid and reducing methane production. Previous work at USF has suggested that the liquid produced from the ORCA food digester encourages the growth of grass. The aim of this study was to determine whether liquid taken from the ORCA food digester would support the germination and growth of *Spinacia oleracea* (spinach). There was a control group and three experimental groups with increasing concentrations of ORCA food digester liquid. The plants were watered with their specified ORCA concentration solution and growth was characterized by observations and height measurements. Data shows that the plants in the higher concentration of ORCA liquid groups are sprouting much later than the plants in the control group and the lower concentration of ORCA liquid group thus indicating that high concentrations of ORCA liquid do not support the germination of spinach. Future research is indicated to determine if ORCA food digester liquid could be beneficial to the germination and growth of other plant species.

Home Away from Home; Compliance with the Covid-19 Conundrum

Daniel Matthew Borely; Ryan Che Michael Austin, & Victoria Lynn Maddex

Faculty Mentor: Donna Ettl-Gambino (Judy Genshaft Honors College)

The public's knowledge of COVID-19 guidelines may affect their behavior and ultimately the transmission rate of this highly contagious virus. There have been limited studies on COVID-19 due to its relatively recent emergence however, there have been numerous studies on similar viruses. Research suggests that compliance with the guidelines in addition to widespread distribution of the COVID-19 vaccine may mitigate spread of the virus. The purpose of this study is to better understand Judy Genshaft Honors College students' compliance with mask wearing, social distancing, and willingness to receive a vaccine. The population will consist of survey responses from students attending the Judy Genshaft Honors College at the University of South Florida. A quantitative causal-comparative approach was utilized. Initially, a MANOVA was conducted to identify significant trends across groups. The independent variable was the participant's living arrangements. The dependent variables were the participants' responses to the survey questions regarding: the student's mask use while in public, intent to receive vaccine, and CDC guidelines with respect to physical distancing. Overall, 95% of students reported that they practice physical distancing (NS), 95% of participants reported that they use their masks in public (NS), and 82% responded

that they intend to take the vaccine when it becomes available (NS). The results of this pilot study research indicated that there were no statistical differences among groups. Indications for future research is to increase the sample size. This is the first of its kind and additional development with a larger sample size may yield better results.

Accessibility of Music Programs in Florida Assisted Living Communities with Memory Care

Mia Borja, Carlyn Vogel, & Dr. Lindsay Peterson

Faculty Mentor: Hillary Rouse (School of Aging Studies)

ALCs in Florida offer memory care services to older adults with Alzheimer's disease and related dementias (ARD). Recent research highlights how implementing music can significantly improve outcomes for older adults with ARD. Despite this research, music activities in memory care ALCs are not universally available. The goal of this research is to examine the accessibility of music activities in memory care ALCs in Florida. Data were collected from the Florida's Agency for Healthcare Administration. The variables included the presence of memory care and music activities, location, Medicaid acceptance, and specialty licenses that enable ALCs to serve residents needing specific nursing care. The location of ALCs was categorized as rural or urban based on 2010 U.S census data. Of the 3,090 ALCs in Florida, 1,921 (62.2%) offered music activities, 683 (22.1%) offered memory care, and 603 (31.4%) offered both memory care and music activities. Less than half of ALCs with memory care and music activities accepted Medicaid and a majority of these did not have a specialty license. Additionally, only 13 ALCs in rural counties included both services. The results suggest there is significant rural disparity in access to ALCs with memory care and music activities in Florida. Older adults needing financial assistance or specialty care that could be provided with different licenses have less access to ALCs providing these two services – services that will be increasingly important as the number of adults with ARD in Florida grows as predicted.

Incorporation of Lysine into PNIPAAm to Enhance Protein Adsorption

Alexandria Brady-Mine

Faculty Mentor: Nathan Gallant (College of Engineering)

Improving cell adhesion to poly(N-isopropylacrylamide) (PNIPAAm) polymer is essential to the development of new stimuli-responsive tissue engineering technologies based on PNIPAAm. Cell adhesion to PNIPAAm gels is poor due to minimal protein adsorption. Based on our observation that coating the surface with polylysine enhanced cell adhesion on PNIPAAm gels, we tested the hypothesis that incorporation of lysine-like monomers into the NIPAAm network would enhance protein adsorption. A series of cross-linkable NIPAAm polymers incorporating 0-5% lysine was synthesized. Fibronectin was coupled onto 10 μ m carboxylated polystyrene microparticles. The beads were then absorbed on circular glass coverslips coated with the crosslinked PNIPAAm polymer films. The adhesion strength of proteincoated microparticles was quantified using a spinning disk which exposed each disk to a range of hydrodynamic shear stresses. The adhesion experiments were conducted with PNIPAAm polymers in both the solvated and collapsed states.

The Influence of Examiner Fidelity on First Graders' Oral and Written Measure

Jade Brown

Faculty Mentor: Trina Spencer (College of Behavioral & Community Sciences)

The extent to which examiners adhered to assessment protocols can influence the outcomes of a study. Yet, assessment fidelity data are rarely reported in evaluation studies (Reed et al., 2014). Little is known about the extent to which examiner adherence to standardization procedures influence student outcomes on oral and written language measures. Using extant data from a randomized group study investigating the effects of an academic language intervention on 155 first grade students' oral and written language skills, we examined assessment fidelity. Expository oral retell (ERO) and narrative writing (NGW) language samples were collected from students at three time points: pretest, posttest and follow up. Research assistants, who were blind to student group assignments, independently transcribed and scored samples. About 30% of samples were randomly selected for fidelity examination, which involved another research assistant listening to audio recordings of the data collection session. Fidelity and student outcomes for ERO and NGW measures were analyzed using a two-level hierarchical linear model (HLM) with participant data (Level 1) nested within schools (Level 2) across three time points (pretest, posttest, and follow-up). We hypothesized that low examiner NGW and ERO fidelity to assessment standardization will negatively affect student outcomes.

Exposure to an Augmented Acoustic Environment Improves Signal-in-Noise Detection in Old CBA/CaJ Mice

Dimitri Brunelle

Faculty Mentor: Joseph Walton (College of Behavioral & Community Sciences)

Growing evidence suggests that neural plasticity can aid in the prevention or treatment of age-related hearing loss (ARHL). Many of these studies, conducted in both animal models and humans, utilized auditory training or passive listening to modulate and assess neural plasticity. Moreover, there remains a need for elucidation on the underpinnings of hearing improvement in challenging listening situations, such as comprehending speech in background noise. There is a paucity of published reports that have examined the effects of targeted augmented acoustic environments on hearing function, specifically signal-in-noise (SiN) processing. An augmented acoustic environment (AAE) is a paradigm first reported by Turner and Willott (2000) in which animals are exposed to a non-traumatic sound for a long period of time. They found that auditory function improved in a developmental hearing-impaired mouse model exposed to AAE. In this study we used modification of the acoustic startle response to determine whether a SiN AAE could improve SiN processing in mice with age-related hearing loss. 9 aged CBA/CaJ mice (20 months) were exposed for 2 months to an AAE consisting of a continuous Gaussian wideband noise to simulate real-life workplace background noise, with a 16 kHz tone burst presented at intensities of +3, +6, +9-, and +12-dB SPL above the background. Aged mice in the AAE group showed statistically significant improvement in detecting the signal in background noise as evidenced by increases in PPI following exposure 2 months post when compared to baseline. AAE animals also demonstrated significant improvements across several tonal prepulse frequencies at 10, 16, and 24 kHz, demonstrating that the ameliorative effects of the exposure are generalizable across the frequency domain. This study demonstrates the consequences of exposure to a SiN AAE in the aged auditory system and plasticity with respect to auditory perception in noisy environments.

How Saving Ginkgo Biloba Could Save Humankind: Palaeobotanical Future

Victoria Anne Burg

Faculty Mentor: Anna Dixon (Department of Anthropology)

Since humans have been around for millennia, they have come to learn a lot about many plants; but some plants have been around for longer than humans, like the Ginkgo biloba tree. It is in instances like this where humans yearn to understand the natural world around them and come to find that it is beneficial to them. Ginkgo biloba is one of thousands of plants that is medicinally beneficial to humans. It has long been a traditional medicine in China, being used to treat respiratory and mental conditions for thousands of years. In recent decades, this plant has finally been taken seriously in Western science, as a multidisciplinary approach is taken to understand exactly how Ginkgo is beneficial to humans while also avoiding the potential lethality it can bring. But will humans destroy this species before we can fully understand how it can help us? Only time will tell the future of this palaeobotanical giant.

A Study of Lambda Permutations

Andrew Burley

Faculty Mentor: Sherwin Kouchekian (Department of Mathematics and Statistics)

Infinite series have been a source of mathematical interest since antiquity. In their 2004 publication, "Creating More Convergent Series" S. Krantz and J. McNeal describe a subset of permutations of the natural numbers that are convergence preserving for any absolutely convergent infinite series while their inverses are not. These permutations are titled "Lambda-Permutations". We look into the specifics of these permutations, as well as relevant literature and generalizations known about all convergence preserving permutations. Namely, F. W. Levi's notion of a "bunch" and its relation to preserving of convergence. We generalize an example permutation of Krantz and McNeal, and explore certain specifics of this generalization relating to the "bunch-number".

Charting Galaxies: A Form of Exploration

Andrea Bustamante

Faculty Mentor: Heather Sellers (Department of English)

"Charting Galaxies" is both a form of exploration and an exploration of form. I created a hybrid literary invention that combines storytelling, website design, game theory, and interactive mapping. I wanted to create a new literary form that represents the spatial distances inherent in multiculturalism and the role of memory and creative writing in developing individual and collective identities. I also wanted to move the reader from a passive and receiving role into an active and intentional role. In "Charting Galaxies," the reader must actively engage with every component in order to develop its meaning and, due to its interactive elements, the form unravels differently for each reader. Through this project, I learned that hybrid literature is an alternative form of storytelling that not only combines various artistic mediums, replicating our diverse and multicultural world and my own multicultural identity, but also becomes a true and alive conversation between two people, the artist and reader, separated by space and time. Art, including "Charting Galaxies," connects people by serving as a platform through which authors can chart their own galaxies (the stories they carry) and make meaningful connections with their audience, no matter the distance that separates the two entities, whether that may be in terms of space, identity, background, or beliefs.

Perceived Social Capital & Risky Health Behaviors in Diverse Middle-Aged and Older Adults

Michael Buxton, Sneha Saravanan, Michael Kaczor, & Bashak Newman

Faculty Mentor: Maureen Templeman (School of Aging Studies)

Perceived social capital, defined as perceived neighborhood quality and social support from friends and family, can have both positive and negative impacts on health behaviors. Data also suggests that consequences of alcohol and substance use disorders, as well as smoking, vary by age, sex, and race/ethnicity. It is important to understand how social capital affects different groups' engagement in risky health behaviors, such as smoking, alcohol use, and substance use. We sought to test if there were significant relationships between perceived social capital and engagement in risky health behaviors among diverse middle-aged and older adults. Based on the social determinants of health, we hypothesized that beyond demographic factors, lower perceived social capital would increase engagement in risky health behaviors. Our sample included 4709 Black and White participants ages 40 and above from MIDUS, a population-based study that examines various aspects of midlife development. Hierarchical linear regression analyses were used to determine if different elements of social capital explain a statistically significant amount of variance in engagement in risky health behaviors, after accounting for sex, race, and level of education. We found that, in addition to demographic factors, lower perceived social capital was associated with more engagement in all three kinds of risky health behaviors. However, specific aspects of perceived social capital are related to different risky health behaviors. These results suggest that interventions targeting various risky health behaviors should be modified for specific aspects of social capital.

How Does Visual Word Forms and Lexical Status Interact with Sentence Context: A Proposed Event-Related Potential Study

Neslihan Caliskan & Sara Milligan

Faculty Mentor: Elizabeth R. Schotter (Department of Psychology)

Readers use their expectations about upcoming words, based on the preceding sentence context, to facilitate word recognition. Consequently, processing of non-words that are visually similar to expected words is also facilitated by a constraining sentence context. However, less is known about how non-words are processed in sentence structures that do not generate strong expectations. The N400 is an event-related brain potential component that reflects the amount of effort required to recognize a word. For example, the N400 amplitude is less negative for real words compared to non-words. Importantly, the lexicality effect disappears within a sentence context as long as the non-word/word is visually similar to the most expected word (Laszlo & Federmeier, 2009). It is unclear whether the disappearance of the lexicality effect is due to the reader's expectations, which reduce their visual processing of the word, or due to more general aspects of sentence reading that affect word recognition. To investigate this, we will replicate Laszlo and Federmeier (2009) and include neutral sentences that do not generate expectations for a particular word, thereby not reducing the need to process the visual aspects of the text. If the lexicality effect is present in the neutral sentences, it would mean that strong expectations generated from a sentence context reduce readers' use of visual input when recognizing a word. Alternatively, if the lexicality effect is absent in the neutral sentences, it would suggest that readers pay less attention to visual forms of words when they are embedded in a sentence context compared to when they are perceived in isolation.

Analysis of Bacteriophage Use in Harmful Algal Bloom Control

Michael Chase, Mae Horne, & Ryan Morgan

Faculty Mentor: Richard Pollenz (Cell Biology, Microbiology and Molecular Biology)

Bacteriophages are the most abundant organism on Earth and these viruses infect specific bacterial hosts in order to replicate. Phages play a role in the ecological relationships in many habitats being involved in a constant war between bacteria and their symbionts. *Karenia brevis* is a toxic dinoflagellate primarily responsible for the environmentally damaging red tides in the Gulf of Mexico. While phages do not infect dinoflagellates, they play a role in the dynamics of algicidal bacteria. Phage tail-like particles can arise in bacteria due to lysis or progeny, which can result in R-type tailocins or Type-6 Secretion Systems. These particles can increase a bacteria's host range as well as its viability in the environment. The algicidal bacteria *Cytophaga* strain 41-DBG2 is known to reduce *K. brevis* activity and reproduction. A possible bioengineered *Cytophaga* strain to express T6SS or R-type tailocins with the use of a *Cytophaga* phage is a proposed mechanism to limit *K. brevis* growth. Lytic agents have been exposed onto *K. brevis* with moderate success, but research suggests there could be bacterial interactions that can be targeted in *K. brevis* growth. Research suggests that if *Cytophaga* is not viable then other bacteria can be used as pathogenic devices to lyse bacteria impacting *K. brevis*. Use of phage in bioremediation has become an increasingly viable option, but policies and research is limited due to public opinion. Future research is needed on the use of T6SS or R-type tailocins in the environment as well as use of phage bioremediation in red tide.

The Ayurvedic Method of Healing

Anushka Cheruvattath

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

Ayurveda, which originated in India thousands of years ago, is a holistic system of healing which focuses on maintaining the wellbeing of the whole through natural forms of healing. The balancing of the three Doshas, which are considered to be energy or life forces, are critical to the wellbeing of the body, mind, and spirit. There are many forms of Ayurvedic healing that will be addressed in this project, each of which deal with different types and subsets of illnesses. This research essay will focus on the basics of Ayurveda before delving into its application in both pregnancy and mental illness treatments. Additionally, the relationship between Ayurvedic methods and biomedicine, or Western medicine, will be explored through evidence obtained by research projects based in Mysore, India and Sri Lanka.

Striving for Success with English Language Learners in the Classroom

Mollee Chisholm, Payton Curry, Brittany Brammer, & Julia Nunez

Faculty Mentor: Ilene Berson (College of Education)

Throughout this teacher inquiry project, our goal was to gain more insight on how to differentiate instruction and how to further support English Language Learners (ELLs) during whole group instruction. We know from the research literature that we must include the students, modify our speech, scaffold accordingly, and build autonomy. From this inquiry, we plan to answer the question "How can we better support ELLs within the classroom?" More specifically, we want to take a close look at how to better support ELL students within the classroom while taking into account their needs in learning the English Language. Our students range from Kindergarten to second grade, or ages five to eight years old, providing us with a diverse

range to explore different instructional methodologies and assessment approaches to enhance ELL student outcomes. Our data include a collection of students' benchmarks and diagnostic assessments, work samples, photographs, anecdotal records and transcriptions of video recordings. Educator-posed questions on the main lessons, extension activities, learning targets, and student reflection were coded for data analysis. These findings have suggested that strategic seating arrangements, cultural awareness, adequate wait time, and scaffolding are key to supporting ELLs in their academics. After gathering our results, we have identified new strategies, techniques, and methods that allow us to support ELL students in an educational setting.

The Decrease in Mental Health Stigma in India from 1947 to Now

Riya Choksi

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

Due to the mental health stigma embedded in India's culture, there have been many social and medical repercussions for Indian people with mental illnesses (PWMI). A century ago, patients in treatment facilities were not even allowed to see their families. Since then, the mental health stigma in India has greatly improved, especially over the last two decades. Implementation of programs such as community-based intervention and telepsychiatry has reduced the stigma established in the public. This research project aims to compare the financial, medical, and social support that PWMI in India received in the 1950s with the current response for PWMI in the last twenty years. Through increased legal action, medical intervention, and social acceptance, current patients have considerably higher access to care and support for their mental illness. Despite this progress in Indian urban cities, however, the vast majority of village health workers in rural areas still believe mental illness is not a real medical condition. Such misconceptions require education in mental health and enforcement of healthcare policies. It is important to analyze the progress made to understand which mental health stigma barriers still need to be dismantled.

Measuring Inhibition in 3-year-olds Using the Day-Night Stroop Task

Merlin Chummar & Lauren Labib

Faculty Mentors: Darlene DeMarie (College of Education) & Jennifer Bugos (College of the Arts)

The purpose of this literature review was to examine inhibition assessed in young children using the Day/Night Stroop task. A search of the literature resulted in 51 primary research papers administering the Day/Night Stroop task to three-year-old children. All studies were conducted between 2010 and February 2021. For this review, we created an Excel spreadsheet we compared procedures and results among studies and calculated the percentage of studies that included different stimuli type, number of stimuli administered, administration of practice trials, and if so, how many practice trials, and attrition. Results show that some studies administered only one Stroop task trial in which the children were required to respond in an incongruent manner to the stimuli (i.e., say "day" to the moon picture and "night" to the sun picture). Other studies administered both the congruent and incongruent Stroop methods, administering the congruent method first, followed by the incongruent. However, none of the 51 studies returned back to the congruent way. We noted the relationship between the way tasks were administered and the results reported. It is important for future research to ensure understanding of the task prior to assessment and making conclusions about children's skills.

NASA VIS Project: Biomechanics of Exercise Stability During Perturbations in Human Exploration Missions

Artur Cianfarani Meneghel, Abby Blocker, Maya Reid, & Lilian Penick

Faculty Mentor: Stephanie Carey (College of Engineering)

As spaceflight missions increase in both duration and complexity, responses to environmental changes become a crucial focus for astronaut health and success. For human spaceflight to the Moon or Mars, smaller exercise equipment needs to be designed to counter bone density loss, muscle atrophy, and decreased aerobic capacity. A Vibration Isolation & Stabilization system (VIS) will also need to be developed to prevent cyclic exercise forces from impacting the space vehicle. The purpose of this project is to determine if the VIS motion in-turn affects the stability of the astronaut's exercise. Using a simulated analog for an active or passive VIS, the effect of ground perturbation on movement reactions is addressed, including joint load and muscle activation, as well as how these data can be used for future implementation of countermeasures via computational modeling. Different combinations of mass, spring, and damping coefficients can be applied to the simulated VIS to test varying levels of perturbation during exercise procedures. Through the collection of kinetic and kinematic data, exercise stability can be analyzed to provide insight on how astronauts can benefit most from their exercise programs.

Cyberchondria on Campus: COVID-19

Jordan Rebecca Cohen, Allen John, Jennifer Moreno Alejo, & Victoria Maddex

Faculty Mentor: Donna Ettl-Gambino (Judy Genshaft Honors College)

Where students receive their information about COVID-19 may impact their compliance with the CDC's guidelines to reduce the spread of COVID-19. Studies have shown that receiving information about COVID-19 from non-credible sources, such as social media, may negatively impact people's perception on the COVID-19 virus, leading to variations in compliance to recommended guidelines. Limited research has suggested that viewership of politically motivated media may affect the compliance of COVID-19 guidelines by individuals. This project analyzes the association between students' political affiliation and their opinions regarding face-touching, cough/sneeze etiquette, vaccination, Internet reliability, and restaurant attendance. The population consisted of survey responses from students within the University of South Florida's Judy Genshaft Honors College. A quantitative causal comparative approach was utilized. Initially, a MANOVA was conducted to identify significant trends across groups. Data is still being collected; however, differences in political affiliation appear to result in differences of opinion regarding COVID-19 topics. Results from MANOVA showed statistically significant differences between political affiliation and COVID-19 opinions. Regardless of political affiliation, 48% of students eat at restaurants and 42% trust COVID-19 Internet information. Conservative students may trust Internet-based COVID-19 information less than liberal students. This study's results provide insight on the students' likelihood to receive the COVID-19 vaccine when available. Additionally, these results may assist policymakers in determining the potential use of future online media within healthcare. Lastly, this information may help universities determine more effective ways to convince non-compliant students to follow COVID-19 guidelines, and in return, slow the spread of the virus.

Bacteriophage Applications in Food Safety: A Review of Current Methods and Practices

Caitlyn Coleman

Faculty Mentor: Richard Pollenz (Cell Biology, Microbiology and Molecular Biology)

Bacteriophages are organisms of incredible diversity and abundance. Their specificity is a unique attribute that allows phages to target specific species of bacteria and kill the host efficiently. While phages have attracted attention for their potential in infections of antibiotic-resistant bacteria or bioremediation purposes, there are also uses in the field of food safety. The ability of phage to specifically infect a single bacterial host has strong implications for the food safety industry since phage could be used as very sensitive detection agents. Confirmation that food products are free from contamination and health hazards is necessary to maintain a healthy society. This project investigates the current applications of phages in detecting and eliminating foodborne pathogens through a literature survey approach. The work of Clavijo et al (October 2019) and Petsong et al (October 2019) was utilized. The review of the current literature suggests that phages are being used as means of biocontrol and remediation in raw poultry and fresh produce. Two specific pathogens being studied are *Salmonella enterica* serovar Enteritidis and *Salmonella enterica* serovar Typhimurium. Phages are also being used to attack foodborne diseases at their source. A study was conducted using the phage cocktail SalmoFREE® to stop pathogens at the farm level of production. This research shows that bacteriophages have the capacity to improve overall food safety and quality. Future research should focus on an expansion of studied foodborne pathogens and their respective bacteriophages, to *Escherichia coli* O157:H7 and *Listeria monocytogenes* where phages could improve the safety standards.

Pandemics Past and Present: Social Impacts Connecting the Second Plague Pandemic to COVID-19

Caitlyn Coleman

Faculty Mentor: Andrea Vianello (Department of Anthropology)

Epidemics are frequent in history, and while today's medicine has reduced their impact in western countries, the COVID-19 pandemic reminded us of their lethality and ability to disrupt life. As part of an effort to provide contextual information to the USF Venice project, my research project uses literary sources to compare the COVID-19 pandemic with the second plague pandemic (The Black Death) and identify matching patterns and solutions. Not all communities are impacted in the same manner, with those in poverty at a higher risk due to diminished health. Race/ethnicity contributed to the risk of contracting COVID-19; the Centers for Disease Control and Prevention (CDC) data shows that people of color and ethnic minorities are disproportionately affected. Studies performed by DeWitte, S. N., and Hughes-Morey, G. (May 2012) as well as DeWitte, S. N., and Wood J. W. (February 2008) were utilized to address the Black Death. Fear surrounding the Black Death also led to the persecution of Jews, who were blamed for the disease. This phenomenon is mirrored in the Anti-Asian hate crimes during the COVID-19 pandemic. Future research should continue to search past outbreaks of disease to identify areas of improvement that apply to modern day society.

Strings Modeling Gene Segment Arrangements

Devon Conant

Faculty Mentor: Natasa Jonaska (Department of Mathematics & Statistics)

We use combinatorial analysis to understand DNA recombination processes that certain species of ciliates undergo during reproduction. In these species, during conjugation, a transcriptionally active macronucleus is destroyed and regenerated from a germline micronucleus where a majority of genes are fragmented in several (up to ~150) segments. These segments may be out of order or reversed, separated by so-called “junk” DNA which may be excised as cyclic molecules. An alignment of short repeat sequences, called pointers, at the endpoints of gene fragments, guides the recombination process so sequences of pointers can represent the arrangement of the gene fragments. Recent experimental data detected the existence of previously predicted cyclic molecules. The data also indicated that fragments of up to two genes may interleave or overlap around the cyclically excised DNA sections. We propose a combinatorial model to describe each linear arrangement of gene fragments neighboring cyclic molecule junctions as a sequence of pointers, and we call these sequences legal strings. We generate all possible legal strings with a computer algorithm and sort them into biologically equivalent classes. We describe a one-to-one correspondence between legal strings indicating gene fragment organization of two genes and paths in a rectangular lattice that start at (0,0) and end at (m,n) using only horizontal, vertical, and diagonal steps within a unit square. The number of such paths are within a square array corresponding to Delannoy numbers.

Non-alcoholic Fatty Liver Disease in Non-liver Transplant Patients

Claudia Conceicao

Faculty Mentor: Nyingi Kemmer (Department of Hepatology)

The global prevalence of non-alcoholic fatty liver disease (NAFLD) is rising at an alarming rate, driven in large part by an increased incidence of diabetes and obesity. NAFLD is currently the number one cause for liver transplantation in the U.S. NAFLD has been shown to have effects on patients undergoing transplants for other organs such as kidneys and pancreas. Our objective was to evaluate the prevalence of fatty liver in non-liver transplant patients, looking particularly at kidney transplants. We conducted a single-center retrospective cohort study of patients undergoing kidney transplants from January 2015 to December 2019. Patient data were obtained from the United Network for Organ Sharing and our hospital's EPIC system. Patient records were reviewed at the time of transplant to one year after transplant. Patients under 18 years of age at the time of transplant were excluded from our study. Of the 1300 kidney transplant patients, 149 (11.5%) had a fatty liver noted before or after their initial kidney transplant. The mean age of patients was 53 years for NAFLD and 51 years for non-NAFLD patients. Of the 149 NAFLD patients, 30 (20.1%) underwent a living donor transplant, 144 (96.6%) had diabetes and only 17.4% received a hepatology consult. This study emphasized the need to diagnose and understand post-transplant outcomes for NAFLD patients in the kidney transplant population and ensure patients with fatty liver receive consultations from specialists/hepatologists. Additionally, undiagnosed NAFLD patients are at risk of developing health complications if left untreated and may require a liver transplant.

Collegiate COVID-19 Compliance

Katrina Jewel Connors, Kimberly Ann Lubanski, Annika Noel Scholten, & Victoria Lynn Maddex

Faculty Mentor: Donna Ettel-Gambino (Judy Genshaft Honors College)

COVID-19 is a pandemic plaguing almost all parts of the world. Students' knowledge of and compliance with COVID-19 guidelines may impact their behavior. Limited research has suggested that compliance may be more effectively raised by having public health messages emphasize potential health threats. This project examines Judy Genshaft Honors students' compliance with mask wearing, intent to vaccinate, whether CDC was the preferred information source regarding COVID-19, and participation in airplane travel. The population consisted of students who are enrolled in the Judy Genshaft Honors College at the University of South Florida. A quantitative causal comparative approach was utilized. Initially, a MANOVA was conducted to identify significant trends across groups. The independent variable was the participants' political affiliation. The dependent variables were the participants responses to the survey questions regarding compliance with mask wearing, intent to vaccinate, whether CDC was the preferred information source regarding COVID-19, and participation in airplane travel. The results showed for respondents that 100% wear their mask, 85.71% intend to get the vaccine, 90.48% primarily use the CDC for COVID-19 information, and 31.75% have travelled via airplane within the last three months. Results illustrated for intent to vaccinate that 50% of conservatives, 100% of liberals, 72.73% of moderates, and 80% of those who preferred not to answer intended to receive the COVID-19 vaccine. Furthermore, results for the CDC as preferred primary resource indicated that 100% of conservatives/liberals, 77.28% of moderates, and 80% of those who preferred not to answer use the CDC as their preferred COVID-19 resource.

The Effect of Face Masks on Task Performance: An Experiment

Jeams Richard Costa

Faculty Mentor: Lisa Penney (Muma College of Business)

We are in the middle of a global pandemic, and despite clear recommendations from experts with the Center for Disease Control (CDC) and World Health Organization (WHO) to wear face masks, many people refuse to comply. Politics aside, some people complain that face masks are annoying, distracting, and reduce their efficiency. The purpose of this study was to investigate whether wearing a face mask actually increases negative affect, discomfort, and lowers the speed and quality of task performance in the wearer via an online experiment. Participants were recruited through snowball sampling via social media to participate in an online study wherein they were asked to complete a survey, an online typing speed test, and then self-report levels of negative affect and discomfort experienced during the typing test. Participants were randomly assigned to either receive instructions to wear a face-covering of their choosing for the duration of the study or to complete the study without wearing a face mask. Of 139 total participants, only 61 provided usable data. No significant differences between the experimental and control group were found on any of the dependent variables. Explanations for these findings, including low statistical power and methodological limitations due to the virtual nature of the study, as well as recommendations for future research, are discussed.

LGBTQ+ Inclusion through Conscious Editing

Maria “Mimi” Coto

Faculty Mentor: Amanda Boczar (Department of English)

Throughout the Spring semester, I've been working with USF Library's Ted Hipple Collection of Young Adult Literature to update LGBTQ+ subject headings, with the intention of sending a proposal of updated terms to the Library of Congress. This process is done through conscious editing, which allows researchers to actively monitor and change archival descriptions, resulting in updated language and an increase in diversity. The importance of updating text's subject headings includes removing offensive or outdated language, ease of access for research, as well as promoting inclusivity within the library. I intend to discuss the process of conscious editing, what the results look like, and how it can both diversify the collection and impact the LGBTQ+ community on a broader spectrum.

Student Grouping and its Effects on Class Performance

Melissa Crespo & Alexandra Correa

Faculty Mentor: Ilene Berson (College of Education)

Collaboration in a classroom is one of the most important methods of learning for students. In order for collaboration to take place, students need to be grouped or partnered. The most common form of grouping students is to group them by academic abilities: students who are more independent and students who need extra support. This allows the teacher to work directly with students and make it easier to differentiate/accommodate. However, it has been found that this method has a negative effect on students and their image as learners. For this research, we decided to focus on two particular students and how they perform best during math partner work. We have paired our focus students with students that have similar and different personalities as well as students with similar and different strengths or abilities. As our focus student works with their partner, we will observe and take notes of how they work together. Work samples will be taken, and an interview will be conducted at the end of each week in order to get input from our focus student. We hope to find which type of pairing, personality or ability, is more beneficial for students as they complete their assigned tasks. There are a multitude of ways to group students, with our research we wish to seek which work best in order to implement them in our own classroom settings.

Evaluation of a Sexuality Education and Healthy Relationship Program for Black/African American Youth in South St. Petersburg

Marlayna Cromedy & Julianna Capobianco

Faculty Mentor: Tiffany Chenneville (Department of Psychology)

Evidence suggests Florida youth engage in high rates of sexual risk-taking (Youth Risk Behavior Surveillance, 2015). Indeed, Florida has high rates of sexually transmitted infections, including HIV, and teen pregnancy (Florida Department of Health, 2014). Black/African American youth are at an exceptionally high risk for adverse outcomes associated with sexual behavior given the impact of racism on health (Reif et al., 2014). Sexuality education programs targeting Black/African American youth are therefore needed. The Health Education and Relationship Training Services (HEARTS) program was designed to provide culturally appropriate sexuality education and healthy relationship training to Black/African American youth in south St. Petersburg. The HEARTS program utilizes the Love Notes curriculum, a comprehensive and evidence-based program

designed to teach young adults how to build healthy relationships to prevent dating violence, reduce impulsive actions, and learn better sexual behaviors. 259 youth aged 12 to 19 ($M=14.84$, $SD=1.415$) were enrolled in the program over 12 months in collaboration with community organizations, including faith-based institutions in a predominantly Black neighborhood in south St. Petersburg, Florida. Findings revealed high levels of satisfaction among youth. On average, youth found the HEARTS program interesting ($M=1.60$, $SD = .589$) and rated the program as high quality ($M=1.59$, $SD = .592$). Both qualitative and quantitative data suggest parent and youth satisfaction with the program. Data also suggest the HEARTS program holds promise for increasing knowledge about healthy relationships and sexuality education among Black/African American youth.

Confirmatory Silos in COVID-19-Related Attitudes and Behaviors

Marcus Cumberbatch, Brittnee Hampton, Nahid Afroz, & Sung Hee Pyo

Faculty Mentor: Sandra L. Schneider (Department of Psychology)

Confirmation bias is a pervasive phenomenon. We hypothesize that confirmation bias plays a role in our choice of news media, which may lead to the creation of confirmatory silos. These silos may create closed feedback loops that may shape attitudes and behavior. The purpose of this study was to explore the extent to which these confirmatory silos may extend to COVID-19 attitudes and behavior. This correlational survey study was completed by 389 USF undergraduates from psychology classes. Participants provided information about attitudes toward COVID-19, self-reported COVID-related behavior, cable media news sources, and political outlook (conservative vs. liberal). We found that liberal outlooks lean toward consumption of more liberal media (CNN, NPR, MSNBC), while conservative outlooks lean toward viewing of more conservative media (Fox News). As expected, we found that consumption of more liberal news was associated with higher levels of COVID-19 worry, while viewing of more conservative media predicted less COVID-19 worry. This relationship extended to behavior. Viewing of more liberal media was also associated with more self-reported COVID-19 protective behaviors (e.g. social distancing and hand washing), while consumption of more conservative media correlated with fewer protective behaviors. These findings provide evidence of confirmatory silos in the context of COVID-19. Attitudes and behaviors were consistent with the messages within the silo. Silos may reinforce a single point of view and limit awareness of alternative points of view.

Neuropsychiatric Symptoms and Dementia: Relevance to Subtype Dementias and Medical Conditions

Rasha Daas

Faculty Mentor: Hillary Rouse (School of Aging Studies)

Dementia is one of the major causes of disability among older people, and the total quantities of patients with intellectual decay keep on ascending as the populace ages. An increase in the number of adults results in increases in the number of people with Alzheimer's Disease and Alzheimer's Disease-related dementia, or ADRD. There are noncognitive side effects of dementia that happen in 98% of people sooner or later in their sickness and are regularly the most upsetting to parental figures and patients themselves. There are also cognitive symptoms for dementia, as well as behavioral or psychiatric symptoms. These symptoms also tie with neuropsychiatric symptoms (NPS). Neuropsychiatric symptoms (NPS), including aloofness, gloom, rest problems, mental trips, hallucinations, psychosis, tumult, and animosity, are extremely pervasive to people with dementia. In a populace-based examination assessing individuals with dementia, indifference is the most continuous side effect, trailed by sadness and disturbance/aggression.

Strengthening the Health Care System: Addressing Violence against Women

Neha Dantuluri

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

In recent years, the rise of gender-based violence in India has drastically increased. Overarching, this phenomenon neglects the needs of Indian women while the health care system disregards a system of medical care that properly addresses survivors of violence. This research is centered around the case study of a constructive model implemented in a Delhi hospital. By actively utilizing trauma-informed care (outlined by the WHO), doctors and hospital staff were able to promote positive health outcomes for women and even identify over 500 cases of abuse, harassment, or gender-based violence within 9 months. By investigating the methods of care within this hospital, it can be identified what this hospital does correctly and how these outcomes can be used as a model for implementing health systems to address violence against women across South Asia. The WHO guidelines for gender-informed care were utilized to structure a clinical case study and spatial analysis. The results of this study indicated that the abolition of the two-finger test, ensuing the L.I.V.E.S protocol, providing resource directories, and ensuring confidentiality were effective practices in this model. The findings of this study could help medical professionals to strengthen the response of health systems for survivors of violence. Ideally, the healthcare spaces could serve as a foremost proponent of improved clinical and psychosocial health outcomes for women.

Perceived Impact of Loneliness on College Students' Well-being

Kerri Davis, Taylor Mosley, Jennifer Gordon, & Megan Kobunski

Faculty Mentor: Amber Gum (College of Behavioral and Community Sciences)

Loneliness is a common and growing phenomenon on college campuses, and has detrimental effects on students' health and well-being. The purpose of this survey was to assess USF students regarding their perceptions of the impact of loneliness on student well-being, including social and academic functioning as well as mental and physical health. Survey questions were derived from the UCLA loneliness scale and supplemented by the literature concerning loneliness among college students. The anonymous online survey was distributed by email to all USF students within the College of Behavioral and Community Sciences (CBCS). Participation in the survey was voluntary, so data was obtained from a sample of CBCS students who wished to respond. Preliminary analysis of data from the survey displays that 42% of respondents strongly agreed that loneliness impairs or decreases social functioning and 41% somewhat agreed that loneliness makes it difficult to retain information essential for academic success. On a scale of 0-10, 87% of students rated the impact of loneliness on emotional health as 8 or higher and 51% of students rated its impact on physical health as 8 or higher. This data demonstrates that USF students perceive loneliness to have a notable impact on student well-being, and illustrates a need for further implementation of loneliness interventions at the University of South Florida.

Battery or Bigotry: The Impact of Defendants' Race on Mock-jurors' Decision

Lillian Deaton, Sumeyye Erdem, & Alexis Hussar

Faculty Mentor: Christine Ruva (Department of Psychology)

In a time of heightened tension in the United States, we explored how defendant race (White vs. Black/African American) impacts verdicts, culpability ratings, and credibility ratings in an aggravated battery trial. The Aversive Racism Theory (Gaertner & Dovidio, 1992) proposes that people hold implicit biases, which have discriminatory effects, against persons

of different races. Based on this theory, Ingriselli (2014) suggested that White jurors will make less racially biased verdicts when race is salient because jurors will attempt to appear impartial by suppressing negative attitudes regarding race. Therefore, we manipulated defendant race by inserting a single photo (three different photos used for each race) within trial transcripts containing many photos (i.e., attorneys, judge, and victim's injuries). A Qualtrics survey was used to collect data and randomly assign participants (N = 200; women = 72.5%; age ranged 18 to 42, M = 20.11, SD = 3.06; race/ethnicity – 44% White, 10.5% Black, 31.5% Hispanic, and 12.5% other) to conditions. Hypotheses included that participants would be significantly more likely to find Black defendants guilty and rate these defendants higher in culpability and lower in credibility than White defendants, regardless of defendant photo (1-3). A race effect was found, but not as we expected; mock-jurors rated White defendants as higher on guilt and culpability and lower in credibility scales than Black defendants. Victims of White defendants were rated less culpable than victims of Black defendants. These findings contributed to our ultimate goal of assessing the efficacy of an implicit bias remedy in future research.

Attitudes Towards COVID-19 Based on Political Affiliation, The Big Five, and Gender

Allison Deocampo

Faculty Mentor: Lindsey Rodriguez (Department of Psychology)

At the beginning of the pandemic, media coverage on COVID-19 was highly politicized and polarized. Recent studies have shown that more conservative individuals are less likely to see the pandemic as a serious threat. It was hypothesized that males, Republicans, and individuals who are more dogmatic and extraverted have attitudes that align with concern for the economy over the health implications of COVID-19. Participants (N=754; 50% women) completed a survey of COVID-19 attitudes, the Big Five, demographic questions, and dogmatism in Qualtrics Panels. Results showed that individuals who self-reported being more conservative, dogmatic, and extroverted, as well as men, were more likely to have attitudes with concern for the economy over health implications caused by COVID-19. Conversely, those who scored themselves more liberal, neurotic, agreeable, and conscientious were more likely to have concern for the health implications of COVID-19 over the economy. This research can provide the foundation for future research on politicization and polarization within the media about COVID-19 and if this had a causal effect on people to favor the economy over concern for health implications.

The Relationship Between Play and Learning in Early Childhood Education

Jordan Dillard, Hannah Petitt, & Kaitlin Kanaskie

Faculty Mentor: Ilene Berson (College of Education)

Many respected educators assert that play is the work of the child. Yet, in recent years the push-down of academic content curriculum has derailed educators from the developmentally appropriate practices that children benefit from most. Time for play has been decreasing drastically in the last decade despite research confirming the vast benefits it offers to young children. Rather than isolating play and learning into two separate parts of the school day, children should have integrated opportunities for them to support one another. In order to measure the effects of this practice, our research question is "If children are given opportunities to play with teacher support, then how would that play affect their learning?" In order to find the solution, our research group collected data from 3 early childhood classrooms of varying ages from VPK to 2nd grade. This allowed us to compare not only the ease of integration of play into academics among different ages, but also see how the different kinds of play (free play, guided play, teacher-directed play...etc.) impacted student learning on

a continuum. Data were collected through a variety of authentic assessment sources, such as storyboards, images, and children's work samples. Through our research and prior studies, it is clear that play positively impacts children's learning by promoting sustained periods of exploration that create excitement around learning rather than stress. As educators, it is our responsibility to provide students with both meaningful and engaging developmentally appropriate lessons while still meeting the rising expectations children face today.

"I know what it's like to be alone": Institutional Struggles of Former Foster Youth

Rachael Dominguez

Faculty Mentor: Chris Ponticelli (Department of Sociology)

The United States foster institution affects a large portion of American children today, yet it is filled with institutional problems that affect children long after they depart from the system. Through one-on-one interviews with foster alumni, this study aims to identify hardships these individuals face that are unique to them due to their time within the foster care institution. In the end, this study identified major limits to bureaucracy within higher education, the need for a community for foster alumni- both in higher education and outside of it, and factors that hint at the foster institution impacting future career choices. Potential implications are discussed, as well as the need for replication on a larger scale. Keywords: foster care, foster alumni, college success, concealable stigma, skillset.

Sex, Sociology & Social Distancing

Carly Marie Durgin, Nicole Howard Pacha, & Victoria Lynn Maddex

Faculty Mentor: Donna Lee Ettl-Gambino (Judy Genshaft Honors College)

The COVID-19 pandemic has highlighted a multitude of disparities across the United States. With primary communication methods shifting to virtual outlets, major adjustments have been made. In the literature, the collegiate population is one who may be underrepresented. There is limited research regarding their communication with healthcare providers and overall knowledge of COVID-19. The purpose of this study is to increase our understanding of Judy Genshaft Honors College students' knowledge of and willingness to communicate electronically with their physicians. A secondary purpose examines how students utilize the Internet for COVID-19 information. The population consisted of students who are enrolled in the Judy Genshaft Honors College at the University of South Florida. A quantitative causal comparative approach was utilized. Initially, a MANOVA was conducted to identify significant trends across groups. The independent variable whether the participant identified as a frontline worker. The dependent variables were the participants responses to the survey questions regarding: comfort level communicating with their doctor, if they search the Internet for COVID-19 information, and if they trust the information on the Internet. Considering this was a pilot study, and data collection is still in progress the initial results were not significant. Overall means show that 79% of both frontline and non-frontline workers feel comfortable in contacting their doctor over email. Moreover, the overall means also indicate that 83% of both frontline and non-frontline workers search for information on COVID-19 on the Internet and of those participants 73% trust the information they found on the Internet about COVID-19.

To Vax or Not to Vax: The Age of COVID Misinformation

Carly Marie Durgin, Nicole Howard Pacha, & Victoria Lynn Maddex

Faculty Mentor: Donna Lee Ettel-Gambino (Judy Genshaft Honors College)

University students may be considered an underrepresented population. The COVID-19 pandemic has caused higher levels of anxiety, depression, and substance abuse while simultaneously inspiring an increased need for research. The impact of COVID-19 has brought about new safety guidelines within university communities. There are gaps in the literature regarding university students' knowledge of COVID-19. The purpose of this study is to increase our understanding of University of South Florida Judy Genshaft Honors College students' knowledge of and compliance with COVID-19 guidelines as set by the CDC. The population consisted of students who are enrolled in the Judy Genshaft Honors College at the University of South Florida. A quantitative causal comparative approach was utilized. Initially, a MANOVA was conducted to identify significant trends across groups. The independent variable was the participants' grade level. The dependent variables were the participants' responses to the survey questions regarding: stance on vaccination, if they trust the information on the internet, and if the CDC is their primary source of information. Considering this was a pilot study, and data collection is still in progress the initial results were not significant. Overall means show that 87% of all grade levels would obtain the vaccine if they were able to do so. Moreover, the overall means also indicate that 75% of all grade levels trust the information they find on the internet and that 90% use the CDC website as their main source of information about COVID-19. This information is the first of its kind at USF.

Revisiting the Predictive Value of Heart Rate Relative to PTSD and Depression in Trauma Center Patients: Does it Matter When it's Measured?

Aizara Ermekbaeva

Faculty Mentor: Brian Bunnell (College of Medicine Psychiatry and Behavioral Neurosciences)

Background: Between 20 and 40% of traumatically injured patients develop posttraumatic stress disorder (PTSD) and/or depression within a year post-injury. The ACS Committee on Trauma (COT) recommends assessment and monitoring of PTSD and depression symptoms by trauma centers. Resources that efficiently enhance capacity to identify good candidates for mental health follow-up are therefore a priority. Data on patient vitals such as heart rate (HR) are routinely collected and stored in electronic medical records (EMRs), and their utility for identifying patients at-risk for PTSD has been explored previously but with varying results. Further, few studies assessed HR at more than one time-point during hospital admission and even fewer examined the relation between HR and depression at follow-up. Methods: We examined data from a prospective clinical sample of 389 patients admitted to a Level I trauma center to examine the predictive value of HR relative to elevated PTSD and depression 30-days post-injury using ROC curve analyses. Patient admission, discharge, and mean HR data were extracted from the EMR. A phone-based depression screening was conducted ~30-days post-injury (median days = 39) using the PTSD Checklist for DSM-5 (PCL-5) and the Patient Health Questionnaire-9 (PHQ-9). Results: Results of the ROC curve analyses predicting elevated PTSD at 30-days were significant for admission (AUC = 0.62 $p < 0.001$) and mean (AUC = 0.59, $p = 0.01$) HR. Optimal cutoffs for predicting elevated PTSD at 30-days were 91.5 and 87.5 BPM for admission and mean HR, respectively. Results of the ROC curve analyses predicting elevated depression at 30-days were significant for admission (AUC = 0.60, $p = 0.002$) and mean (AUC = 0.57, $p = 0.04$) HR. Optimal cutoffs for predicting elevated depression at 30-days were 90.5 and 87.5 BPM for admission and mean HR, respectively. Discharge HR did not significantly predict PTSD or depression at 30-days. Conclusions: The results of this study support the prior literature demonstrating the predictive

value of HR relative to elevated PTSD and depression. However, the results suggested an optimal HR ~5 BPM lower than these studies. Continued assessment of the predictive value of physiological variables such as HR that are automatically captured and continuously monitored in EMRs is important given the increasing need for efficient and cost-effective risk assessment in trauma centers, as recommended by the ACS COT.

Evaluating the Required Controlled Attenuation Parameter (CAP) Value for a Magnetic Resonance Imaging Derived Proton Density Fat Fraction (MRI-PDFF) of Above 8%

Melisa Escobar

Faculty Mentor: Guy Neff (Department of Hepatology)

In a clinic where the patients are expected to meet certain numbers to be included in a trial, it can become difficult to find a clear value range to know if a patient will qualify in a trial or not. Two important values that are often looked at are the magnetic resonance imaging derived proton density fat fraction (MRI-PDFF) and the controlled attenuation parameter (CAP). For PDFF values, Covenant currently looks for a value of above 8%. This project will dive into finding what CAP value can we find to know the PDFF value will be above 8%. Data was collected from 105 patients that have been randomized within two NAFLD trails, Madrigal 14 (MGL 14) and Madrigal 11 (MGL 11), at a large clinical research center. The data consists of CAP values, MRI-PDFF values, obesity, and hypertension. It was broken into three groups (CAP 248 – 280, 281 – 300, and 300 and above) and evaluated. The above results suggest that patient with CAP score greater than 280 will have a PDFF value of $\geq 8\%$ consistently elevated suggesting of NASH.

MRI Proton Density Fat Fractionation (MRI-PDFF) Analysis with Metabolic Variances

Melisa Escobar

Faculty Mentor: Guy Neff (Department of Hepatology)

Non-alcoholic fatty liver disease (NAFLD) has become the most common cause of chronic liver disease worldwide, and the healthcare system is burdened by the unmet need for a high throughput noninvasive method of diagnosis. For decades, the gold-standard of NASH, the invasive for NAFLD, is done using liver biopsy. This invasive procedure carries substantial morbidity risks and is uncomfortable. Our hypothesis is to evaluate MRI-PDFF values and compare to liver biopsy results. Also, this project will look over patients that have MRI-PDFF values above 8%. Data was collected from 105 patients that have been randomized within two NAFLD trails, Madrigal 14 (MGL 14) and Madrigal 11 (MGL 11), at a large clinical research center. The data consists of CAP values, MRI-PDFF values, obesity, and hypertension. It was broken into three groups (CAP 248 – 280, 281 – 300, and 300 and above) and evaluated. The collected data and results above supports the use of MRI-PDFF as a non-invasive and reliable method for measuring liver fat content.

Advocating for Christ through Dance for Camera

Shelby Fair

Faculty Mentor: Merry Lynn Morris (School of Theatre and Dance)

The purpose of my research was to combine elements from Christian philosophy, dance, and music to create a Dance for Camera work titled John 3:16, which advocated for people to understand the relationship between man and God. The research was conducted in the Fall of 2020, where I gathered information about Christian philosophy while working on my advocacy speech for a Global Citizens project in my senior seminar course. I choreographed and generated movements based upon my research from my Global Citizens advocacy. I developed movements based on concepts from Christian philosophy such as rebirth and being born again, struggle of human nature, sin and temptations, and fighting against depression and temptation. I used hard rock and rap music from artists like Metallica and Eminem to inform my movement choices. I filmed my movement at the beach because the sand represented unforgiven sins, and the water represented purity-Jesus's blood washing away sins. I contrasted the beauty of nature designed by God and the beauty of manmade machinery, to merge this idea that as humans we always strive for perfection. I finalized my project by piecing together footage taken at the beach and on campus. I found music and scripture from the bible that would suit the message of my piece and edited it to fit the length of my project. My work, John 3:16, brings awareness of Christian philosophy to the dance and artistic community.

Sita: A Look at What it Means to be a God

Ayesha Faisal

Faculty Mentor: Jennifer Knight (Department of History)

The role of women throughout the body of Indian epic traditions is one whose themes prevail to modern day. The goddess Sita in the Ramayana is a figure whose purpose and agency in the epic has been examined by scholars for centuries. A virtuous woman becomes an outcast following her abduction and subsequent return to the court of her husband. Often erased from the narrative is Sita's own godly parentage, as the daughter of the Earth Goddess, Bhumi Devi. It is this complicated legacy that renders Sita one of the less venerated goddesses of the Hindu pantheon, particularly when compared to other consorts of the god Vishnu. Given her godly birth, her marriage to a prominent god in the Hindu pantheon, and centrality in one of the most famous Indian epics, one might wonder as to why Sita has not amassed a large cult of worship. This paper explores the factors that contribute to the perception of Sita today. Spatial, religious, and historical factors all impact the way Sita is both written and interpreted in the various iterations of the Ramayana. By using Valmiki's Ramayana, the earliest written form of the story, we can examine the changes that have occurred through time. Examining these factors can help us see how and why the perception of such a central figure in Indian literature has changed, and what that means for society as a whole.

The Self-assembly Study of Iso-guanosine Derivatives

Omar Fathalla

Faculty Mentor: Xiadong Michael Shi (Chemistry)

Self-assembly is the spontaneous organization of molecules through non-covalent interactions resulting in a well-defined structure with lower free energy. Guanosine and iso-guanosine derivatives can self-associate into cyclo-polymers. The H-bonding angle of Guanosine is 90°, compared to iso-guanosine which has a bonding angle of 108°. Upon cyclization,

Guanosine and iso-guanosine can self-associate in the presence of cation through ion-dipole interaction. Previous experiments of guanosine derivatives self-assembly resulted in G quartet and iso-guanosine derivatives self-assembly resulted in pentaplexes. This experiment was performed to see the self-assembly differences between the iso-guanosine and the deoxy iso-guanosine. Moreover, multiple cations sources were used to examine cations selectivity of the self-assembly. Four different salts, CsCl, NaCl, KCl, BaCl₂, and SrCl₂, were used each time to react the deoxy iso-guanosine derivative with sodium picrate using water and CDCl₃ as solvents. The product was then extracted with water. The results of self-assembly were confirmed by 1H NMR. The 1H NMR spectra analysis of the deoxy iso-guanosine derivative self-assembly showed a formation of pentaplexes. The self-assembly resulted in two stacks of the cyclo-pentamers with one cation from the salt interacting in between through ion-dipole interactions. The product was highly selective toward Cs²⁺ cation. Further research can be done to investigate other derivatives of guanosine and iso-guanosine self-assembly. The product selectivity toward Cs gives a potential application in the cleaning of radioactive wastes by binding to the fission product Cs.

The Research and Discussion of Premenstrual Dysphoric Disorder (PMDD) in the Field of Women's Health

Ashley Faudoa

Faculty Mentor: Raman Sachdev (Department of Philosophy)

Women's health is an area of the health care field that deals with the overall wellbeing of women, it seeks to identify, diagnose, and treat diseases or conditions that affect women physically and emotionally. Advancements in research on women's health allow women to understand and link symptoms that they may be experiencing to preexisting conditions. A condition that is underrepresented and not researched enough in women's health is Premenstrual Dysphoric Disorder or PMDD, a disorder that affects women and "assigned female at birth" (AFAB) individuals of reproductive age. This disorder can be compared to premenstrual syndrome (PMS) but the symptoms in individuals with PMDD are far more extreme. The underrepresentation and lack of discussion about PMDD in the field of women's health is dangerous because of the extreme symptoms that it can be linked to which negatively impact quality of life. The purpose of this research is to further explore PMDD; what it is, who it affects, and treatment options. This research also explores the lack of common knowledge about PMDD by analyzing survey results done in an online, anonymous format; as well as suggest solutions to increase common knowledge about PMDD.

The Effectiveness of Positive Verbal Reinforcement in the Classroom

Laura Galle

Faculty Mentor: Ilene Berson (College of Education)

Many past studies have analyzed teachers' praise rates and the ratio between positive verbal reinforcement and disruptive behavior. The following research aims to expand previous literature by considering students' academic achievement in relation to the intervention and how students respond to praise socially. The guiding research question was how does positive verbal reinforcement, such as specific praise, affect student behavior and academic achievement in the classroom? The following sub-questions are also addressed: How much exposure to compliments, both provided by the teacher and peers, is needed to make a noticeable difference in students; do students begin to incorporate compliments into their daily routine; and does receiving positive reinforcement have the same effect on ELL students as it does on native English-

speaking students? Data points, such as math test scores, were collected in a first-grade classroom, both at the beginning and end of the study. Tallies on disruptive behavior and teacher-given praise, as well as jottings and journal entries, were collected each day. At the end of the four-week data collection period, math test scores were compared, as well as the average amount of student disruptive behavior and teacher-given praise per week. Journal entries underwent a qualitative analysis through the use of specific coding. The apparent trends dictated by the collected data imply an inverse relationship between disruptive student behavior and praise rates as each week passes, as well as an increase in math test scores, meaning that praise may be an effective intervention.

Measuring Concordance Between Point of Care Testing and Central Laboratory Testing in the Fibroscan®-Aspartate Aminotransferase (FAST) Score

Joshua Ghansiam

Faculty Mentor: Guy Neff (Department of Hepatology)

The multitude of non-alcoholic steatohepatitis (NASH) clinical trials require diagnostics increasing in invasiveness culminating in liver biopsy have led to endeavors to expedite early serological measurements with point-of-care testing (POCT). As the device moved from the military front lines, the Piccolo Xpress® POCT is a quick user-friendly modality for acquiring accurate, reliable, and reproducible diagnostics for a fraction of the cost of conventional analysis. If the results of Piccolo Xpress are found to be indistinguishable from those produced by high-volume central laboratory testing (CLT), POCT may supplant the current box-and-ship paradigm. Echosens, a specialized ultrasound device to assist with identifying hepatic fat and flexibility has evolved. To assist with this device we examine a composite score combining ultrasound and AST that rapidly and reliably predicts fibrosis stage in NASH patients without the need for biopsy.

The Impact of Childhood Trauma on Communication and the Speech-Language Pathologist's Role

AnnMarie Giglio

Faculty Mentor: Anthony Coy (Department of Psychology)

Trauma affects the way that children develop, in the following research specifically, communication skills are focused on. Communicating is an integral part of life and if that ability is fractured, the child will be referred to a Speech-Language Pathologist (SLP). However, SLP's do not have the knowledge a mental health professional does regarding psychological trauma. Greater awareness is needed to drive interdisciplinary work on the topic, as well as providing education on psychological trauma to SLPs. Qualitative research was used to explore SLP's work with trauma and education they received regarding trauma. Four SLPs that worked with children in Florida were interviewed via Microsoft Teams. Looking over the transcripts provided four different themes that were reoccurring throughout the interviews. Rapport was an important skill mentioned that built trust between client and clinician. Foundational skills, like playing, assists SLPs when children lack the most basic communication. SLPs turn to Mental Health professionals when working with children who have went through a psychological trauma; the mental health professionals have knowledge SLP's don't and vice versa. Lastly, providing graduate students and current SLPs with mental health education will help prepare them for working with children that have experienced a psychological trauma. Giving the most basic of skills could prevent unease and create a more efficient therapy session. Limitations, like COVID-19, prevented a greater number of interviewees, however, the future research looks promising. Additional topics and a widespread population will allow for an even deeper look into the SLP's role with psychological trauma.

Preliminary Findings on Effects of Adverse Childhood Experiences with/without Pet Interactions on Long-term Health and Well-being through Attachment

Ashton Griswold, Michael Robinson, & Christopher Dulaney

Faculty Mentor: Anthony Coy (Department of Psychology)

Both adverse and benevolent childhood experiences are associated with long-term mental and physical health. Similarly, research on human-animal interactions indicates that pet ownership is associated with better health and well-being. The purpose of this study is to better understand if pet ownership and attachment in childhood may moderate the negative health effects of adverse childhood experiences or have effects similar to benevolent childhood experiences. The current poster examines three simple effects that provide preliminary evidence that this moderation may occur. First, we replicated findings that indicated pet ownership status should be related to attachment anxiety and avoidance during adulthood. Second, we sought to replicate prior findings that childhood experiences were related to physical and mental health later in life. Finally, we sought to determine if childhood experiences were associated with attachment to pets. A sample of 1550 participants was collected using a Qualtrics panel of adults over the age of 40. Participants reported pet ownership status, attachment anxiety and avoidance, pet attachment, adverse and benevolent childhood experiences, and mental and physical health outcomes. The key findings of the study included: 1) pet ownership predicted differing levels of attachment anxiety and avoidance; 2) adverse and benevolent childhood experiences were related to physical and psychological health outcomes and; 3) adverse (but not benevolent) childhood experiences were positively related to stronger attachment to pets. These findings provide preliminary evidence that pets may interact with adverse childhood experiences on mental and physical health by acting as an attachment figure in childhood.

Comparing Emotional Regulation, Jealousy, and Intimate Partner Violence Differences Between Sexual Minority and Heterosexual Individuals at the Onset of COVID-19

Christine Grossman

Faculty Mentor: Lindsey Rodriguez (Department of Psychology)

Objective: Prior research indicates that sexual minorities suffer from higher rates of depression, anxiety, and substance abuse than their heterosexual counterparts. There are many different sources of these differences, including discrimination, self-esteem, acceptance from others, and many other factors. We sought to extend this idea to understand how emotional regulation, jealousy, and IPV among sexual minority individuals compared to heterosexual individuals. Method: Participants included 214 Qualtrics Panel respondents who completed a survey between April and May 2020. This study compared Lesbian Gay and Bisexual (LGB) participants to a matched sample of heterosexual participants (matched by age and gender). Participants completed an online study asking about their overall demographic characteristics, alcohol use, and stress concerning COVID-19. Results: Sexual minority individuals have a significantly more difficult time regulating emotions and reported higher jealousy than heterosexual individuals. There were marginally significant results indicating that sexual minorities suffer from more IPV than their heterosexual pairs. Discussion: Results for emotional regulation and jealousy provided support for hypotheses. However, the IPV data was not significant as expected. The differences between the sexual minority and heterosexual individuals may be more likely to emerge with a larger sample. COVID-19 may exacerbate the already elevated stress experienced by sexual minorities. Future studies are encouraged to increase their sample size to ascertain more significant results to determine the need for tailored LGB community resources.

Autonomous Wheelchair Indoor-Outdoor Navigation System (AWI-ONS)

Loiy Habhab

Faculty Mentor: Redwan Alqasemi (College of Engineering)

Individuals with disabilities who use power wheelchairs often have trouble locating accessible routes from their outdoor location to the desired building or from their indoor location to another destination. Powered wheelchair systems can be expanded on with an autonomous control module to navigate the wheelchair independently. Autonomous Wheelchair Indoor-Outdoor Navigation System (AWI-ONS) utilizes Quick Response (QR) code and Global Positioning System (GPS) technologies to communicate between the wheelchair and various locations inside and outside a building. AWI-ONS uses GPS signals and Google Maps for outdoor navigation and QR code technology for indoor navigation. The QR codes are placed in various locations inside the building such as parking lots, doorways, offices, bathrooms, stores, elevators, accessible entrances, and passageways. When the user is indoors, AWI-ONS uses the onboard camera to scan QR codes which will automatically download floorplans of the current building from our Firebase Server, and generate a topological map that is made available to the user through a touch screen user interface. When the user is outdoors, AWI-ONS uses Google Developers' Maps API to generate an outdoor map of the area. This map will be updated regularly by the signals received from the GPS module that is fitted onto the wheelchair. The user will have the ability to choose the desired destination, and AWI-ONS will use a modified Breadth-First Search Algorithm to find the most viable path to that destination. This new navigation system is expected to help people with mobility constraints to reach their destination safely and independently.

Modification of a Virtual Mindfulness Based Stress Reduction Program for Caregivers of Advanced Stage Cancer Survivors (vMBSR(C)) Based on a Prototype Evaluation

Laith Abdel Hader

Faculty Mentor: Cecile Lengacher (College of Nursing)

Background/Purpose. Cancer caregivers (CG) often experience high distress and may benefit from a vMBSR(C) program. The purpose of this study was to redesign the program based on evaluation of the original prototype. **Methods.** In Phase 1 of Prototype testing, the vMBSR(C) program was redesigned based evaluation on the original program. First, six modules were redesigned to improve and modernize the format, revise guided videos, and scripts. Second, the research team reviewed completeness, aesthetics and organization of the modules and guided videos in planning for pilot testing among caregivers of advanced stage patients. Pilot testing will enable further evaluation of the program for usability, and acceptability. Caregivers will complete the 'System Usability Scale' (SUS) and 'Acceptability E-Scale' surveys through the web using Qualtrics. Positive and negative feedback on the modules will be reviewed to identify appropriate edits to be completed prior to Phase 2. **Results.** Six modules were reviewed and edited along with a recruitment and orientation module. These modules will be piloted among 10-15 caregivers of advanced stage cancer patients. Qualtrics data on acceptability and usability surveys will be collected with a demonstrated appropriate acceptability and usability scores. Recommendations for improvements based on redesign of the modules, including additional guided meditation practice will occur in this pilot plan. **Conclusions and Implications.** Assessing the usability, acceptability, and general physical appearance of the vMBSR(C) modules provide a prototype process allowing the research team to initiate additional review and edits prior to the implementation of the intervention among CG of advanced-stage cancer patients.

How a Teacher's Questioning Affects the Math Concepts Discussed During Play

Kayla Halls

Faculty Mentor: Ilene Berson (College of Education)

Play is the premiere conduit of learning within early childhood education, acting as a vessel for the exploration of all content areas, including mathematics. Several studies suggest that teacher interaction and/or communication furthers children's cognition, mathematics content learning, and play as a whole. However, few studies have investigated the specific effects of teacher questioning on the math concepts practiced during play, leading to the research question of this inquiry project: How does my questioning influence the math concepts practiced during play? A total of ten VPK children were observed through anecdotal records, photographs, and transcripts of video recordings in order to document their responses to teacher questioning during play. Teacher questioning about play, teacher questioning about math, the math standard addressed, student reflection on math/play, and student extension of the play scenario in relation to math were coded for analysis within the data collected. The findings are expected to indicate that teacher questions about play tend to extend the play scenario in relation to math, while teacher questions about math lead to self-reflection. This implies that the questions asked should mirror the goal. If a teacher wants children to reflect, they should ask questions about the math concepts being practiced in play. However, if a teacher wants children to extend their mathematical thinking within a play scenario, they should ask questions about the play. Future researchers should inquire about the influence of peers' questioning/interactions on the complexity of mathematical thinking within play scenarios.

Predicting Patient Response Dynamics: How Many Measurements are Sufficient?

Isha Harshe

Faculty Mentor: Heiko Enderling (Department on Oncologic Science)

Tumor growth dynamics can be described by many mathematical models, such as the logistic growth model. This model is governed by the interaction between the tumor growth rate and carrying capacity. Accurately determining optimal values for these parameters may enable us to make predictions individual patient responses. This study investigated the number of measurements (three versus four) necessary to accurately predict the carrying capacity of 18 untreated breast cancer patients. Three measurements corresponded to breast cancer screenings (mammograms) at day 0, 7, and 30, and the additional fourth measurement would occur at day 60. The location of these points along the curve may determine the confidence at which the carrying capacity is predicted. For some patients, three measurements may be sufficient to determine the carrying capacity. By assessing how close the tumor volume at the third measurement is to the inflection point of the logistic growth curve, we may be able to predict whether a fourth measurement is needed to know the carrying capacity. The distance between the inflection point and the volume measurement at a certain time may be dependent upon the growth rate of the cancer. By determining each patient's growth rate from their initial dynamics, we may be able to recommend optimal personalized screening dates for breast cancer patients to best predict their later carrying capacity.

Utilization of Mental Health Services Among College Students

Syed Hasan

Faculty Mentor: Nicholas Hall (USF Health Byrd Alzheimer's Institute)

The objective of this research project was to examine utilization of mental health services among college students and how stress impacts it. While mental health issues continue to increase within the college student population, utilization

of mental health treatment and services is not as high as it should be. The strategies to address the low prevalence of treatment need to be exponentially higher, intentional and more responsive. There is almost a negative correlation between stressors in college students and the services used to seek support for them. In addition, I did my own research survey to examine how students from various colleges within USF have been responding to stress during COVID-19. The purpose was also to observe any stressors that COVID-19 might have caused them in any way as well as the steps they have been taking to manage the stress.

How Literature Informs Race Relations

Maxine Haspel & Victoria Mendez

Faculty Mentor: Mike Stowe (College of Arts and Sciences Deans Office)

This short documentary was created in order to summarize the findings of a short study conducted by Maxine Haspel and Victoria Mendez for Mike Stowe's Literature 2000 course in the Fall of 2020. The goal of the study was to analyze the impact that the inclusion of black literature in college level literature courses can have on students' understanding of the Black Experience in the United States today and related social issues; The term black literature describes works written by black authors and that center around the stories of black characters. These works often involve themes and plot points that reflect the reality of life as a Black U.S.-American, therefore the aforementioned researchers theorized that the inclusion of these texts in college literature courses would have a positive correlation to relevant social issues. In order to test this hypothesis the researchers interviewed two students (A and B) enrolled in a literature course centered around black literature and two students (C and D) who had never participated in such a course. The students were asked a few baseline questions before being shown a short clip from the HBO series *Lovecraft Country* and a passage from the novel *Miles Morales: Spiderman*. The researchers then asked the students several follow-up questions in order to gain an understanding of how the works impacted student A and B's understanding of relevant social issues compared to students C and D.

Nonalcoholic Fatty Liver Disease Questionnaire to Evaluate Primary Care Team Knowledge

Keianna Hawthorne

Faculty Mentor: Guy Neff (Department of Hepatology)

Nonalcoholic Fatty Liver Disease (NAFLD) is an umbrella term for liver conditions that involve fat being stored in liver cells. Over 150 million people in the United States are affected by NAFLD. NAFLD encompasses nonalcoholic fatty liver disease (NAFL), nonalcoholic steatosis hepatitis (NASH), advanced stages of fibrosis, and cirrhosis. NAFLD is a diagnosis of exclusion and eliminates alcoholic liver disease, genetic disorders, and numerous virus-related liver diseases. Primary care providers (PCP) play a crucial role in identifying and diagnosing their patients with NAFLD or risk of liver disease. However, the depth of knowledge regarding fatty liver is not well categorized in this disease state. The goal of the project is to evaluate the knowledge and information known about NAFLD in local primary care physicians. A cross-sectional survey is ongoing with many primary care team providers along the west coast of Florida. The providers selected will complete a prepared questionnaire about NAFLD. The questions are broken into three groups: general information, diagnostic acumen, and disease state outcomes. We will evaluate the most common information deficits and direct education efforts towards them. The early results demonstrate a very low knowledge base for fatty liver disease. The results are ongoing and will

be tabulated as participation increases. Questions from each section were not answered correctly. The results show that many primary care providers underestimate the prevalence and importance of NAFLD. The overall results demonstrate that educational efforts involving the basic principles of identifying and managing NAFLD are a critical need.

Youth Chronic Illness as a Moderator Between Parenting Stress and Parent Emotional Wellbeing During COVID-19

Ashly Healy

Faculty Mentor: Melissa Faith (Department of Psychology)

The coronavirus (COVID-19) pandemic poses a serious risk to mental health. Children with chronic health conditions, including diabetes and pulmonary conditions, are at increased risk of severe COVID-19 complications. Studies have demonstrated that parenting stress is greater when youth have a chronic illness. This poster examines the presence of pediatric diabetes or pulmonary conditions as a categorical moderator between parenting stress and parent emotional wellbeing. It is hypothesized caregivers of youth with diabetes or a pulmonary condition would be more likely to experience greater levels of parenting stress and lower levels of emotional wellbeing. We recruited 634 parents during the COVID-19 pandemic to complete a series of questionnaires. First-order effects in hierarchical multiple regression indicated that parenting stress significantly, positively predicted parent emotional well-being, explaining 22% of the variance in parent emotional well-being. After adding the interaction term, the second-order model accounted for a significant portion of the variance in parent emotional wellbeing, with the presence of diabetes or pulmonary condition becoming a significant moderator. Parents of youth with diabetes or a pulmonary condition tended to experience greater parenting stress and greater emotional wellbeing. Although previous literature has found greater parenting stress is linked with psychological distress in parents, additional factors such as social support and appreciation for physical health during COVID-19 may contribute to parents' emotional wellbeing. Findings suggest that psychosocial interventions targeting chronically ill youths' caregivers during COVID-19 may be substantially enhanced by incorporating parenting stress reduction interventions.

Evaluation of Demographic Variances Amongst Randomized Non-alcoholic Fatty Liver Disease (NAFLD) Subjects in a Large Clinical Research Center

Gabriella Hernandez

Faculty Mentor: Guy W. Neff (Department of Hepatology)

Introduction: NAFLD is a disease state which has grown into a silent pandemic and presents a challenge in patient identification. Non-alcoholic fatty liver (NAFL) and non-alcoholic steatohepatitis (NASH) are subtypes of NAFLD with the latter subtype presenting inflammation and fibrosis. To elucidate the demographics of NAFLD patients, a multivariate analysis on a cohort of confirmed NAFLD patients randomized into phase 2 and 3 clinical trials were assessed. The aim of this project is to identify a more accurate screening criteria to target the at-risk population for NAFLD and to prevent progression of NAFLD. Methods: A retrospective medical record analysis was completed including 143 randomized subjects within NAFLD studies, that received liver biopsy confirmation. Data includes the following: gender, age, ethnicity, hip-waist circumference, BMI, potential NAFLD related morbidities including metabolic risk factors, and various lab values. Results: The results show that majority of patients randomized into NAFLD and NASH studies are over the age of 50, non-Hispanic, and primarily white. This is likely due to the urban population demographics which greatly mirrors these results. Male and female randomization rates are almost equal in value (see graph 1). Conclusion: The above data will benefit the NASH research disease state by identifying subjects that increase enrollment criteria.

Evaluation of Morbidity Variances Amongst Randomized Non-Alcoholic Steatohepatitis (NASH) Subjects in a Large Clinical Research Center

Gabriella Hernandez

Faculty Mentor: Guy W. Neff (Department of Hepatology)

Introduction: NAFLD is a disease state which has grown into a silent pandemic and presents a challenge in patient identification. Non-alcoholic fatty liver (NAFL) and non-alcoholic steatohepatitis (NASH) are subtypes of NAFLD with the latter subtype presenting inflammation and fibrosis. To elucidate the morbidity variances amongst NASH patients, a multivariate analysis on a cohort of liver biopsy confirmed NASH patients randomized in stage 2 and 3 clinical trials were assessed. The aim of this project is to identify a more accurate screening criteria based on co-morbidities associated with NASH. Methods: A retrospective analysis was completed including 68 randomized subjects withing NASH studies, that received liver biopsy confirmation. Data includes the following: metabolic risk factors such as diabetes, hypertension and obesity, controlled attenuation parameter (CAP) scores, stiffness score measured in kPa, average transaminase values, and average MRI-PDFF values. Results: Results from the retrospective analysis show that patients with three metabolic risk factors, such as diabetes, hypertension, and obesity result in higher rates of randomization into NASH trials (see table 1). Conclusion: The data above demonstrates obesity is a key factor in higher rates of randomization into NASH trials based on this subset of patients. Further in-depth analysis is needed to delineate the morbidities that identify the NASH population.

Pranayama - The Yogic Art of Breathing

Anagha Hesarghatta

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

This research examines the understanding of the body and health as practiced in South Asia, though the practice of pranayama. Pranayama is the process by which breathing is regulated and controlled for health benefits. Various types of pranayama are followed, each which produce unique results. The examination of clinical trials helps in examining the scientific validity of practices like pranayama indicates the relevance of pranic healing in modern contexts. Various chronic illnesses and health problems, such as asthma and cardiovascular issues can be improved greatly through the regular practice of pranayama. Furthermore, the analysis of the process of yoga commodification or yoga tourism can also be used to understand how yoga is extrapolated to fit Western health, as well as how ideas of healing travel throughout the world. The conclusions of this research indicate that pranayama, and yoga more broadly, is an essential part of healing throughout the world, which has often been extrapolated from its traditional roots, changing its significance and meaning. Thus, it is important to understand these traditional practices from their traditional roots to best integrate these practices into Western medicine.

Clostridioides Difficile Phage Biology and Application

Joshua Heuler

Faculty Mentor: Xingmin Sun (College of Medicine)

Clostridium difficile, now reclassified as *Clostridioides difficile*, is the causative agent of *C. difficile* infections (CDI). CDI is particularly challenging in healthcare settings because highly resistant spores of the bacterium can persist in the environment, making it difficult to curb outbreaks. Dysbiosis of the microbiota caused by the use of antibiotics is the primary

factor that allows *C. difficile* to colonize the gut and cause diarrhea and colitis. For this reason, antibiotics targeting *C. difficile* can be ineffective at preventing recurrent episodes because they exacerbate and prolong dysbiosis. The emergence of antibiotic resistance in *C. difficile* also presents a significant threat. The diverse array of bacteriophages (phages) that infect *C. difficile* could offer new treatment strategies and greater insight into the biology of the pathogen. In this review, we summarize the current knowledge regarding *C. difficile* phages and discuss what is understood about their lifestyles and genomics. Then, we examine how phage infection modifies bacterial gene expression and pathogenicity. Finally, we discuss the potential clinical applications of *C. difficile* phages such as whole phage therapy and phage-derived products, and we highlight the most promising strategies for further development.

Comparative Genomics of *C. Difficile* Prophage-like Elements

Joshua Heuler

Faculty Mentor: Xingmin Sun (College of Medicine)

Clostridioides difficile is the main cause of nosocomial-acquired diarrhea and is a growing antibiotic resistance threat. The *C. difficile* genome contains numerous mobile genetic elements that have influenced the evolution and pathogenicity of the species. Bacteriophages that have integrated into the host bacterial genome, known as prophages, represent one type of mobile genetic element highly relevant to *C. difficile* virulence. Some prophages can extricate their DNA from the host genome to produce functional phage, while others remain permanently integrated due to mutations. Several functional *C. difficile* bacteriophages have been characterized, but little progress has been made to examine the diversity of prophages in thousands of *C. difficile* isolates. In this study, we used bioinformatics to characterize 53 putative prophages predicted in *C. difficile* genomes. After annotating each prophage, we conducted a comparative analysis of prophage genome structure, phylogeny, and virulence factor carriage. Phylogenetic analysis of the *terL*, *terS*, *portal*, and *integrase* sequences suggests different evolutionary patterns between important prophage genes. We demonstrated that prophages, just like their functional phage counterparts, share a common modular layout even in the absence of sequence similarity between individuals. Yet, there are still differences between prophage clusters and between prophages and functional phages. For example, prophages may contain duplicated genome modules, which are uncommon in functional phages. Analyzing prophage sequences could be used to reveal the evolution, virulence factor carriage, and other characteristics of their host bacteria. Novel therapeutics against *C. difficile* could also be developed from prophage genes with predicted antibacterial activity.

The Art of Yoga in South Asia

Linh Ho

Faculty Mentor: Holly Singh (Judy Genshaft Honors College)

Yoga has been a well-known health healing practice not only in its origin regions in South Asia but also around the world. It is a traditional art of acquiring the utmost state of body, mind, and soul. In South Asia, for centuries, yoga has been developed and incorporated into people's lives, representing the culture and religion. The philosophy behind the ancient Indian practice of yoga has influenced various aspects of how society in India functions, whether it be in relation to areas such as health and medicine or education and the arts. It is practiced by the young and old without discriminating against gender, class or religion. This research paper will focus on the impact of yoga on the South Asian community since its birth, especially the health healing aspect and social perception of yoga. In order to conduct the research, various scholarly

sources have been thoroughly analyzed. It has come to a conclusion that yoga practice is widely used by South Asians as an important healing art physically and mentally. It also plays a major role in contemporary applications, especially in politics and religious practice.

Identification of Vector Mosquitoes: A Field Implementation of Novel Hardware and AI Algorithm

Robert Hogan & Estelle Totolobe

Faculty Mentor: Sriram Chellappan (College of Engineering)

Mosquito-borne diseases continue to be one of the leading causes of death globally. They arise from vector mosquitoes which can transmit various diseases such as malaria, yellow fever, dengue, etc. Vector-borne diseases account for 17% of all infectious diseases and affect millions of people around the world causing 700,000 deaths annually according to the WHO. Consequently, real-time identification of these mosquitoes is essential for pest control agencies which have the goal of reducing and eventually eradicating these pernicious diseases. In an effort to reduce the prevalence of vector mosquitoes, an Artificial Intelligence (AI) system has been developed to effectively identify them, so that targeted mosquito-control can be applied to eliminate these species as they are detected. In order to create an environment for the AI system, modifications were made to the CDC Miniature Light Trap, which is used throughout the world. Added features include a digital imaging chamber, heated CO₂ attractant, and a control system to capture the images required for the AI system. Mosquitoes are attracted to the heated resting surface inside of the imaging chamber, where pictures are taken as the presence of mosquitoes is detected. Currently, mosquitoes are efficiently attracted and caught in the trap. However, there are issues with the camera focus, resulting in blurry images of mosquitoes inside the imaging chamber. This results in the AI being unable to process these images, and effectively identify these mosquitoes. The focus for future work is to correct this issue in order to reliably capture clear images.

A Cross-Comparative Study of Refugee Populations and their Access to Healthcare in the U.S. vs. E.U

Reena Howard, Adrian De La Rosa, Miguel Fernandez, Janefar Eva, & Muhammad Erchid

Faculty Mentor: Lindy Davidson (Judy Genshaft Honors College)

The past decade has seen an increase in the number of refugees in the United States and European Union. Of the many resulting problems, this situation has made it difficult for refugees to gain access to healthcare in their host countries. According to the UNHCR's Refugee Convention, refugee populations are entitled access to similar healthcare services as the residents of their home countries, however, it is unclear to what extent this is being upheld. This study examines refugee populations in the U.S. and Germany and compares refugee access to healthcare services relative to the citizens of their host countries. Two different countries were selected in order to gain a more encompassing perspective of the refugee experience. This is done as the research aims to compare American and German standards of healthcare. Data used includes human rights reports, country demographics, and public records relating to healthcare. Findings suggest that refugee populations are at a significant disadvantage due to distinction from their new society and lack of its procedural knowledge. Additionally, there are multiple policies set in place that lack understanding of the refugee experience and act as factors preventing these populations from seeking help. The unique circumstances observed in the studied populations may provide insight into the experiences of other immigrant populations and provoke international policy adjustments.

The Death of MTV?

Vivian Ingram

Faculty Mentor: Maria Cizmic (Humanities and Cultural Studies Department)

Music Television (commonly known as MTV) was a cable channel that had been launched in late 1981 with the original intention of showing solely music videos. The television platform would be in a continuous stream 24/7. These videos came from music from the Top 40 playlists. The channel promoted artists and bands like Madonna, Bon Jovi, Cyndi Lauper, and Michael Jackson. Instead of disc jockeys, the channel had video jockeys, or 'vee-jays' (like Alan Hunter and Nina Blackwood). This platform celebrated over a full decade of success, and its popularity gradually rose. However, when the 1980's were over, the channel saw some drastic changes. New people like Chris McCarthy took over the corporate offices and made changes in the programming. The young audiences saw grown adults screaming at each other, getting drunk, engaging in intimate activities, and throwing temper tantrums over the smallest things. The people who made the channel successful became terminated after their contracts expired. The actual airtime of the music video stream became less to almost nonexistent. What is happening to the original MTV? Why are there reality television shows on the platform? What is so fascinating of watching grown men and women fight over the most frivolous things? The paper's primary focus is about the founding material of Music Television and how it evolved to showing reality shows. This paper will examine the first music video aired along with the first reality television aired. The major contributing factor of MTV's change are different interests.

Healthcare Accessibility and Mortality in 21st Century Russia

Anna Jablonska

Faculty Mentor: David Garrison (Judy Genshaft Honors College)

This research discusses the underlying causes behind high mortality rates in contemporary Russia. By analyzing various psychological, social, medical, economic, and governmental factors, this research seeks to understand the correlation between Russia's increasing mortality rates and the overall decline in healthcare accessibility for its citizens. Russia's mortality rates are significantly higher as compared to other European countries, which suggests that a reevaluation of its healthcare system is necessary. By examining inefficient free medical care, improper allocation of funding, barriers in medical care engagement, substance abuse, and more, this research hopes to offer solutions to a leading problem in contemporary Russia.

Business for Good: How Universities Can Catalyze the B Corp Movement

Emma Jacobs

Faculty Mentor: Rebecca Harris Barancik (Department of Economics)

The burgeoning B Corp movement is transforming the global economy with a mission of using business as a force for good to solve social, environmental, and economic problems. Higher education institutions are uniquely positioned to educate the business leaders of tomorrow on this rising method of "business unusual." Universities can play a key role in catalyzing the B Corp movement, which advocates for corporate social and environmental responsibility, accountability, and transparency. This paper describes how universities can effectively educate and prepare the next generation of changemakers through what are referred to as B Corp programs. Though they take many unique forms, university B Corp programs share the

unifying goal of helping businesses earn their B Corp certification while benefitting students with a valuable experiential learning opportunity. This paper features five case studies of existing B Corp programs, including the recently developed Business for Good Internship at the University of South Florida (USF). Finally, this paper discusses the unique circumstances, challenges, lessons learned, and future aspirations for each university B Corp program in the hopes of highlighting best practices to facilitate the further development of successful programs.

“Forgotten Children”: Siblings of Adolescents with Eating Disorders

Evin Janik

Faculty Mentor: Christina Salnaitis (Department of Psychology)

With over 30 million people in the United States impacted by an Eating Disorder and the high mortality rate associated with the diagnosis, research has investigated a plethora of different forms of treatment. One of the most common treatments is Family- Based Therapy, which often dives into the parent and diagnosed child’s relationship, however, there is little focus on the impact of the diagnosis on the sibling(s). In this study, we will be analyzing adults who grew up with an adolescent sibling diagnosed with an eating disorder. These siblings are known throughout this study as “forgotten children”. The main goal of this research is to examine, qualify, and describe the experiences of siblings of adolescent with an eating disorder. In doing so, this study will investigate whether the siblings of adolescents with an eating disorder have been impacted, negatively or positively, into adulthood due to the diagnosis. It will also serve to quantify the impact of the diagnosis and resulting experiences using a variety of measurements; depression, anxiety, coping skills, perseverance, resilience, personality traits, and drug usage. The study will investigate correlations between the measurement metrics that may reveal relationships specific to siblings of adolescents with an eating disorder. The results of this study will allow researchers to delve further and focus more on siblings of adolescents with eating disorders, especially when focusing on the familial element of the disorder. The results will also serve as a reflection of these siblings and allow their voices and experiences to be heard.

Immunity Passports: Technology’s Role in Shaping Healthcare

Michelle Jayaraj

Faculty Mentor: Raman Sachdev (Department of Philosophy)

With the rise of an unprecedented global pandemic, the relevancy of digital technology has played a significant role in shaping the climate of future interactions. The COVID-19 (SARS-CoV-2) pandemic has left companies and organizations at the mercy of technology in continuing workplace progress. Likewise, governments across the globe are looking to technology to curate solutions to problems caused by the outbreak of SARS-CoV-2. To stop the spread of the coronavirus, several countries have closed their borders. However, countries such as the United States, Germany, Italy, and the United Kingdom have proposed the idea of using technology to instead filter visitors and grant access to those who have obtained an immunity passport. An immunity passport is granted to those who have already been infected with the coronavirus and thus possess antibodies. With a simple phone application, people will be able to receive an immunity passport by answering just a few questions about their medical history and interaction with COVID-19. This would allow the individual to essentially revert back to traveling places, such as work and school, within and even outside of the country. While it may seem efficient in theory, such findings would inform that this simplified approach fails to recognize key ethical, legal, and medical circumstances that stunt a clear execution of the plan. Understanding the nuances of technological advances within the healthcare field will allow for better utilization and allocation of digital resources in future medical care.

The Ethical Implications of Cosmetic and Post-Production Enhancements in Cosmetic Marketing

Riley Johnson

Faculty Mentor: Carol Osborne (Muma College of Business)

The multibillion-dollar cosmetic industry has long marketed their products' benefits with models and actresses, but post-production enhancement has taken their advertising efforts to a new level. How does the public feel about using lash inserts to improve mascara results or editing out the frizz caused by a shampoo for the commercial? When does it become unethical? By looking at primary survey and focus group data, as well as secondary data, I hope to explore how labeling and enhancements of product results affect the consumer's attraction to a brand. This study will also take a look at the impact that undisclosed post-production enhancement has on the mental health of incoming generations.

The Impact of the COVID-19 Pandemic on Sleep, Physical Activity, and Dietary Coping Behaviors in College Students

Drew Johnston

Faculty Mentor: Alison Oberne (College of Public Health)

The COVID-19 pandemic has impacted people's mental, physical, and emotional health across the world. College students are a vulnerable population for developing mental health issues and poor coping habits, in general, and during times of stress. The purpose of this study is to examine how the COVID-19 pandemic has impacted health-related coping behaviors of first-time-in-college students and the differences, if any, between male, female, and non-binary students. A quantitative, online survey with questions evaluating physical activity, sleep, dietary habits, and stress levels was administered to University of South Florida undergraduate students. ANOVA and the correlation coefficients will be calculated to assess the differences in physical activity, sleeping habits, and dietary habits during the COVID-19 pandemic between male, female, and non-binary respondents. ANOVA and the correlation coefficients will be calculated to assess differences in general stress levels and stress levels in response to the COVID-19 pandemic between male, female, and non-binary respondents. Respondents were primarily female ($n = 273$), with fewer male ($n=53$) and non-binary respondents ($n = 11$). More non-binary students and a larger sample size will be needed in future research to better understand the health-related coping strategies among this vulnerable population. Based on current findings, services, including counseling or health programs, for undergraduate students may be beneficial in developing healthy coping behaviors and promoting healthier lifestyles, especially during natural disasters and infectious disease outbreaks.

Multifaceted Stigma Associated with Cannabis Use in Epilepsy Treatments

Prema Kallepalli & Shannon Rego

Faculty Mentor: Andrea Vianello (Department of Anthropology)

The earliest use of cannabis for a variety of medicinal uses dates back to ancient China, during the rule of Emperor Shen Nung (ca. 2700 BCE). Several other instances of cannabis were recorded in the Middle East, Egypt, and India between 1800 and 1500 BCE. European colonialism was responsible for the introduction of cannabis into Western Medicine. Archaeological and historical evidence including artifacts and texts confirms the use of cannabis for various purposes. The use of cannabis in different treatment options spiked in the 19th century but slowly dwindled in the 20th century due

to cannabis trafficking and international prohibition, leading to a stigmatized approach to the use of cannabis and related products, even for medicinal uses. Recently, cannabis has been gaining a lot of attention for its medicinal use. Two active components of cannabis, Tetrahydrocannabinol (THC) and Cannabidiol (CBD) play different but important roles in the endocannabinoid system. Two important receptors, CB1 and CB2 have a high affinity for THC and are able to form a binding complex with this active compound. CBD inhibits THC controlling its side-effects. In this work, we are going to determine how the stigma associated by past experiences is affecting current research. We will use historical and archaeological data to examine the push for research on cannabis as well as the resistance from those who perceive it as a harmful narcotic.

Time Series Analysis of Groundwater Levels in the Lafayette Blue Springshed

Eric Kastelic

Faculty Mentor: Patricia Spellman (School of Geosciences)

The Suwannee River Basin is a 9,990 mi² watershed whose major river, the Suwannee River, is primarily sustained by groundwater influx in its lower reaches. The lower reaches of the Suwannee River receive water from over 150 springs discharging from the Upper Floridan Aquifer (UFA), some of which have been classified as priority springs that require targeted resource management. One continually monitored spring, Lafayette Blue, is one such priority spring that provides baseflow to the Suwannee River. The UFA is a highly productive karst aquifer which supplies the majority of regional municipal and agricultural water supply. Recent investigations into the water quality of Lafayette Blue springs shows significant increases in Nitrate, primarily due to fertilizer application as agriculture in the region increases. The area surrounding Lafayette Blue springs is projected to see a 22% increase in agriculture over the next two decades. Due to these increases, understanding the impacts of agriculture on both water quality and quantity are necessary for proper water resources management. Completing a time series analysis on groundwater levels, hydraulically connected streams, and spring discharge to the lower Suwannee River allows us to identify coincident water level declines within the springshed and their potential impacts on Suwannee River flows. These data will also be used to develop models that will help answer questions about 1) the comparative role of climate and agriculture on water quantity declines 2) how future demands may impact specific springs such as Lafayette Blue and the overall baseflow to the Suwannee River.

Perceived Risk of the Coronavirus Pandemic on Breast Cancer Survivors

Meaghan Kelleher

Faculty Mentor: Constance Visovsky (College of Nursing)

Significance: The coronavirus (COVID-19) pandemic has altered the physical, mental, and emotional health of people around the world. Although it is known that there are long-term health effects of COVID-19, there is limited research available on the perception of COVID-19 among breast cancer survivors. **Methods:** As part of a larger parent study, we examined 18 breast cancer survivors perception of COVID-19 risk factors using data from a quantitative survey. The COVID-19 Risk Perception Survey covers 11 statements concerning COVID-19-related behaviors and beliefs that are scored from 1 (strongly disagree) to 5 (strongly agree). **Results:** The data indicated that participants had contrasting opinions regarding their risk of contracting COVID-19, and the effects a COVID-19 infection may have on them due to comorbidities. Comorbidities may include but are not limited to, hypertension, chronic obstructive pulmonary disease, and diabetes mellitus. While the majority of participants (n = 55.6%) believe their risk of contracting COVID-19 is low, many participants (n = 66.7%) have comorbid conditions that place them at a significant risk for COVID-19 infection or complications. **Implications:** These findings suggest that breast cancer survivors have concerns about contracting COVID-19 infections, and that despite having

comorbid conditions, they may not know the exact nature of infection risk, or how to ameliorate that risk. At present, there is a need for further research to uncover the risks for COVID-19 infection among breast cancer survivors as well as appropriate health-related information in relation to the COVID-19 pandemic.

The Impact of the COVID-19 Pandemic on Colorectal Cancer Screening and Post-Test Surveillance at the James A. Haley V.A.

Judah Kreinbrook, Gary Rabenold, Kelsey Berman, Mae Horne, Joselyn Martinez-Garcia, Sricharan Pusala

Faculty Mentors: Fabio M. Leonelli, M.D. (Clinical Research and Education Center at the James A. Haley VA; USF Health; Morsani College of Medicine) & Jose L. Lezama M.D. (Chief of Medicine, James A. Haley Veterans' Hospital; USF Health Department of Internal Medicine Vice Chair)

Colorectal cancer (CRC) is the second leading cause of cancer death in the US. Screening and post-test surveillance for CRC are an integral part of CRC management. The COVID-19 pandemic delayed access to both screening and surveillance. Delays are associated with an increased incidence of advanced stage diagnoses and mortality. The VA Health system (VAHS) treats 3% of national CRC cases, but the effect of the pandemic on the veteran population's screening and further surveillance for this disease is unknown. Screening can be done via colonoscopy, sigmoidoscopy, or fecoimmunochemical testing (FIT). While only FIT can be safely conducted from home during a pandemic, patient compliance and the degree of post-test surveillance can limit FIT's value. The objective of the study is to evaluate the effects of the COVID pandemic on CRC screening/surveillance at James A. Haley Veterans' Hospital. The study will retrospectively review the screening modalities as well as the diagnostic incidence of precursors (e.g. adenomas) and manifest CRC in the period between March - December of 2016 – 2019. A similar set of data will be reviewed for March - December 2020 and compared. Analysis will include:

- 1) The change in distribution of screening modalities including the number of tests and percent-positive
- 2) The logistical challenges to the increased implementation of mail-in FIT
- 3) The quantification of screening/surveillance delays

This group of patients will constitute the cohort(s) for a future prospective study assessing the effect of screening/surveillance delays on the incidence of precancerous lesions or manifest CRC.

Observations Involving Demographic Disparities Within Community Based Referral Patients Involving A Clinical Research Center

Daniel Kurtz

Faculty Mentor: Guy W. Neff (Department of Hepatology)

Introduction: NAFLD has become a healthcare crisis, as majority of North Americans suffer from NAFLD, a hepatic inflammation, categorized as non-alcoholic steatohepatitis (NASH), or the non-inflammatory non-alcoholic fatty liver (NAFL). NAFLD rarely becomes symptomatic until it has progressed to cirrhosis, thus testing is critical to survival. The aim is to analyze a group of referred patients presumed to have NAFLD. Methods: Primary care physician (PCP) referred patients to a large NAFLD-dedicated clinic were analyzed based on gender, ethnicity, anthropometrics, and serological values. From these values, the referred patients from PCPs were categorized into groups reflective of their demographics. The patients were analyzed on their compliance for visits. Results: Numerous demographics were referred from various PCPs. 32.7% of patients referred are disqualified from any current NAFLD studies; 26.54% of patients qualify for study screening. 17.06%

of patients were non-compliant of their visit, while 23.7% of patients have normal results. The primary factor disqualifying patients from NAFLD trials are their current medications: either more time is needed to acclimate to their medication, or the medication was prohibited by the study. The Hispanic/Latino group have the highest degree of transaminitis given the samples collected; White and Caucasians have the highest average CAP score and kPa on FibroScans. Every demographic presented similar BMI(33.39kg/m²) and HbA1c(6.43%) average overall. Conclusions: Currently, the limitation is the amount of data collected. There are not enough patients within each group to generalize to the population. More patients are being added to the databank. 76.3% fall into the White/Caucasian group.

Administration of BK Channel Agonist to Reduce Behavioral and Neural Manifestations of Tinnitus in Mice after Induced Acoustic Trauma

Kristie Labib & Malak Ibrahim

Faculty Mentor: Joseph Walton (Department of Communication Sciences and Disorders)

Tinnitus is a hearing disorder affecting approximately one third of all adults, and unfortunately has no FDA approved curative treatments. The deafferentation of central auditory structures as a result of ARHL or acoustic trauma (AT) causes a reduction in auditory sensory input. This then causes compensatory shifts in the balance of excitation and inhibition of the firing rate of the neurons within the CAS, which most often translates to hyperactivity. One particular BK channel modulator, known as CS0022, has been studied for its effect on hyper-excitability and inhibition in animal models. As a result, this study seeks to investigate this BK channel modulator therapy further and examine its effects on tinnitus in order to support its advancement and clinical usage. Auditory Steady State Responses (ASSRs) are electrophysiologic responses that display hearing sensitivity by evoking periodic amplitude-modulated tones (AM tones). They elicit steady state responses through neural phase-locking, which demonstrates auditory perceptive abilities. The study's first objective is to examine the effects of AT on ASSR responses, as it is hypothesized that AT suppresses neural phase-locking abilities. The study's second objective is to examine the effect of CS0022 on the ASSRs of animals with AT-induced tinnitus, as it is hypothesized that CS0022 would enhance neural phase locking abilities. The data demonstrated that animals with tinnitus generally exhibited decreases in ASSR peak amplitudes following AT and increases in ASSR amplitudes following CS0022 administration. These findings suggest that this pharmaceutical treatment may serve as a potential therapeutic in suppressing tinnitus symptoms.

Investigating the Structure-Property Relationship of Relaxor Ferroelectrics via Machine Learning

Adriana Ladera

Faculty Mentor: Dr. Inna Ponomreva (Department of Physics)

Relaxors ferroelectrics are an intensively studied field of research that are of great interest owing to their large dielectric permittivity and electromechanical coupling. The polarization response of relaxors is believed to be correlated with the presence of polar nanoregions (PNRs) in the material, which give origin of their unique behavior. After decades of research, however, PNRs and their relationship to relaxor dynamics is a discussion that is still actively disputed. Given both the computational and experimental challenges that impede progress on the atomistic insight into PNRs dynamics, it is hypothesized that machine learning (ML), a nontraditional computational approach, is the way to tackle the problem. We expect that ML can be used to analyze the thousands of dipole patterns within PNRs produced by Molecular Dynamics (MD) simulations of relaxors and provide insight into their intrinsic dynamics. We begin by testing various ML toy models

to classify or group the electric response of relaxors, which will allow for assessment of the ML algorithm performance for the given problem. The ML algorithms with the most promising performance will be applied to study the structure-property relationship in relaxors. The aims of this work are therefore to (i) gain insight into the presence and properties of polar nanoregions in relaxor ferroelectrics via ML and atomistic MD, (ii) demonstrate the potential of ML as a predictive tool in relaxor ferroelectrics research, and (iii) develop a multifunctional ML model that can be applied to a wide range of material properties originating from dipolar interactions.

SIRT1 and Mitochondrial Homeostasis in Heart Failure

Van Le

Faculty Mentor: Ji Li (College of Medicine Surgery)

Sirtuin 1 (SIRT 1) is a nicotinamide adenine dinucleotide (NAD⁺) dependent histone deacetylase. SIRT 1 has a crucial role in mediating cell survival and protecting the heart from several stress, such as hypertrophy and prevent progressive cardiac failure. Recently, SIRT1 is emerged as a crucial regulator of mitochondrial function in heart, while the mitochondrial dysfunction has been implicated in the development of heart failure. SIRT1 is crucial to maintain mitochondrial structural and functional integrity to improve cardiac function in hypertrophy. Young mice (3-6months, C57BL/6J) were subjected to transverse aortic constriction (TAC) surgery, models of pressure overload-induced cardiac hypertrophy, for six weeks. Echocardiography was used to assess cardiac functions and heart tissue was collected for histological and immunoblotting analysis. Histological staining results showed that TAC for 6 weeks clearly induced hypertrophy with enlarged left ventricles compared to sham group. Echocardiographic analysis indicated that 6weeks-TAC resulted in the impairment of cardiac systolic function, in terms of ejection fraction reduction. Immunoblotting results revealed that 6weeks-TAC induced upregulation of SIRT 1 in mice heart as well as the mitochondrial biogenesis regulator PPARgamma and mitochondrial fusion regulator MFN2. Next, we will apply Sirt1flox/flox and cardiac specific Sirt1^{-/-} (cSirt1^{-/-}) mice in this project to determine the hypothesis that Sirt1 is crucial for these effects in protect heart from hypertrophy.

Closing the Language Gap One Work of Art at a Time

Francesco Little

Faculty Mentor: Dr. Catherine Wilkins (Judy Genshaft Honors College)

Struggling to learn English? (ESL) classes too boring? Well, I think so too. This study focuses on the impact of art analysis and incorporation on the language learning process is very readily tied to my own experiences having been part of several (ESL) programs. Serving as a literature review and framework for future VTS (Visual Thinking Strategy) facilitation, this research outlines the process by which those attempting to learn English as a second language can participate in VTS sessions to improve their comfort and confidence with English while simultaneously building community with other ESL participants. With the creation of this framework, we hope to improve communication between people of different linguistic backgrounds providing them with both agency and the means by which to explore newly realized interpersonal relationships. This literature review provided us with overwhelming evidence that art analysis and incorporation in the language learning process helps participants acquire fluency while self-assessment of confidence serves as a valid method to acquire empirical data for the use of statistical analysis to discern if our proposed framework is effective.

Sharing the Pen: How Does the Interactive Writing Approach Motivate and Improve Students' Writing Abilities

Angela Lopez

Faculty Mentor: Ilene Berson (College of Education)

Learning how to write is a pivotal step in a young student's educational career. With this comes learning to read, spelling rules, problem-solving, structure and more. Much research has been conducted that suggests implementing specific writing approaches with students may improve their understanding of writing, spelling strategies, reading, and handwriting. Few studies suggest, however, which writing approach is most effective and if using an approach will increase students' motivation to write. In my research, I am implementing an interactive writing approach with 3 small groups of 1st graders while collecting and analyzing data to find if it will enhance their writing abilities and motivation to write. My data collection includes audio recordings of student conversation, notes, and photographs of student artifacts. The students are grouped based on their guided reading levels, so there is not a major contrast on their ability to write and read during the lessons. I work with each group to choose a topic, purpose, and audience for their stories. I guide students' thinking and ideas into a direction that makes sense for our writing. Each student plays a role in physically writing words and sentences while utilizing problem solving strategies for spelling, orthography, and independence throughout our lessons. We will revise, edit, and publish our work to our audience in hopes of motivating the students to make their story the best it can be.

Development of a Spanish-Language Toolkit for Hearing Loss Self-Management: Focus Group Results

Natalia Lugo-Reyes

Faculty Mentor: Michelle Arnold (School of Natural Sciences and Math)

Hispanic/Latinx adults are 78% less likely to utilize hearing aids in comparison to non-Hispanic/Latinx Whites, despite both groups having a comparable hearing loss prevalence of ~65%. The US Hispanic/Latinx population is projected to grow and along with it, known costly negative health outcomes associated with untreated hearing loss. A potential source of discrepancy between hearing healthcare (HHC) among Hispanic/Latinx adults and white, non-Hispanics is language access. While not previously studied in terms of HHC use, the associations between limited English proficiency (LEP) and overall healthcare utilization are evident. Increasing access to HHC by removing language barriers for individuals with LEP should be a public health priority. Thus, the objective of the current study was to develop culturally and linguistically appropriate HHC patient education materials. We completed an iterative development process and formative evaluation of Spanish-Language education materials utilizing focus group methodology, with the ultimate goal of co-designing materials focused on hearing loss-self management for use with Hispanic/Latinx adults. Participants were 35 Spanish-speaking adults aged 18 to 78 who self-identified as Hispanic/Latinx. The purpose of the focus groups was to ensure that the developed materials were culturally relevant regarding themes, content, and linguistic appropriateness. Focus group content analysis findings revealed the need for materials addressing topics such as familism, caregiving roles, and vanity issues. Participants showed eagerness to share these much-needed materials with loved ones and were enthusiastic to help. Overall, the study was well-received and gave the indication that these materials will be used by and benefit the Hispanic/Latinx community.

Patient Satisfaction by Gender

Victoria Lynn Maddex

Faculty Mentor: Donna Ettel-Gambino (Judy Genshaft Honors College)

The quality of care received from providers may impact the satisfaction of the patient experience. There have been numerous studies regarding patient satisfaction, especially retrospective studies that document changes that were made within hospitals and healthcare networks analyzing whether or not changes generated significant findings. Patient satisfaction was also found to be highly correlated with aspects of healthcare that people take for granted such as functioning medical instruments and careful explanation of diagnosis and treatment. This project examines key drivers relating to patient satisfaction in this Midwestern United States multi-hospital system. A quantitative causal comparative approach identified key drivers to improve patient satisfaction while simultaneously increasing quality outcomes for hospitalized patients. A retrospective review was conducted of patients' verbatim comments derived from post-discharge satisfaction scores utilizing a MANOVA. The following themes were identified: Facilities/Environment, Care Team, System/Organization, Provider, Nurses, Administration/Reception, and Timeliness. Results of the MANOVA showed statistically significant differences with the following two criteria: system/organization and facility/environment. Overall, 69% of patients expressed satisfaction with the system/organization, and 74% of patients reported satisfaction with the facility/environment. These findings indicated a correlation between gender and patient satisfaction, with females reporting greater satisfaction scores. Limited healthcare resources require efficient and effective process improvement efforts in order to maximize the patient care experience at this Midwestern multi-hospital system in the United States. This information may assist caretakers and administrators with the appropriate data-driven evidence in order to make informed decisions and implement system and process changes that will maximize the patient care experience.

Positively Waiting: Technology as the Preferred Distractor in the Pediatric Setting

Victoria Lynn Maddex

Faculty Mentors: Timothy Stephen Ernest with Donna Lee Ettel-Gambino (Judy Genshaft Honors College)

Visiting a healthcare facility as a child may be considered a stressful and anxiety-inducing experience. Recent research suggests that positive distractions, such as pet therapy and single-user electronic devices, aid in reducing anxiety and increasing patient satisfaction throughout a patient's experience at a pediatric healthcare facility. The aim of this quality improvement project was to determine which positive distractions patients experienced and whether single-user electronic loaner devices should be provided to patients at pediatric outpatient facilities. A quantitative causal comparative approach was utilized in identifying patient exposure to key positive distraction techniques that may significantly decrease anxiety. The independent variable was caretaker gender. The dependent variables were caretakers' responses to interview questions regarding exposure to and interest in positive distractors. Many patients had interactions with therapy dogs than clowns, musicians, with none reporting interaction with magicians at the facility. Although funding is provided for positive distractions, the results show that reported exposure to any single activity did not exceed 30%. Many patients (71%) showed interest in having access to single-user electronics during clinic appointment wait times. Male patients showed great interest (87%) in having access to single-user electronics. Findings suggest pediatric healthcare facilities funding single-user electronics to reduce patient anxiety may increase patient satisfaction. Additionally, data suggest administrators may benefit by offering an array of positive distractions, with a particular focus on pet-therapy programs. Child life specialists are particularly suited for overseeing the implementation of an efficient and effective program.

Planners, Parents, & Pediatrics: Appointment Barriers

Victoria Lynn Maddex

Faculty Mentor: Donna Ettel-Gambino (Judy Genshaft Honors College)

Patient satisfaction continues to be an ongoing conundrum within the healthcare system. Patients who are unable to attend appointments may negatively impact the patient's health while simultaneously impacting healthcare providers' ability to work efficiently and effectively. To maximize patient satisfaction, it is imperative to identify barriers which may lead to patients missing appointments. There are various arguments as to which aspect of patients' lives is the biggest culprit that prevents them from attending appointments. The purpose of this quality project was to better understand what barriers were preventing families from scheduling and attending appointments at a not-for-profit children's orthopedic outpatient clinic. This quality project was conducted by asking the parents of patients who attend the pediatric outpatient clinic a series of structured questions referring to specific barriers they may encounter when scheduling or attending appointments. 97 interviews were conducted in a waiting room within a pediatric outpatient setting in the Tampa Bay area. Descriptive statistics and cumulative frequencies were conducted to compare trends across groups. The top three barriers were the parent's work schedule (40%), phone wait times (17%), and after-school activities (19%). After-school activities were the most prevalent barrier for African American families (40%), while work schedule and transportation issues were more prevalent in Hispanic families (58% and 33% respectively). These data indicate that parent work schedules interfere with attending scheduled appointments to the largest extent. These findings suggest that an expansion of hours of operation may better serve the needs of caretakers and patients while maximizing facility efficiencies.

Stick It: Can Celebrity Endorsements of Childhood Vaccinations Influence Compliance?

Victoria Lynn Maddex

Faculty Mentor: Donna Ettel-Gambino (Judy Genshaft Honors College)

The purpose of this study was to gain insight into caretakers' education profiles, the influence of celebrity endorsements and opinions during the immunization decision making process, and their fear that vaccinations may cause autism in children/infants. This study was limited to the caretakers of students enrolled at a rigorous, African American private middle school for students qualifying for need-based scholarships in Saint Petersburg, Florida. A causal comparative approach was utilized. The independent variables were the caretaker's education level. The dependent variables were the caretaker's responses to the survey questions regarding knowledge and sources of vaccination information. Descriptive statistics and a multivariate analysis of variance was conducted to compare trends across groups. Overall, caretakers (25%) reported that their opinions on vaccinations were admittedly influenced by celebrity endorsements/opinions and many of the caretakers (38%) were identified as believing that vaccinations in children and infants may cause Autism ($p < 0.0001$). Additionally, caretakers (74%) who have a high school degree or a GED, believe that vaccines may cause autism when given to children/infants when compared to caretakers who have some college education or an Associate degree (17%) and of caretakers (21%) who have at least a bachelor's degree ($p < 0.0001$). This information is the first of its kind in the area of caretakers' education level and the barriers present that could prevent them from vaccinating their children. This information may assist policymakers and other key stakeholders in Florida—and nationally—in identifying, designing and implementing strategies to provide caretakers with the appropriate childhood immunization information.

Nanoparticulate Drug Delivery Systems for the Treatment of Atherosclerosis

Bhanuteja Madhu

Faculty Mentor: Yashwant Pathak (Taneja College of Pharmacy)

Nanotechnology is at the forefront of medical technology. It has a vast number of applications in the health sciences and new breakthroughs are being made constantly using it. Recently, Nanotechnology has been a candidate for new ways to deliver drugs in order to treat this heart condition. The purpose of this research article is to shed light on recent developments in Nanotechnology by analyzing its recent real-world applications to treat Atherosclerosis. Traditional methods of treatment including medication, lifestyle changes, and even invasive surgeries. Oral medication and surgical procedures have proven to be successful in treating Atherosclerosis, but both can cause tissue damages and other problems. Nanotechnology can be used to deliver drugs and even help improve white blood cell responses to plaque buildup. The usage of liposomes developed with nanotechnology helped increase the solubility of statins which helped increase absorption and bioavailability. When the medication was placed inside the developed liposome, it was shielded until it reached the target site. The biochemical properties of liposomes have helped researchers attach biomolecules like antibodies to the liposomes in order to help with targeting, guiding, and attracting macrophages to areas of interest like plaque sites. Another nanotechnology that is being further developed for a medical application is carbon nanotubes. These nanotubes can be easily grown and have been used successfully to deliver drugs and create nano-scaffolding to help tissue growth. Nanotechnology has enormous potential for medicine and when applied to the heart condition Atherosclerosis, nanotechnology has been able to prove its usefulness successfully.

Psychiatric Ward Design: Analyzing Architectural Design Elements and their Impact on Patients (and Staff)

Bhavana Madhu

Faculty Mentor: Atsuko Sakai (Judy Genshaft Honors College)

Psychiatric wards and hospitals have been notorious for being spaces that are meant to heal individuals who possess mental health conditions. But on the flip side, they are known to lack variation and colorful design. With the incorporation of certain design elements, the behaviors in patients can be affected. This study analyzes various spatial designs of psychiatric wards and identifies critical design elements in order to help increase the mental health and behavior of patients. Design elements include additions and rearrangements of furniture, room design elements, TVs, lounge material, and more. Humans are sensory creatures who react to environmental changes. Psychiatric ward patients are even more responsive to changes in the environment due to their altered mental state of mind. By examining various design studies done in the United States and the United Kingdom that explore the effects of additions of design elements on psychiatric ward patients, conclusions were drawn on which design elements were most effective in improving patient behavior. First, it was found that the addition of design elements helped to reduce aggression in psychiatric ward patients. Second, these design elements helped to improve behaviors in patients. Third, these design elements helped to reduce psychopathy and stereotypy in patients. It was concluded that the psychiatric ward was seen to transition from a homogenous bland environment to a healing space with the addition of various design elements. Therefore, design elements indeed have a strong impact on patient outcomes in terms of behavior and aggression and their impact on staff.

Virtual Reality for Vocational Rehabilitation

Piyush Manjhi

Faculty Mentor: Redwan Alqasemi (Department of Mechanical Engineering)

Virtual Reality For Vocational Rehabilitation is an initiative to train mentally challenged people in the different workspace with the comfort of VR, providing a safe and sound environment.

CareMessage Program as an Additional Intervention in the Care of Uninsured Type 2 Diabetic Patients

Valeria Pereira Martinez & Eric Delgado Rendon

Faculty Mentor: Eduardo Gonzalez (Department of Family Medicine)

Successful management of type 2 diabetes is largely contingent upon patient adherence to medication regimens, healthy diets, and exercise habits. This study follows the outcomes of the CareMessage program: a messaging program used to engage diabetic patients by asking about their beliefs regarding diabetes management. Through the CareMessage program, patients were also provided with diabetes education, reminders of their health, and lifestyle resources such as healthy recipes, useful websites, and modified workouts. The goal of this project was to determine whether implementation of the CareMessage program as part of standard care at the BRIDGE Healthcare Clinic would improve patients' self-efficacy in managing their condition and overall health. All active diabetic patients were offered the opportunity to enroll in the program, yielding a total of 22 participants. The primary outcome of self-efficacy in this study was measured using the Diabetes Empowerment Scale—Short Form (DES-SF). Secondary outcomes of the study included BMI and HbA1c changes. At the 6-months benchmark, data revealed a positive trend in DES-SF scores (averages from 31.1 to 32.1), a decreasing trend in BMI (averages from 31.7 to 31.5), and an increasing trend in HbA1c (averages from 8.01 to 8.15), however all these changes were not statistically significant. Data analysis for the 12-months benchmark remains in progress for a more definite conclusion.

Effects of Zn on Clostridioides Difficile Sporulation

Ann Matthew

Faculty Mentor: Xingmin Sun (College of Medicine)

Clostridioides difficile (*C. difficile*) is a Gram-positive, anaerobic, spore-forming and toxin-producing bacterial pathogen that causes *C. difficile* infection (CDI), the most common healthcare-associated infection in USA. *C. difficile*. Formation of dormant spores is one of the main virulence factors of this multi-drug resistant organism. Pathogenesis of CDI is mediated by the disruption of gut microbiota due to factors such as antibiotic uses. But how minerals impact CDI is mostly unknown. Previous studies indicated that high levels of the mineral Zinc exacerbate CDI whereas Zn supplementation decreased the recurrence of CDI. However, the effect of Zinc on *C. difficile* sporulation is unexplored. Based on the data available, we hypothesized that Zinc has crucial effect on the sporulation of *C. difficile*. In this study, we investigated the sporulation efficiency of the *C. difficile* strain R20291 (a hypervirulent strain) under various concentrations of Zinc Chloride at 24 hours and 48 hours. Preliminary results revealed that under the Zinc Chloride concentrations 75 uM and 150 uM, *C. difficile* produced spores at higher efficiencies than the control *C. difficile* cultures free of zinc supplementation (7.3% and 17.8% increase in sporulation efficiency, respectively, compared to the control at 48 hours). However, under the Zinc concentration

200 μM , the sporulation efficiency of *C.difficile* was decreased (23% reduction of sporulation efficiency compared to the control at 48 hours). Based on these preliminary observations, we suggest that the mineral Zinc concentration plays an important role in *C.difficile* sporulation, in a concentration-dependent manner. Additional experiments are being conducted to substantiate these preliminary observations.

Quantifying the Environmental Response to Deglaciation in Martian Craters

Lisette Melendez

Faculty Mentor: Joseph Panzik (School of Geosciences)

The present day climate of Mars has been delineated by a hyperarid climate conditions with glacial periods primarily controlled by variations in obliquity. In the past ~5 million years, the mean value of obliquity of Mars has decreased from ~35° to the current ~25°, a change which is interpreted to cause glacial ice to move from the mid-latitudes to the polar regions, resulting in deglaciation of the midlatitudes. On Earth, environments that experience deglaciation are classified as undergoing a paraglacial period, where the landscape is recovering from the effects of glaciation. This results in increased sediment transport and the formation of a diagnostic set of geologic features. On the surface of Mars, this diagnostic set of features are also formed after glaciers migrate away, including gullies, spatulate depressions, washboard terrain, and polygonal terrain. We mapped the distribution of these features within craters using CTX and HiRISE data. We also quantified various characteristics of each feature, as well as identified the orientation aspect of said features. We found that the spatial extent of paraglacial features increases with increasing crater diameter. The data collected supports the interpretation that glaciers are no longer active at the mid-latitudes, while paraglaciation remains the prominent system these environments have recently experienced. Since the extent of paraglaciation was not equal across the craters analyzed, paraglaciation is interpreted to experience regional variability. Implications for the constraining of past and present climatic systems on Mars will be gained by further assessing the extent of paraglaciation on the Red Planet.

NASA VIS Project: Biomechanics of Exercise Stability During Perturbations in Human Exploration Missions

Artur Cianfarani Meneghel, Abby Blocker, Maya Reid, & Lilian Penick

Faculty Mentor: Stephanie Carey (College of Engineering)

As spaceflight missions increase in both duration and complexity, responses to environmental changes become a crucial focus for astronaut health and success. For human spaceflight to the Moon or Mars, smaller exercise equipment needs to be designed to counter bone density loss, muscle atrophy, and decreased aerobic capacity. A Vibration Isolation & Stabilization system (VIS) will also need to be developed to prevent cyclic exercise forces from impacting the space vehicle. The purpose of this project is to determine if the VIS motion in-turn affects the stability of the astronaut's exercise. Using a simulated analog for an active or passive VIS, the effect of ground perturbation on movement reactions is addressed, including joint load and muscle activation, as well as how these data can be used for future implementation of countermeasures via computational modeling. Different combinations of mass, spring, and damping coefficients can be applied to the simulated VIS to test varying levels of perturbation during exercise procedures. Through the collection of kinetic and kinematic data, exercise stability can be analyzed to provide insight on how astronauts can benefit most from their exercise programs.

Contagion-Preserving Network Sparsifiers: Exploring Epidemic Edge Importance Utilizing Effective Resistance

Alexander Mercier

Faculty Mentor: Sayandeb Basu (Judy Genshaft Honors College)

Network epidemiology has become a vital tool in understanding the effects of high-degree vertices, geographic and demographic communities, and other inhomogeneities in social structure on the spread of disease. However, many networks derived from modern datasets are quite dense, such as mobility networks where each location has links to a large number of potential destinations. One way to reduce the computational effort of simulating epidemics on these networks is sparsification, where we select a representative subset of edges based on some measure of their importance. Recently an approach was proposed using an algorithm based on the effective resistance of the edges. We explore how effective resistance is correlated with the probability that an edge transmits disease in the Susceptible-Infected model. We find that in some cases these two notions of edge importance are well correlated, making effective resistance a computationally efficient proxy for the importance of an edge to epidemic spread. In other cases, the correlation is weaker, and we discuss situations in which effective resistance is not a good proxy for epidemic importance.

Political Media & Dehumanization of the Self on Marginalized, Immigrant Populations

Annabel Meyer & Emily Courtney

Faculty Mentor: Jamie Goldenberg (Department of Psychology)

With the accessibility of the Internet, ideas and sentiments can spread quickly and to many who would not have access otherwise. With this accessibility also comes an everyday exposure to current events and political sentiments. The climate of the 2016 election and conversations about immigration spread anti-immigrant sentiment. This study attempted find if this everyday consumption of anti-immigrant sentiment causes marginalized immigrants (specifically Latinx and Muslim immigrants) to dehumanize themselves, and if these dehumanizing sentiments have an effect on mental health. This study composed anti-climate change (control) and anti-immigrant sentiment tweets, then asked participants to complete a measure of dehumanization of the self. To see the relationship between possible dehumanization of the self and mental health, participants were asked to complete the Beck Anxiety Inventory. The study concludes with future directions for the study and implications of results on the mental health of marginalized immigrants.

Modernization and Legacy Events: A Look into How Modernization Impacts a City's Likelihood to Host Legacy Events

Jennifer Moeder

Faculty Mentor: Janelle Wells (Muma College of Business)

Legacy sporting events have long been an attraction of major cities all over the world. This study looks into what a city is willing to do to make their bid/proposal stand out more than the others through modernization of their city attractions. Specifically, looking into how the multi-million-dollar modernization of Water Street in downtown Tampa has changed the amount of legacy events hosted in Tampa. Examining similar studies of the effects both before and after legacy events,

there are many factors which go into generating a proposal to host such events. Everything has to be included, hotels, restaurants, outdoor attractions, transportation, and how the city can handle the influx of people. Comparing Tampa's Water Street modernization project to that of the Staple's Center and SoFI in California, along with itself before and after these renovation, this thesis examines how much, if any, influence this could hold on committee decisions as well as looking into if these renovations truly help a City host a greater magnitude of legacy events.

Multinational Corporations' Approach to Corporate Social Responsibility in Developing Economies: A study of IKEA in India and TOMS in Haiti

Juanita Morales

Faculty Mentor: Jean Kabongo (Muma College of Business)

Corporate Social Responsibility (CSR) is approached with varying strategies by different companies, bringing about distinct results. This study aims to investigate corporate approaches to corporate social responsibility in two developing economies – IKEA in India and TOMS in Haiti, while analyzing the social practices of each. We address the following research questions: What impact does CSR have on communities in a developing economy and what different approaches can be taken? How do corporations utilize cultural marketing research to compliment CSR? And Who do they collaborate with? Qualitative research focused on a case study was used, accessing public documents from IKEA and TOMS with an interpretative approach in line with the perspectives of the Stakeholders Theory. This study should serve as an example of varying CSR approaches and their true impact on communities for current and future corporations. Any future research should also include more primary research such as stakeholder interviews. Preliminary results show how important it is to do proper research on a developing country's social and economic issues to predict the effects of any outside efforts; IKEA's approach follows the stakeholder theory by partnering with local businesses, maintaining a set code of conduct, and increasing social spending every year to address India's issues, while TOMS follows a feel-good marketing approach utilizing donations or handouts as their sole focus. IKEA has created over 45 thousand jobs and continues to work toward developmental goals in India, while TOMS has given 95 million shoes to 82 countries after changes to their initial model.

3D Reconstruction of a Developing Astrocyte in the Medial Nucleus of the Trapezoid Body from Volume Electron Microscopy

Victoria Moses

Faculty Mentor: George Spirou (Department of Medical Engineering)

The medial nucleus of the trapezoid body (MNTB) is an excellent model system for studying neural circuit development due to the rapid maturation of a highly homogenous neuronal population that is monoinnervated by the largest terminal in the mammalian brain, the calyx of Held (CH). Glial cells were once thought to be the glue of the brain. However, recent evidence has demonstrated that glia have a more active role in neural circuit development. One of the four main classifications of glial cells, astrocytes, are the most abundant glial cell type in the CNS with distinct morphologies that underlie differing functional roles. Numerous studies have examined the relationship between astrocyte diversity and functionality across various brain regions, as well as within the same region; however, the exact role of astrocytic heterogeneity remains elusive, particularly during development. To visualize the morphological features of astrocytes at an ultrastructural level during CH development, we utilized our unique developmental series of serial block-face scanning electron microscopy (SBEM) volumes. We have completed a partially reconstructed postnatal day 6 astrocyte to observe and analyze complex

astrocytic morphologies. Initial analysis reveals the preservation of characteristic astrocytic features, such as formation of end feet and vellus processes. We also observed several novel characteristic features, such as large mitochondrial width, prevalent stacks of endoplasmic reticulum, and axonal ensheathment. This study highlights the complex morphology of astrocytes and their diverse heterogeneity by identifying novel ultrastructure morphological features during a critical period of synaptic development and neural circuit formation in the MNTB.

The Relationship Between Mental Health Symptoms and Intimate Partner Violence

Kerri Murphy, Dr. Lindsey M. Rodriguez, Alison Hunt, Zachary Whitney, Sarah Strike, Joshua Stanz, & Natalia Naccarato

Faculty Mentor: Lindsey Rodriguez (Department of Psychology)

Psychological symptomology and intimate partner violence (IPV) have been shown to often display robust significance. In this study, we investigated how one's own mental health symptoms and one's partner's mental health symptoms were related to one's own IPV perpetration. Although many studies have examined the relationship between IPV and mental illness, there appears to be a dearth of research pertaining to mental health symptoms of a partner and the subsequent impact related to the other partner's IPV perpetration. We aimed to fill these gaps with two hypotheses. H1: Individuals with more mental illness symptoms will be more likely to perpetrate IPV. H2: Those with more mental illness symptoms will be more likely to be victims of IPV. Participants included 118 romantic couples (44% female) cohabitating during the COVID-19 pandemic. On average, participants had been romantically involved with their partner for 14.74 (SD=11.71) years. Most participants were White (88.74%) and heterosexual (83.12%). Participants completed an online survey seeking to evaluate their experience with symptoms of anxiety, depression, neuroticism, anger, psychological IPV perpetration, and physical IPV perpetration within the past month. Results indicate support for both hypotheses. Own and partner anxiety, neuroticism, and some facets of anger were related to more physical and psychological IPV. Interestingly, physical violence was predicted by their partner's depression and not their own. We discuss important implications of a partner's anxiety being related to IPV perpetration and that one's own anger control was shown to be a deterrent of IPV.

Students' Perceptions of Loneliness Intervention Programs and Strategies at the University of South Florida

Kerri Murphy, Michael Buxton, & Morgan Duncan

Faculty Mentor: Amber Gum (College of Behavioral and Community Sciences)

With the increasing prevalence of loneliness in college students, there is a need to evaluate intervention services offered by universities and private colleges. Through our research, we sought to examine students' perceptions of loneliness intervention programs and strategies at the University of South Florida (USF). Students from the College of Behavioral and Community Sciences were emailed an anonymous online survey asking questions pertaining to loneliness. There were 219 students who participated in the survey. We were particularly interested in students' awareness of intervention services, if students had utilized one or more of these services previously, and their perceived effectiveness of these services. Additionally, students were asked their preferred modality of interventions to combat loneliness. Intervention services included different departments of Student Success and their programs associated with involvement and wellness. The results of our study indicate there is room for improvement of intervention services that are offered by USF to ward off loneliness amongst students. We found that 70% of survey takers have not used an intervention service provided by USF.

For those who did use these services, only 32% were extremely satisfied with their experience. Students were open to a variety of services, including counseling, campus activities, and a one-credit course on emotional intelligence and healthy relationships- with the majority of individuals demonstrating a preference for counseling. These findings may lead to suggestions for additional strategies USF can employ to lower the prevalence of loneliness in USF students.

Will the U.S. Adopt Negative Interest Rates as a Result of COVID-19?

Manal Nair

Faculty Mentor: Michael Snipes (Department of Economics)

Negative interest rates (NIRs) are a monetary policy used by central banks or the Federal Reserve to stimulate an economy. They have become widespread in Europe and Japan following the 2008 economic crisis, but this has not yet occurred in the U.S. Analyzing the effects of NIRs on the financial markets in Europe and Japan will help to determine whether they have been beneficial in terms of stimulating their economies. Economic weakness drove these countries to go negative to fight inflation; furthermore, it created savers who prefer safety to take risks in order to earn more. The reason for studying the possible effects of NIRs on the financial markets and economy in the U.S. is that the Federal Reserve has recently cut rates to 0–0.25% to stimulate economic growth. There is a possibility that the U.S. will follow Europe and Japan. However, the interest rates will stay low for some time until reaching negative values. This paper seeks to determine if there is a correlation between NIRs and economic activity in the countries selected for the years 2009–2020 (particularly in countries with initial negative rates, e.g., Denmark, Japan, and Switzerland) through a historical comparative analysis.

A Retrospective Analysis of Morbidity Variances Amongst Clinical Trial Screen Fail (CTSF) Patients from a Private Clinical Research Center

Anna Nguyen

Faculty Mentor: Guy W. Neff (Department of Hepatology)

Introduction: Non-alcoholic fatty liver disease (NAFLD) is a rapidly growing global disease state. Nonalcoholic Steatohepatitis (NASH) is the progressive form of NAFLD, whereupon a fatty inflammatory process leads to liver damage. NASH disease state is the second most active research disease state and offers patients a treatment option. To enter a clinical trial, subjects undergo a screening process that includes three steps: laboratory analysis, MRI sequence analysis, and liver biopsy for definitive diagnosis of NASH. The clinical trial screen fail (CTSF) rate for NASH trials is extremely high and often greater than 75%. The aim of this project is to analyze a cross-sectional cohort experiencing CTSF for current NASH trials. **Methods:** A retrospective review of medical records was completed that included data patients who were prescreened and screened for NASH clinical trials. The data included the following: potential NASH/NAFL related morbidities, controlled attenuation parameter (CAP) scores, liver stiffness measurement (kPa), MRI-PDFF values and various lab values. **Results:** The results demonstrate that morbidities including diabetes, obesity, and hypertension have a higher CTSF rate when compared to subjects with diabetes and obesity or hypertension. The data suggests that DM-II and vast number of metabolic syndrome components should be emphasized when pre-selecting NAFLD patients for screening. **Conclusions:** The long-term analysis noted above will require further in-depth analysis to delineate the morbidities that identify the NASH population. This project will create guidance and direction of resources, reduce the cost of screening, and improve the overly high screen fail rate staggering fatty liver trials.

Demographic Analysis: Evaluation Amongst Clinical Trial Screen Fail (CTSF) Patients in a Large Clinical Research Center

Anna Nguyen

Faculty Mentor: Guy W. Neff (Department of Hepatology)

Introduction: There has been an increase in the prevalence of Non-Alcoholic Fatty Liver Disease (NAFLD) worldwide. NAFLD is pathologically divided into disease state without inflammation called Non-Alcoholic Fatty Liver (NAFL) and disease state with inflammation is called Non-Alcoholic Steatohepatitis (NASH). The uncertain picture of the archetypal NAFLD patient poses a challenge in isolating at-risk patients and identifying endemic populations. Currently, there are no FDA-approved treatments for NASH. The most promising treatment for NAFLD is in the direction of NAFLD clinical trials. However, the rates of screen failures are generally greater than that of randomization. The study's objective is to analyze the demographics of patients who do not meet inclusion/exclusion criteria for NAFLD clinical trials. This aims to improve patient identification for NAFLD trials to reduce screen failures and accelerate enrollment. Methods: Patient information of 158 patients who screen failed for NAFLD clinical trials were retrospectively analyzed. Data collected includes the following demographic information: sex, age, ethnicity, and race. We analyzed the various groups frequency of CTSF. Results: The data collected reveals white, non-Hispanic, greater than 50 years of age have the highest risk for CTSF rate. Black and Asian subjects were under-represented within the analysis. Conclusion: The above data demonstrates differences in CTSF rates amongst ethnicity, gender, and age. Understanding the patient population that screen failed will optimize the recruitment and screening process for NALFD trials.

The Relationship Between Gender, Race, and Picture Stimuli Selection in First-Graders

Jessica O'Reilly, Jaidon Angel & Perdita Samuel-Lopez

Faculty Mentor: Trina Spencer (College of Behavioral & Community Sciences)

Race and gender can influence the preferences and choices of young children (Jensen et al, 2020; Renneles et al, 2014). However, little is known about if or how race or gender can affect students' selection of testing stimuli when given choices during language-based assessments. In this study, stimulus picture sets were presented to 155 first-graders as writing or oral retell prompts at three different time points. One stimulus set, the Narrative Generation Writing (NGW) stimuli, included images of children from varying genders and races. The other stimulus set, the Expository Oral Retell (ERO) stimuli, included images of non-human scientific topics. The purpose of this study was to examine students' race and gender and the impact their demographics had on their selection of different assessment stimuli for NGW and ERO tasks. Chi-squared analyses were used to examine the relationship between the frequency of student stimulus set selection and student gender and race. For the NGW assessments, there was a significant difference in stimulus selection between male and female students, but not among different racial categories. Female students most frequently selected stimuli featuring a female character, while male students most frequently selected stimuli featuring a male character. In comparison, the results of the ERO assessment indicated that neither gender nor race significantly predicted stimulus set selection. These results may reveal more about the biases young children have, which has implications for future language assessments and how to ensure stimuli that are used reduce, not increase, racial or gender biases.

Mama Don't Preach: Comparing Mothers' and Adolescents' Perceptions of Maternal Guilt Induction

Mackenzie Osborne & Blythe Sanschagrin

Faculty Mentor: Wendy M. Rote (Department of Psychology)

Parental guilt induction is a common parenting practice used to develop a sense of morality within children during development. However, literature on moral development versus literature on parenting establish there to be distinct perceptions of the effects of guilt induction across their individual domains. Rote and Smetana (2017) examined how child appraisals and the projected effects of hypothetical guilt inductive statements vary based on the topics over how guilt is induced and the way it is expressed. This study builds upon Rote and Smetana (2017) by evaluating child and parent perceptions of the same vignettes. This comparison is necessary as child and parent perceptions of parenting are moderately correlated, with a correlation coefficient around .28 (Hou et al., 2020), and parents and teens differ as to the amount of authority they believe parents possess to regulate various issues (Smetana, 2011). This study included 123 mother-adolescent dyads (246 participants total) from the Tampa Bay area who separately evaluated 12 hypothetical vignettes depicting parental guilt induction. Mothers' and teens' evaluations of guilt inductive statements were compared using a repeated measures ANOVA, taking into account guilt induction topic and method of expression. Mothers' and teens' evaluations of guilt induction differed somewhat, partially depending on the topic and form of guilt induction considered. Discussion focuses on the factors leading to similarity and differences in parents and adolescents' perceptions of guilt induction.

Does Race/Ethnicity Influence the Health Disparities within the LGBT Community? Analysis of Adults Aged 50 and Older

Aisha Ozair, Aditi Parashar & Adrielle Faith Magdael

Faculty Mentor: Christi Nelson (Aging Studies)

Lesbian, gay, bisexual, and transgender (LGBT) health disparities have been well documented in previous research; however, limited research has been conducted on racial/ethnic differences in health among LGBT older adults. Past research suggests that LGBT adults from racial/ethnic minority groups may encounter more discrimination and stigma than white LGBT adults, resulting in poorer health. This study investigated differences in general health between racial/ethnic groups in LGBT adults aged 50 and older from the 2018 and 2019 Behavioral Risk Factor Surveillance System annual surveys. The average ages were 64.2 years for the lesbian, gay, and bisexual (LGB) participants (n=3636) and 65.4 for the transgender participants (n=972). For self-rated general health, the result of the chi-square analysis indicated that there were significant differences between the racial/ethnic groups for both LGB and transgender participants, $\chi^2(4, n=3630)=46.47, p < .001$ and $\chi^2(4, n=969)=19.03, p=.001$, respectively. Specifically, for LGB participants, the results found that 21.5% of White participants, 29.4% of Black participants, 10.9% of Asian participants, 39.9% of Hispanic participants, and 30.5% of the Other Race participants rated their health as fair or poor. For transgender participants, the results found that 25.7% of White participants, 29.5% of Black participants, 15.8% of Asian participants, 43.9% of Hispanic participants, and 28.2% of the Other Race participants rated their health as fair or poor. In conclusion, the results of this study suggest that cultural differences in racial/ethnic groups may play a role in the health of the LGBT community, making it an important factor to consider in LGBT research.

Is Insurance Reassurance Throughout the COVID-19 Crisis?

Nicole Howard Pacha, Carly Marie Durgin, & Victoria Lynn Maddex

Faculty Mentor: Donna Lee Ettel-Gambino (Judy Genshaft Honors College)

How people view health insurance policies may have changed during the COVID-19 pandemic. There have been limited studies about how private versus public insurance could affect the quality of healthcare and how people access healthcare. More research is needed on how insurance status may influence health information seeking during the COVID-19 pandemic. The purpose of this study is to increase our understanding of University of South Florida Judy Genshaft Honors College students' compliance with COVID-19 guidelines as set by the CDC. The population consisted of students who are enrolled in the Judy Genshaft Honors College at the University of South Florida. A quantitative causal comparative approach was utilized. Initially, a MANOVA was conducted to identify significant trends across groups. The independent variable was the participants' insurance status. The dependent variables were the participants responses to the survey questions regarding: comfort level communicating with their doctor, if they trust the information on the internet, and if the CDC is their primary source of information. Considering this was a pilot study, and data collection is still in progress the initial results were not significant. Overall means show that 79% of all types of insurance holders feel comfortable in contacting their doctor over email. Moreover, the overall means also indicate that 82% of all type of insurance holders search for information on COVID-19 on the internet and that 84% use the CDC website as their main source of information about COVID-19. This information can assist USF administrators' decision making on COVID-19 safety guidelines.

Liberal or Conservative: Where Do You Stand with COVID-19?

Nicole Howard Pacha, Carly Marie Durgin, & Victoria Lynn Maddex

Faculty Mentor: Donna Lee Ettel-Gambino (Judy Genshaft Honors College)

In the midst of the COVID-19 pandemic, citizens of the United States were faced with the additional challenge of safely voting in the 2020 presidential election. CDC guidelines led some of the population to opt for mail-in ballots in order to comply with physical distancing. There has been limited research conducted about how political ideation may influence one's physical distancing practices. The purpose of this study is to increase our understanding of the University of South Florida Judy Genshaft Honors College students' political influence on compliance with COVID-19 guidelines. The population consisted of students who are enrolled in the Judy Genshaft Honors College at the University of South Florida. A quantitative causal comparative approach was utilized. Initially, a MANOVA was conducted to identify significant trends across groups. The independent variable was participants' political affiliation. The dependent variables were the participants responses to the survey questions regarding: whether they frequent restaurants, if they have been on an airplane in the past 3 months, and if they show their Campus Pass to their professors. Considering this was a pilot study, and data collection is still in progress the initial results were not significant. Overall means show that 38% of all political affiliations frequently go out to eat at restaurants. Overall means indicate that 32% of all political affiliations have been on an airplane in the past 3 months and that 68% show their Campus Pass to their professors. This information is the first of its kind at the University of South Florida.

Imbalance in Sex Ratio and Illegal Sex Recognition in India

Rutul Padmani

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

For the past few decades, the imbalance in the sex ratio has been a major concern for the government in India. According to the 2011 census report, there were 909 females per 1000 males. Moreover, the ratio of females to males below 6 years of age has been declining at a disturbing rate. Male preference and female feticide using prenatal gender recognition is a major reason behind this sex ratio imbalance. This study aims to evaluate the factors causing this imbalance like the introduction of ultrasound scanning technique (used for gender recognition) and male preference among urban and rural populations. The measures adopted by the government to stabilize the sex ratio like banning sex recognition before birth. This law was implemented over 25 years ago but the sex ratio(male: female) gap has grown. This project also addresses healthcare malpractices like revealing the fetus' gender to the patients. It evaluates the impact of the government's measures on this problem and suggests various alternative approaches which could help to balance the sex ratio.

Mindful Eating

Elizabeth Padron

Faculty Mentor: Geoffrey Potts (Department of Psychology)

Previous literature suggests that mindfulness increases internal awareness. When applied to nutrition, mindfulness has been successful in enabling healthier food choices in eating disordered and also overweight populations. Mindful eating is thought to increase conscious and intentional food choices, however, there is no supporting evidence for mindfulness impacting the food behavior of normal-weight individuals. I hypothesize that mindfulness will positively affect food attitude, demand, and choice of healthy options and negatively affect unhealthy options. Mindfulness is established through a 10-minute video-guided breathing exercise. Food attitudes are measured for healthy and unhealthy options on a five-point Likert scale. The demand task tests for the likelihood of food purchases on a scale from 1-100 for both healthy and unhealthy options at different price points. In the food choice task, the participant chooses a snack from both healthy and unhealthy options at the end of the study as a thank you for completing the experiment. Literature suggests more mindful people tend to choose healthier choices than less mindful people. The results of this ongoing study bring attention to the power of mindfulness when it comes to food choices in college students and the importance of building positive nutrition habits for a healthy life. More research is needed to understand the mechanisms behind different mindfulness practices and their efficacy in enabling healthy food choices. Further research could make mindfulness a strategy in public health campaigns to address the obesity epidemic in the US.

Ayurvedic Medicine

Kshama Patel

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

This project discusses the advantages and disadvantages to Ayurvedic medicine. Ayurvedic medicine is the holistic way of treating a patient with various techniques varying from herbal remedies to simply relaxing the body. This is a widely practiced technique in South Asia and other countries by South Asians. This practice will be compared against biomedicine, or Western medicine. This project uses various different sources to discuss and analyze how effective Ayurvedic medicine

really is by evaluating the advantages and comparing them against the disadvantages. Additionally, some personal experience by the author will be included to back up some of the research as she comes from an Indian background and is raised in a family who uses Ayurvedic medicine for many different disorders in the household. Several different case studies are presented in this project. These studies include case studies of successful uses of Ayurvedic medicine, and cases of the adverse effects of using Ayurvedic medicine. The project will dwell into what exactly Ayurvedic medicine can include and then it will go deeper into the practice of the medicine by discussing the difference between Ayurvedic medicine and Western medicine. Then, the case studies will be used to prove the different points which will then be used to come to a conclusion on whether or not Ayurvedic medicine is actually as effective as biomedicine. Different cases such as epilepsy, hypertension, schizophrenia, and even cancer treatments will be discussed. Based on the analysis a conclusion will be made at the end of the project.

Colorism in India: The Scale of Beauty

Angela Patel

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

Colorism in India has been an issue since the colonization of the British where the standard of beauty was praised by one for having European-like features. This ideal has percolated down generations to where the culture of skin-whitening has become popular and the norm for many women in India. Society has convinced several generations of women that they won't be successful in terms of careers, livelihood, beauty, etc. if they are not "fair-skinned" because it is still heavily portrayed as such in media and social spaces. In this project, I will be exploring the impact of skin-whitening on women and how current society still perpetuates this mentality on impressionable girls. The new wave of social movements denouncing colorism and supporting natural beauty will also be discussed as they have paved the way for changing the dynamic of how such products can be marketed. Overall, the goal of this project is to observe and analyze the history behind this ideal and the effects on Indian individuals in the present as many changes are occurring in this time of empowerment.

Measurement of Human-Suit Interaction During Extravehicular Activity to Reduce Injury

Niraliben Patel & Valeria Carrasquillo

Faculty Mentor: Stephanie Carey (College of Engineering)

As astronauts perform various tasks outside a spacecraft, an important tool for survival and a breathable environment in space is the spacesuit. However, while it provides humans with the ability to execute extravehicular operations, spacesuits may interfere with mobility, increase discomfort, and in extreme may even cause injury. To determine countermeasures for these issues, it is important to measure movement within the spacesuit and the extent to which it impedes movement using a force sensing system. In this study, an internal suit is proposed for measuring the interaction of the user and the spacesuit during dynamic motion, to recognize high-force areas. The proposed prototype includes an Arduino Uno microcontroller, force sensing resistors, and an HC-05 Bluetooth module to transfer the data for real time monitoring. A sleeve has been designed for initial testing, involving six sensors. The force sensing system is integrated into a Lycra sleeve for conformable measurement as well as uniform fit. A "low," "medium," and "high" force range has been determined to analyze the intensity of contact. Several tasks will be performed to measure the intensity and duration of the interactions between a mock suit and the sleeve. Future work will refine the sleeve's design in terms of integration of the hardware for optimal

comfort and ultimate efficiency. Data collected will be analyzed and processed in efforts to create a 3D model displaying the regions of highest interactions. The microcontroller will be minimized to a smaller unit, such as the Arduino Mega or Nano.

Examining the Mediation Role of the Family Environment in the Relation Between Parent and Child Anxiety and Depression
Nirzari Patel. Faculty Mentor: Brian E. Bunnell (College of Medicine Psychiatry and Behavioral Neurosciences)

Anxiety and depression are two of the most prevalent psychiatric conditions. Several studies have shown that caregiver psychopathology predicts psychopathology in their children. However, little research has examined the mediational role of the family environment on this relation. Thus, the main purpose of this study was to examine whether the relationship between caregiver depression and anxiety and their child's depression and anxiety respectively, is mediated by the various facets of the family environment. The sample included 316 caregiver-child dyads who completed clinical assessments of anxiety and depression. Children also completed the Family Environment Scale or Child Version of the Family Environment Scale depending on their age, which includes the following subscales: Cohesion, Expressiveness, Conflict, Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization, and Control. Results indicated that the relationship between caregiver anxiety and child anxiety was mediated by Family Cohesion and that the relationship between caregiver depression and child depression was mediated by Family Cohesion, Expressiveness, and Active-recreational Orientation. The results of this study suggest that Family Cohesion, Expressiveness, and Active-Recreational Orientation play significant roles in the effect of caregiver psychopathology on that of their children.

Rape Culture's Effect on Women's Mental Health in India

Nirzari Patel

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

Rape ranks number fourth for the crimes against women in India, only considering the recorded cases that are being counted. Some states are backward and state that recording sexual assault is discouraged not only by the family but also by the police. The women who are sexually assaulted or raped have some adverse effects on their mental health. In South Asian culture Mental Health issues are usually stigmatized. Women fear for their life and worry that being rape will bring shame to their families by society. Additionally, most of the time the women who are assaulted; are assaulted by the closest people they know and not by strangers. The purpose of this paper is to solely address the effects of mental health on women who have experienced sexual assault or rape and focuses on women who face fear, anxiety, and stress to do their day-to-day activities with the nagging thought that they might be sexually assaulted. Many women carry tools to protect themselves and are scared to wear revealing clothing. Moreover, some women also rely on their male friends to drop them home if they are out late at night. Thus, women know that not all men are the same but the men they can trust are not that many. Based on the analysis performed, women in India do face mental health problems including fear, anxiety, and stress in their day-to-day activity due to the constituted patriarchy and the structure of the society.

Underground Organ Trade

Vishesh Patel

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

This project dives deep into the issue of human trafficking, and more explicitly, organ harvesting. Organ trade is a vital issue that occurs all around South Asia, and it does not seem to be halting anytime soon. The project talks about why people harvest organs and what are their motives such as money and power. Other matters that are covered are the pathways

of organ trade in South Asia, how the process happens and what are some trends that can easily be noticed such as who goes through this process and where. The project also highlights trends at the macro scale and narratives about transplant experiences. Other topics include the laws regarding this issue and how often are they upheld, or if there even enough laws to protect the people. Another topic covered in the project is the other side of organ transplants, which is who gets them and the rise of transplant tourism. This is all supported by stories from victims and statistics provided by a few other research articles. The last topic that is covered in the project is solutions and what to do next. This issue is immense, however, there are solutions presented, and the project reviews them and picks out flaws or supports them. There is no single solution, however, some can relieve some of the intensity of the issue.

Authentic Assessment of VPK Students' Math Skills

Paige Paul

Faculty Mentor: Ilene Berson (College of Education)

Young children express their mastery of skills in a variety of ways, but classroom instructional practices often rely on more formal, structured assessments. Research shows that when students have the opportunity to engage in open-ended exploration and interaction with math manipulatives, there is a greater chance of students using the materials purposefully. These child-initiated engagements offer rich opportunities for authentic assessment. Early childhood students participate in meaningful math lessons that allow them to later exhibit their skills throughout the day. The purpose of this study is to see how I may authentically assess students' applied math skills in the classroom. This is being conducted on 15 Voluntary Prekindergarten (VPK) students, ranging from three to five years old. Data collection includes photographs of student work samples and anecdotal records. The data were coded to identify trends. Findings suggest that authentic assessment of math learning allows for teacher reflection to enhance lessons, guides instructional decision-making on what to teach next, and promotes a focus on the students' strengths.

The Impact of the Caste System on Healthcare

Parker Payton

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

In modern India, the caste system has become less influential on one's social standing as previously in Indian history. However, there are echoes of this divide still evident in India, especially surrounding healthcare. For this project, I would like to research the effects of the modern caste system on many facets of healthcare, including wait times, treatment accessibility, and cost of care. Author Sanghmitra S. Acharya writes, "In the last 70 years, India has achieved considerable improvement in the health of its people. Nonetheless, the gap across social groups remains wide. There is evident association of low health status with poor, female gender, rural place of residence, tribal ethnicity, scheduled castes (SC) and specific minority groups" (Acharya 2018). This project will be an analysis of healthcare accessibility based on caste, gender, or other factors, and it will detail possible solutions to the issue of caste-based discrimination in healthcare. For this project to be affective, one must take a multifaceted approach when attempting to understand and improve India's flawed healthcare system. The complex relationship between caste and the people of India is a major player in how this system works and is maintained. By identifying how caste and other factors are related will make it easier to find solutions to these flaws, which will help ensure necessary care to millions of people. Government intervention regarding access to healthcare, education, income stability, technology, and other essential services is a vital first step to ending caste discrimination.

Acharya, S. S. (2018, June 18). Health Equity in India: An Examination Through the Lens of Social Exclusion. *Journal of Social Inclusion Studies*, 4(1), 104-130. Retrieved from <https://journals.sagepub.com/doi/full/10.1177/2394481118774489>

An Analysis of the National Basketball Association's 2019-2020 Season Viewership and the Impact of Social Justice Initiatives

Isabella Philippidis

Faculty Mentor: Gregory Greenhalgh (Muma College of Business)

"Sports play a different role in everyone's lives, and has physical and mental health benefits. Sports also acts as a microcosm of society and can be utilized as a vehicle for social change. The purpose of this research is to discover the factors that impacted the NBA's 2019-2020 season's viewership and the role their social justice initiatives played. Surveys were designed to interpret what impacted sports fan's viewership of the NBA's last season and interviews were conducted to understand how the league held individual teams accountable to put into practice their social justice stances."

The Racial Disparities Behind Alzheimer's Disease

Romil Pitale

Faculty Mentor: Hillary Rouse (School of Aging Studies)

There will be two elements to this Thesis, the first will be a discussion of the social and cultural issues surrounding racial disparities in Alzheimer's diagnoses with a focus on African American populations. I will contextualize the discussion by presenting statistical evidence of the existence of racial differences and their extent. I will briefly explain the extent to which genetics play a role and how genetic influence differs across racial groups, as well as address rebuttal arguments. A brief discussion of how biases in healthcare systems affect the quality of care and whether patients get timely diagnoses. Social issues will include an extensive discussion of Stigmas. The discussion of stigmas will talk about public perception, inherent biases in screening which may strengthen negative stigmas of healthcare, poor communication from physicians, how the content of stigmas differs across racial groups, and the extent of racial differences in beliefs, concerns, and faith in prevention/treatment options. The second part of the thesis will be an Oil Painting of an individual with Alzheimer's. I hope to capture the character of a patient with Alzheimer's with elements of as much as I can learn about their life story embedded in the painting. Alzheimer's is a disease that slowly takes away memory of life experiences, and I want to attempt to document the current state of being that the patient is in as well as emphasizing aspects of their life story.

Pretty Woman (1990) as a Product of the Disney Ethos

Maya Quinones

Faculty Mentor: Elizabeth Kicak (Department of English)

In 1984, Disney CEO Robert Miller created Touchstone Pictures, a distribution label that produced films marketed toward teen and adult audiences. Without the trademark mouse ears attached to these riskier projects, the market flocked to theaters unaware that they were consuming media tied to the characteristically family-friendly brand. With its expansion to teen and adult markets, the Disney company was challenged with maintaining brand integrity while crossing the boundaries of what is considered family-friendly entertainment. My research locates the Touchstone film *Pretty Woman* (1990) as a Disney entity subject to the influence of the Disney ethos. I perform a comparative analysis of the revised screenplay and

the final film in relation to the original, far grittier screenplay \$3000 to examine key identifiers of the Disney influence on this R-rated Touchstone film. I identify three core values of Disney ethos derived from Janet Wasko's *Understanding Disney: The Manufacture of Fantasy* (2020) that I believe are most salient in *Pretty Woman* (1990): The Fairytale, Traditional Values, and Capitalism. My findings indicate that while the company succeeded in producing far riskier content, the film ultimately upholds regressive tenets of the Disney ethos like patriarchal systems, the cult of domesticity, and an unwavering trust in capitalism. Through this analysis, I emphasize the risks inherent in Disney's continued proliferation across multiple avenues towards multiple demographics.

Impacts of Mask Covering on Human Breathing Examined by a Real-Time Magnetic Respiratory Monitor

Yasif Rahman

Faculty Mentor: Manh-Huong Phan (Department of Physics)

Due to the rise of Covid-19, it can be said that wearing a mask has become an essential part of everyone's daily life. With a person's face having to be covered for an extended period of time while interacting with others, many have raised concerns whether that extended period of mask wearing has any negative effects on one's respiratory rate. Common practice and technology require most respiratory devices to be in direct contact with a person, leading to the possibility of inaccurate data. To this end, we have developed a novel sensing platform utilizing a non-invasive, contactless, magnetic sensor and a tiny permanent magnet that can precisely monitor a person's breathing in real time. This device yields an accurate measure of the strength of the person's breath during different stages of rest, as well as anomalous variations in respiratory rate and amplitude. Thus, the effects that a mask can have on a person can be examined and analyzed systematically. We show that long time mask-covering has considerable impacts on human breathing, and selecting an appropriate mask for each specific case is needed.

Perception of Diseases and Healing in Rural India and its Effect on the Utilization of Different Systems of Medicine

Varsha Ramchandran

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

The rural population of India makes up more than 65% of its total population. Due to the majority of Indians residing in rural areas, it is essential to understand how diseases and healing are perceived in rural communities. There have been gradual changes to how medicine and illness are viewed by those in rural areas, which may have an effect on their health-seeking behavior. The purpose of this study is to examine the perception of diseases and healing in rural India and its effect on the utilization of different systems of medicine. This study explores the current rural medical situation, the perceptions of diseases and healing, and the use of traditional versus allopathic medical systems. Additionally, this study seeks to determine whether there is an increase in the use of medical pluralism amongst the rural population. By understanding the perception and views of those in rural communities regarding illness and healing and its effect on their health-seeking behavior, a better plan on how to effectively treat those in rural communities can be made.

Factors Associated with Child Fear of Illness: Parental Management of Children's COVID-19 Knowledge, Parenting Stress, and Parent Emotional Wellbeing

Jonathan Rawlins

Faculty Mentor: Melissa Faith (Department of Psychology)

Introduction: The coronavirus (COVID-19) pandemic poses a serious risk to the children's and parents' mental health. Studies have demonstrated some children are experiencing increased health-related anxiety associated with fear of contracting COVID-19. Yet, additional research is needed to identify parenting factors associated with children's illness fear. This poster will examine two mediation models examining parents' emotional wellbeing and parents' management of children's COVID-19 knowledge as mediators in the relations between parenting stress and child illness fear. Method: We recruited 595 parents during the COVID-19 pandemic. Parents completed the Parenting Stress Index, Fear of Illness and Virus Evaluation, and Epidemic-Pandemic Questionnaire. Parental management of children's COVID-19 knowledge was assessed via two items related to parents identifying trusted information sources for their children and clarifying children's COVID-19 misinformation. Results: Both mediation models were significant as shown by the 95% bootstrapped confidence interval for the indirect effects not containing zero. Parenting stress was negatively related to parents' emotional well-being ($B = -.057$, $p < .001$). Parents' emotional wellbeing was negatively related to children's COVID-19 fear ($B = -1.777$, $p < .05$). Parenting stress was negatively related to parental management of children's COVID-19 knowledge ($B = -.080$, $p < .001$). Parental management of children's COVID-19 knowledge was positively related to child COVID-19 fear ($B = .656$, $p < .001$). Conclusions: Mediation analyses indicated parental management of their children's COVID-19 knowledge and parents' emotional wellbeing mediated associations between parenting stress and children's illness fear. Our findings may inform the development of communication-focused parenting interventions, aimed to reduce children's COVID-19 fear by helping parents provide developmentally appropriate and accurate COVID-19 information.

Fight or Flight: Politically Motivated Selective Avoidance Among Social Media Users

Sam Rechek

Faculty Mentor: Stephen Neely (School of Public Affairs)

"Selective avoidance" describes a deliberate attempt to mitigate cognitive dissonance by insulating oneself from counter-attitudinal information. It has been argued that the filtering mechanisms associated with social media may facilitate these behaviors, and that this may have significant democratic implications as social media becomes increasingly central to the public sphere. With these concerns in mind, this study examines politically motivated selective avoidance in the context of social media. An experimental survey design is employed to measure the propensity of users to "unfriend" or "unfollow" members of their social networks in response to political disagreement, as well as to gauge how these propensities vary based on the strength of network ties. When compared to previous research, the results suggest potentially higher tendencies toward selective avoidance in the U.S. context than has been previously found in other settings, which may reflect broader trends toward political homogenization in the United States.

The Effects of Apkc Inhibitors on Cell Proliferation and Cell Viability in Mantle Cell Lymphoma

Darrys Reese

Faculty Mentor: Mildred Acevedo-Duncan (Chemistry)

Mantle Cell Lymphoma (MCL) is a rare and aggressive Non-Hodgkin's Lymphoma subtype. It is currently incurable, however targeted therapy has proven to be effective in MCL. The targets of interest in this study are the Atypical Protein Kinases (aPKC) PKC Zeta and PKC Iota. PKC Zeta and PKC Iota have played a role in cell proliferation and survival in a variety of different cancer types, including lymphoma. Current drugs that inhibit aPKCs are ICA-1 and Z-Stat. ICA-1 targets PKC Iota and Z-Stat targets PKC Zeta. This study investigated the effects of ICA-1 and Z-stat on cell proliferation and cell viability in MCL cell lines Jeko-1 and Granta-519. Jeko-1 and Granta-519 were treated with increasing concentrations of either ICA-1 or Z-Stat over a 72-hour period. The cells were counted using the trypan blue staining method at 72 hours. When treated with either Z-Stat or ICA-1, both cell lines showed a decrease in cell numbers with little to no change in cell viability, suggesting that the drugs could have a cytostatic effect on these cell lines. The results of this study suggest that Z-Stat and ICA-1 could be viable treatment options for MCL patients and further study into the role of aPKCs in MCL should be conducted.

PLAY (Protecting Little Adolescent and Youth) Hand Glove for Children with Cerebral Palsy

Maya Reid & Lillian Penick

Faculty Mentors: Stephanie Carey (College of Engineering) & Michele Hicks (School of Physical Therapy and Rehabilitation Sciences)

Cerebral Palsy (CP) is the most common motor disability for children worldwide. It occurs due to abnormal brain development of the vertebral cortex, often during prenatal growth. Children with this condition suffer from inhibited muscle tone and movement, causing involuntary reflexes, visual and gait impairments, and difficulties in hand and arm use. Specific to the hands, CP causes incoordination, incomplete finger dissociation, spasticity, and muscular hypertonicity. This makes early therapeutic intervention crucial to developing life-sustaining skills. Proprioceptive input is critical for functional and intentional movement, so the position and control of the hand is essential for overall motor function. The purpose of our intervention is to provide children with a structured hand orthosis with integrated features for breathability, durability, protection, and attractiveness. The goal is to combine functional components with personal features to improve child engagement and therapeutic retainment. Additional considerations include Velcro attachments for practice with daily-use items at varying abilities, and a side closure for ease of donning and cleansing for the caretaker. Our goals to continue research are to create a customer discovery survey to gather more information on the true needs of those with cerebral palsy and their caretakers. We would also like to develop a device assessment survey and integrate pressure sensors into the glove to log contact forces during spastic movement, testing the efficacy of its protective elements. We believe if we continue pursuing an improved approach to current therapeutic models, children with this disability will experience increased autonomy and quality of life.

A Friend or Foe: How Close Should We Get

**Katharine Marie Reisdorf; Brooke Elizabeth Olsen; Teresa Diem Quyen Mai;
and Victoria Lynn Maddex**

Faculty Mentor: Donna Ettl-Gambino (Judy Genshaft Honors College)

According to the CDC guidelines, social distancing is important to mitigate the spread of COVID-19 as it is transmitted most effectively among people who are within six feet and not wearing face masks. Many individuals who are infected with COVID-19 are asymptomatic and unaware that they can transmit. It is imperative to social distance when possible. When coming into close contact with someone who has COVID-19, it is crucial to self-isolate to prevent further spread of the virus. The purpose of this study is to better understand Judy Genshaft Honors College students' compliance with social distancing and isolation recommendations should the need arise. The population consisted of students who are enrolled in the Judy Genshaft Honors College at the University of South Florida. A quantitative causal comparative approach was utilized. Initially, a MANOVA was conducted to identify significant trends across groups. The independent variable was the participants' grade level. The dependent variables were the participants responses to the survey questions regarding: eating out at restaurants, plans for the covid vaccine, plans to self-isolate, and physical distancing compliance. Results of the MANOVA showed statistically significant differences with the criteria of self-isolation willingness and eating out based on grade level. Overall, 97% of Juniors reported a willingness to self-isolate if exposed or infected with COVID-19 whereas only 54% of Sophomores reported being willing to self-isolate. Seniors reported being 25% more likely to eat out at restaurants. An educational intervention may be beneficial to Sophomores who would self-isolate over 50% of the time.

Prediction of Functional Genes in Actinobacteriophage Truong and Analysis of Lysin

Migdalia Ricardo-Iglesias, Caitlyn Coleman, & Juan Gallardo

Faculty Mentor: Richard Pollenz (Cell Biology, Microbiology, and Molecular Biology)

Bacteriophages are the most abundant organisms on Earth and unique in their ability to infect and replicate within a specific bacterial host. The rise of antibiotic-resistant bacteria is a major health concern and phage may be the next line of antibiotic agents. The goal of this project was to identify and analyze the functional genes within M. foliorum actinobacteriophage Truong with a focus on lysin. To carry out this project the following programs were used: NCBI BLAST, HHpred, TMHMM, SOSUI, Phamerator, and DNAMaster. These tools examined the coding potential, alignment, and probability of the start sites for each gene. Functions were predicted by folding the protein in HHpred. Out of the 19 functional genes, 21% were tail proteins e.g. minor tail; 53% were structural e.g. membrane and portal proteins; 37% were regulatory e.g. DNA Primase and Polymerase; and 10% were enzymes e.g. lysin A and terminase. The bacteriostatic lysin gene is significant due to its ability to destroy bacterial cell walls. Lysin A falls under the domain Peptidase, Family M23, and was located between the minor tail and membrane proteins. Across the EK2 cluster of phages, alignment comparisons showed that Lysin A was 99% identical to the gene in Akoni and 70% identical to the gene in PhriedRice. Further analysis of genes in phage will contribute to the understanding of evolution and provide important data for health applications.

What Motivates Your Religiosity?: A Look at How the Strictness of a Religion Plays a Role in Religious Orientation

Nicole Ritenour, Nadine Elnagaar, & Naomi Aguilar

Faculty Mentor: Jay Michaels (Department of Psychology)

This study sought to determine if people's perception of strict religious moral codes and requirements influences religious orientation. Past research highlights how individual differences in religious commitment relate to religious strictness. Specifically, people who belong to more strict religious denominations tend to devote more time and commitment to their faith. Theoretically, this commitment should mean that religious strictness amplifies intrinsic and extrinsic religious motivation. As expected, religious strictness positively correlated with all forms of religious motivation. With a sample of $N = 841$, regression showed that religious strictness related to more intrinsic ($b = .537$), more extrinsic-personal ($b = .593$), and more extrinsic-social religious motivation ($b = .392$, all $ps < .001$). These findings are among the first to examine how religious strictness relates to religious orientation. Understanding how different factors influence religious motivation can provide insight into how different religious denominations relate to outcomes in health and wellbeing. This study was limited by its use of a correlational cross-sectional design, as such, causality cannot be established.

How For-Profit and Non-Profit Mental Health Organizations are Supporting their Employees during COVID-19

Marina Roberts

Faculty Mentor: Dr. Terry Boyd (Muma College of Business)

This research will focus on the impact that COVID-19 has had on one of the more impacted industries in our community – mental healthcare. In this research study, insightful information will be gained surrounding how different mental health organizations in the greater Tampa Bay area have actively supported their employees during the course of the COVID-19 pandemic. The literature review conducted will compare non-profit and for-profit mental health organizations prior to COVID-19, so accurate comparisons can be made with the acquisition of the latest data. A survey will be administered in which employees from local organizations will provide their feedback on the current state of their specific mental health organizations' support and the organizations' ability to adjust to the needs of their employees. It is expected that the results of this survey will provide useful suggestions and conclusions for the organizations being surveyed as well as other businesses within the industry. This data will be paralleled with the literature review's findings to grasp the variance between how non-profit and for-profit organizations have handled this pandemic.

Hepatitis C Donors and Outcomes in Kidney Transplantation

Kobe Robichaux

Faculty Mentors: Jacentha Buggs (Tampa General Procurement and Research) & Victor Bowers (Department of Surgery, Morsani College)

The purpose of this study is to evaluate the safety and outcomes of transplanting kidneys from hepatitis C infected donors into non-infected recipients, specifically those donors with positive Nucleic Acid Testing (NAT+). We hypothesize that recipients who receive NAT+ kidneys have similar outcomes in graft function and graft survival when compared to those recipients who received non-hepatitis C kidneys. This is a single-center, retrospective cohort study of all adult kidney

transplants performed at Tampa General Hospital from January 1, 2019, to April 30, 2020. We accessed 322 electronic health records. We excluded pediatric patients under 18-years of age as well as multi-organ recipients. Differences between the study and the control group for continuous variables were assessed using the independent sample t-test and the chi-squared test for binary variables. Of the 322 total patients analyzed, 21 recipients were in our study group, having received a NAT+ kidney as a non-infected recipient. The remaining 301 recipients were included in our control group, having received a NAT- kidney. Recipient outcomes were preserved between the two groups. In the study group, 3 (14.2%) patients experienced delayed graft function (DGF) while 63 (20.9%) patients in the control group had DGF. Seven (33.3%) recipients in the study group experienced postoperative complications, while 123 (40.8%) patients in the control group did. Overall, the results above demonstrate that our hypothesis is correct. It appears that non-infected patients receiving NAT+ kidneys have similar outcomes in graft function and survival when compared to those who received NAT- kidneys.

Surviving Human Trafficking: Vulnerable Communities and The Effects of Human Trafficking

Yamaris Rodriguez

Faculty Mentor: Frank Biafora (Department of Sociology)

Human trafficking is a social issue where the victim's trauma, abuse, and neglect contribute to their victimization. The misconception and misinformation of human trafficking allows for people to not be aware of when they are at risk of becoming victims. This paper will examine how people are more in danger from human traffickers and how the trauma they experience potentially affects their future. I will also explore human trafficking at a local level by researching policy in the United States and the growing estimation of human trafficking cases in Florida and Tampa Bay.

CD82 Regulation of c-Met in Metastatic Prostate Cell Lines

Caitlyn Roland & Gabriela Dolard

Faculty Mentor: Suganthi Sridhar (Department of Integrative Biology)

CD82 (KAI1), a tetraspanin was first identified as a metastasis tumor suppressor in prostate cells. CD82 is downregulated not only in prostate cancer but also in a variety of many invasive epithelial tumors. CD82 has been well documented as an inhibitor of cell motility and invasion in cancer cells, with varied inhibitory mechanisms. By introducing CD82 in metastatic cell lines (PC3) that do not express CD82, we have shown CD82 to regulate c-Met, a growth factor receptor, over expressed and/or over activated in prostate tumors. Overactivation of c-Met promotes cell proliferation, migration and invasion and it is unclear how CD82 regulates c-Met. Using metastatic prostate cell lines (PC3), with and without CD82 we are using immuno-fluorescence, immunoprecipitation, flow cytometry and western blot techniques to analyze the exact mechanism by which CD82 regulates c-Met. Preliminary data indicates CD82 does not colocalize with CD82, nor does it downregulate c-Met expression on the cell surface. However, CD82 expression seems to cause varied distribution of c-Met and is currently being investigated. Preliminary indications are that CD151, another tetraspanin and a known tumor promoter may be involved in this regulation. CD151 associates with c-Met and our lab is currently exploring the redistribution pattern of CD151 as an alternate mechanism by which c-Met may be regulated. The results observed will provide insights into the role CD82 plays in c-Met regulation as well as it may overall play in CD151 redistribution and in tumor progression and metastasis in prostate cancer.

Intentional Teaching: Scaffolding Literacy Development Through Play

Jacquelyn Rueff & Kiandra Rackley

Faculty Mentor: Ilene Berson (College of Education)

In early childhood education, play is the means by which children interact with and learn from the environment that surrounds them. Recent research indicates that children's play-based literacy development is maximized with a teacher present, and potentially non-existent without the proper support. This caused us to conduct research in the pursuit of answering the question: How can we include opportunities for literacy development within a child's play experiences? In order to conduct this research, we analyzed transcripts of video recordings from play experiences guided by a teacher as well as anecdotal notes taken from play experiences, teacher work samples/examples, and child work samples/artifacts. Our findings suggest that teachers play an important role in scaffolding children to expand their thought processes and make important connections to literacy. Analysis of the data highlights the importance of a teacher's presence within early childhood classrooms in facilitating and guiding children's play. These findings help justify intentional planning of play-based instruction to support literacy.

Visual Thinking Strategies in an Online Environment

Rejoy Sabin Thomas, Christiana Hancock, Brooke Fasano, & Victoria Giol

Faculty Mentor: Catherine Wilkins (Judy Genshaft Honors College)

Anxiety, stress, and depression are prevalent among college students, and the current COVID-19 pandemic has only exacerbated this issue. As a result of the pandemic, most in-person learning has changed to online learning, which inevitably creates new sources of anxiety and stress as well. Visual Thinking Strategies (VTS), a tool utilized by many Art Museum educational programs, has been known to alleviate stress for various individuals. In this study, we investigated the efficacy of virtual VTS sessions for improving college students' mental health during the COVID-19 pandemic. The virtual VTS was expected to reduce feelings of anxiety, but to a lesser extent than face-to-face VTS sessions. Eight Honors College students were recruited to participate in a 30-minute virtual VTS session and their levels of anxiety were measured before and after the session. This data was then compared to data from a different study, which investigated the efficacy of in-person VTS for reducing college student anxiety. On average, participants in our virtual VTS sessions saw a mild reduction in anxiety, but this reduction was only 36% as large as the reduction in anxiety from in-person VTS. Further research is necessary to determine what is responsible for this difference in efficacy, and to determine how to adapt virtual VTS sessions to better serve the needs of individuals who cannot attend in-person sessions.

Investigation of Foodways of the Levi Colbert Prairie

Ariana Saldoriga

Faculty Mentor: Diane Wallman (Department of Anthropology)

The field of zooarchaeology is a multi-faceted investigation of human-animal interactions through the analysis of faunal remains on archaeological sites. This research investigates the foodways of those who lived on the Levi Colbert Prairie (LCP), a nineteenth-century livestock farm in Mississippi, through analyzing the faunal remains recovered from archaeological excavations at the site. Through the evaluation of these remains, zooarchaeologists identify the species, skeletal element, and age at death, of the animal, which offer insight into the culture and behaviors of the humans who

deposited the remains. My project uses zooarchaeological methods to examine subsistence of the enslaved laborers and occupants of the LCP. Levi Colbert was a Chickasaw leader who had various economic endeavors in northeastern Mississippi. He established the Prairie site primarily for livestock farming, where approximately 40 enslaved people tended to 4,000 sheep, horses and cattle. Unfortunately, little historical documentation regarding the LCP farm exists. Archaeological research conducted at the LCP has recovered various artifacts and food remains that can fill in some of these missing gaps in the historical record. This poster presents the results of the analysis of the faunal remains recovered from the site. The results suggest that most of the remains belonged to domestic animals including cattle, pig and horse that were likely raised on the farm, with a few local wild taxa also identified. These data help to reconstruct the cultural practices of the occupants and enslaved laborers who lived and worked at the Levi Colbert Prairie.

Does Robo-Advisor Equal No Advisor?

Tyler Schulman

Faculty Mentor: Robert Tiller (Muma College of Business)

Robo-advisors are expected to have \$2.2 trillion in assets under management by the end of 2020. In 2016, they managed just \$300 billion (KPMG, 2016). As young, tech savvy investors begin to gravitate towards these platforms, traditional financial advisors must learn how to adapt to the rapidly changing competitive landscape of the industry or run the risk of losing business. The purpose of this pilot study was to investigate the current sentiment of traditional financial advisors towards robo-advisors and consider potential ways that traditional advisors can leverage robo-technology. The study consisted of a survey which gauged traditional financial advisors' current sentiment towards robo-advisors, as well as a series of interviews with traditional advisors across three separate areas of the industry. The exploratory work investigated how human financial advisors view robo-advisors and helped to determine ways in which robo-technology may be leveraged to benefit clients. Implications of this paper's findings are relevant to traditional financial advisors, firms, and clients.

The Application of Analytics in Cyber Threat Intelligence

Jessica Senatus

Faculty Mentor: Clinton Daniel (Muma College of Business)

As society ventures deeper into a technologically dependent realm, the need for cybersecurity continues to increase. The rapid increase in cyber threats calls for a streamlined efficient process that put potential targets one step ahead of threat actors. While cybersecurity continues to evolve, there is still room for improvement within the methods executed throughout the threat detection process. The evolution of cybersecurity has inspired the creation of security operation centers (SOCs) that are primarily put in place to monitor, prevent, and investigate active threats within an organization. Due to the significant amount of information collected and generated by the SOC it is often difficult to thoroughly examine all the data without any human error. In addition to this, it often slows the process of turning information into intelligence necessary to make important discoveries. Certain patterns, trends, and common methods can be difficult to spot and digest on a surface level. To combat this weakness and capitalize on information available, the application of analytics within cyber threat intelligence provides promising results with the right techniques. This thesis explores the application of analytics in cyber threat intelligence through a comprehensive case study of a security operations center and the data collected. This thesis will also seek to identify opportunities where data analytics can be implemented, determine how data analytics can be applied, and conclude on the comparative advantage if enforced.

Enhancing Denitrification in Constructed Wetlands with Pyrrhotite and Oyster Shells

Magdalena Shafee

Faculty Mentor: Sarina Ergas (Department of Civil & Environmental Engineering)

There are many sources of nitrate pollution that contaminate local waterways, thereby posing risks to human health and surrounding ecosystems. Recent research has showed the potential of constructed wetlands containing pyrrhotite mineral as a low-cost and sustainable approach for treating nitrate contaminated wastewater through a natural biological process called denitrification. The use of pyrrhotite, however, has led to secondhand sulfate production, which is known to inhibit plant growth and nitrate uptake. This batch reactor study examined whether a combination of pyrrhotite and an inorganic carbon source (oyster shells [OS]) could enhance the denitrification process while minimizing sulfate generation. The study was carried out in sixteen batch reactors, each filled with synthetic wastewater and a unique variation of mineral, OS, and microbial inoculum. Three reactors contained only pyrrhotite added, three with only OS, and three with pyrrhotite and OS combined. Additionally, three reactors were endogenous decay controls, three were abiotic controls, and one contained elemental sulfur. Over the course of ten weeks, the reactors were monitored weekly for changes in sulfate, nitrite, nitrate, ammonium, and phosphate concentrations. While denitrification was accelerated in the reactors containing pyrrhotite, there was little difference between the pyrrhotite only and the pyrrhotite and OS reactors in terms of sulfate generation. The outcome of this study guides further research in the continued refinement and optimization of the constructed wetlands for water quality treatment. Ultimately, this work will enable the introduction of constructed wetlands into small communities for use in lowering nitrate pollution in nearby ecosystems.

Bioassay Guided Fractionation of Fungal Extracts against ESKAPE

Pratiksha Sharma

Faculty Mentor: Bill Baker (Chemistry)

Fungi are known to produce secondary metabolites as a chemical defense in their natural environment which may be useful inhibitors against many pathogens. Screening analysis of these compounds could demonstrate effectivity against certain pathogens. One such group of multidrug resistant nosocomial pathogens is ESKAPE (Enterococcus faecium, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter spp., Pseudomonas aeruginosa, and Enterobacter spp.). Due to ESKAPE's heavy resistance to common antibiotics, the natural compounds of fungi could present an alternate path to new medicines. This review will highlight the bioassay-guided fractionation of fungal extracts that are screened against ESKAPE. With the use of various instruments, such as HPLC, NMR, and mass spectrometry, we will identify organic compounds that can potentially inhibit the ESKAPE pathogens.

Bioactive Secondary Metabolites from Mangrove Endophytic Fungi

Gabriel Shaw

Faculty Mentor: Kristin Herrera (Chemistry)

ESKAPE pathogens and *Candida albicans* are rapidly gaining antimicrobial resistance and can cause fatality in immunosuppressed patients. Endophytic fungi have been identified as critical sources for novel bioactive compounds, for example, novel terpenoids, alkaloids, quinones, xanthenes, peptides, steroids, flavonoids, phenolic compounds have been

identified. Many of these metabolites are novel and qualify as potential new pharmaceutical candidates for treatment of drug-resistant infections. EC10-33C-3B-HDAC has been epigenetically modified using histone-deacetylase, and then extracts were screened in ESKAPE bioassay showing strong broad-spectrum bioactivity. In this investigation, chemical extraction, separation, NMR and Liquid-Chromatography coupled to mass spectrometry will be employed to analyze potentially novel antimicrobial compounds. Fractions will be prioritized based on bioassay results towards both ESKAPE and *Candida albicans*. The MS-MS data will be compared to known substances in the GNPS (Global Natural Products Social Molecular Networking) to check for novelty.

Examining the Relationship Between Visual Field and Integration Processes Using Event-Related Potentials

Samruddhi Shinde & Sara Miligan

Faculty Mentor: Elizabeth Schotter (Department of Psychology)

Readers use perceptual input in order to recognize a word and integrate it into the sentence context. But the quality of the perceptual input is not equal across the visual field; readers can perceive words more easily in central vision than in non-central vision due to acuity and attentional limits. Past research measuring event related brain potentials presented contextually anomalous words in either central or non-central vision and showed that word recognition, indexed by the N400 component, can occur in both central and non-central vision (Stites et al., 2017; Payne et al., 2019), but semantic integration, indexed by the Late Positive Component (LPC), can occur only in central vision (Milligan et al., 2020). Because past studies used anomalous words that were visually similar to highly expected words the dependence of the LPC on presentation in central vision could have happened for two reasons: (1) non-central words were less perceptually clear and therefore harder to distinguish between two similar word forms, or (2) less attention is allocated to the non-central words and therefore they were harder to process, regardless of their visual similarity. To investigate these possibilities, we will replicate the prior study that manipulated readers' predictions about a word via the sentence context and presented the target word in either central or non-central vision. However, in our study, unexpected anomalous words will not be visually similar to the expected word. This will allow us to determine whether semantic integration in non-central vision is limited by perceptual acuity or attention.

Determining the Binding Potential Between Coral Natural Products and Cancer Protein Targets via in-Silico High Throughput Screening

Connor Sierra

Faculty Mentor: Bill Baker (Chemistry)

Natural products have long provided new and interesting compounds with potential pharmaceutical applications. In-silico resources, such as Schrodinger's Maestro, allow researchers to better analyze and understand the interactions between ligands and target proteins. This project examines the docking potential of over 5000 coral compounds against various common cancer target proteins. High-throughput virtual screening (HTVS), standard precision (SP) docking, and extra precision (XP) docking are performed in successive order to select which coral compounds would bind most favorably with each of the distinct cancer targets, with each round of the screening process becoming more stringent. From the final pool of compounds, we have identified several promising hits that can eventually be analyzed for potential pharmaceutical applications.

The Impact of Stressors on Caregiver Decision for Their Child to Attend (re)habilitation Therapy

Monica Simon

Faculty Mentor: Jenna Luque (College of Behavioral and Community Sciences)

Rehabilitation therapy aims to help patients regain a skill or function lost as a result of injury or sickness and consists of Speech Language Pathology (SLP), Occupational Therapy (OT), and Physical Therapy (PT). Consistent therapy attendance is required for adequate progression and goal acquisition through therapy (Super Duper, 2020). This study investigated the impact of encountering different stressful events on a parent/caregiver's decision for their child to attend rehabilitation therapy. A survey was used to collect data that was designed specifically for the parents/legal guardians of children attending some form of rehabilitation therapy. It consisted of questions involving the parent's and child's demographic information and a list of different scenarios in which parents had to decide if they would have their child attend therapy, or if they would cancel, reschedule, or change to online (teletherapy) should the particular circumstance occur. The survey was developed using Qualtrics and was sent via email to multiple rehabilitation therapy centers and posted online. Therapy centers then forwarded the survey to their clients. Eight individuals responded. This resulted in 6 responses for SLP and 6 for OT. The results were analyzed using means and percentages for any patterns that might be present. The results indicated approximately 60% of the responses for OT and SLP chose that they would attend therapy in the given stressful situations. Surprisingly, only one participant indicated that they would change to teletherapy should any of these given situations occur. The results will be further discussed along demographic breakdowns.

Utilization of Ayurveda in Modern Medicine

Karissa Sorrells

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

The origins of Ayurveda dates back thousands of years ago to India where these practices were used to heal. The techniques and practices of Ayurveda have continued to be refined and modernized with the industrialization and globalization of the rest of the world but unfortunately, these practices have not become a widespread form of treatment. Even though clinical research on this topic is limited, Ayurveda proves to be effective for the treatment of various chronic illnesses including arthritis, eczema, and prediabetes. Modern-day drug therapies for cancer have also seen the benefits of the use of natural ingredients during treatment as these medications will create little to no side effects for the patients. Ayurveda should have a more prominent presence in modern approaches to healing through the implementation of standardization and regulation of treatments and therapies. Standardization of Ayurvedic treatment and therapies can be brought about by a more scientific approach by the use of clinical trials. Regulations will vary from country-to-country as each has a unique set of rules regarding the administration of drugs and treatments. The inclusion of Ayurvedic techniques in modern-day medicine will provide a new outlook on treatment and will promote holistic health practices.

Managerial Moderator Strategies to Reduce Stress and Improve Well-Being of Hospital Frontline Healthcare Practitioners in COVID-19 Scenario

Paula Stefani

Faculty Mentor: Karla MacAulay (Muma College of Business)

In this COVID-19 pandemic scenario, healthcare practitioners are strongly suffering from mental health diseases and ill-being while engaging in the treatment and care of patients with COVID-19. Among the different symptoms described in latest studies, the ones expressed more frequently by frontline healthcare workers are depression, anxiety, fear, trauma, and sense of incapacity. This descriptive cross-sectional study has the main objective of collecting information on the different perspectives regarding how hospital administrators are supporting the mental health and well-being of their medical professionals and if their strategies to support well-being are efficient in helping practitioner's mental health during COVID-19 scenario. We are using two main types of methods in order to collect data: Online Surveys and online interviews. Data is still being collected; however, we hypothesize that findings can help us evaluate the negative and positive dimensions of hospital managerial practices, identify possible improvements to support healthcare professional's well-being, and identify communication gaps on perspectives between the managerial sector of hospitals and frontline healthcare practitioners regarding employee's mental health support during COVID-19 scenario.

The Drivers of Pro-environmental Behaviors in College Students

Pauline Stein

Faculty Mentor: Anthony Coy (Department of Psychology)

During the last few decades, it has become more and more apparent that the condition of the environment of our planet is becoming worse and worse with each passing year. The human population of today is facing threats in the form of global warming, climate change, biodiversity loss, and many more. With this picture in mind, it might seem obvious why researchers in recent years have started to look at what motivates and drives college students to act sustainably. College students have become a particularly interesting group to study when it comes to drivers and motivations behind pro-environmental behavior because they are going to be the next stewards of this earth. This study aims to further the research on college students and the drivers behind them acting sustainably. To reach this aim the existing model of the theory of planned behavior was extended by adding the component of environmental knowledge and part of the extended parallel process model. Based on this model a survey was constructed, which was filled out by over 200 college students attending the University of South Florida. The fit of the statistical model was not optimal, but the analysis of the collected data, nevertheless, showed that environmental knowledge affects parts of the TPB and that the parts of the EPPM also affects specific components of the EPPM. Future research in this topic area could provide further insight into what makes college student act sustainably.

Extraction of Endophytic Fungi from Mangroves tested against ESKAPE pathogens via Bioassay Guided Fractionation

Stephanie Suarez

Faculty Mentor: Kristin Herrera (Chemistry)

Natural products chemistry offers an area for novel biologically active molecules in hopes for use in the pharmaceutical/ medicinal industry. In my project, I am hoping to successfully extract bioactive compounds from a mangrove sample and test it against the ESKAPE pathogens via a bioassay guided fractionation. The ESKAPE pathogens are responsible for nosocomial infections throughout the world. Endophytic fungus exhibits chemical interest as it is grown from mangroves, mine being from the Florida Keys. The mangroves experience a unique environment, as they are combating the intense environment that is the ocean. My sample is showing activity against all the ESKAPE pathogens except for the last one, which is the Enterobacter species. So far, I have been able to extract, partition and fractionate my sample; however, I still need to complete drying the fractions and prepare for metabolomics, bioassay, and NMR. We are utilizing two different extraction methods, one which is freeze drying a portion of the fungal extract and using the Soxhlet extractor along with the traditional steeping method, to then compare the approaches and evaluate them for efficiency. If bioassay is successful, and I receive hits in the dried fractions, then I will be able to further fractionate my sample using HPLC to isolate the individual compounds. If time permits, I will be using the Global Natural Products Social Molecular Networking (GNPS) online library of mass-spectral data to search for spectral similarity within the molecular network and look closely into the clusters to determine the mass difference between nodes.

Are Verdicts Often Black and White? Determining Racial Bias in Juror Decision Making

Elizabeth Sykes, Kendall Smith, & Maarya Ibrahim

Faculty Mentor: Christine Ruva (Psychology)

A significant concern to the justice system is that jurors could find defendants guilty when in fact, they are not. Implicit racial bias is of concern because it can facilitate such an error. Although the Supreme Court has tried to remedy explicit racial bias (*Batson v. Kentucky*, 1986), they have failed to address implicit biases. In order to address debiasing, it is important to determine an initial bias. Past meta-analyses have found differing effects of defendant race on guilt (Mazella & Feingold, 1994; Mitchell et al., 2005). Dual process theory and aversive racism theory were applied to identify a trial situation where bias was likely to occur (Chaiken, 1980; Ingriselli, 2015). This study explored the effect of defendant race on guilt in the context of a murder trial to determine its suitability for a debiasing study. It was hypothesized that the Black defendant would be found more culpable, less credible, and guilty more often in comparison to the White defendant. A Qualtrics survey was used to collect data and randomly assign participants to view a Black or White defendant in a murder trial. Participants (N=206; female=152; age ranged 18 to 39, M=20.40, SD=3.26; race/ethnicity—44.2% White, 31.6% Hispanic, 11.7% Black, 6.8% Asian, 5.7% Other). Contrary to the hypothesis, the White defendant was viewed as more culpable, less credible, and more likely to receive a guilty verdict. This study is a part of a greater undertaking on debiasing and will help inform the interpretation of future analyses on a debiasing intervention.

Christianity's Influence in U.S. Politics

Lydia Symens

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

This thesis explores both the relationship between Christianity and U.S. politics and the influence that relationship has had on policy. The main focus of the research is on minority populations or those adversely affected by Christian-influenced policy. An exploration of historical influence allows for better context of today's issues regarding Christianity in politics. This research is significant in that it helps better understand how policy can enact significant harm to those who are not in places of privilege. Moving forward, this research aims to raise questions regarding influences on U.S. policy and how, moving forward, this country can begin to separate them.

The Effect of Parents' Stress on Child Academic Functioning

Rajvi Thakkar

Faculty Mentor: Brian Bunnell (College of Medicine Psychiatry and Behavioral Neurosciences)

Stress helps to elicit goal-oriented action and activate fight or flight responses. However, too much stress can have harmful and impairing effects for the individual experiencing stress (e.g., parents), and those around them (e.g., their children). The research literature suggests an overall positive relation between parents' stress and their child's academic achievement, and that this relation is mediated by parent and children's emotional functioning, and aspects of the overall family environment. However, these relations were examined independently across multiple studies and samples. We examined the relationship between the parents' stress and their children's academic performance, along with the mediational roles of parent emotional functioning, child emotional functioning, and the family environment. The sample included 316 caregiver-child dyads who completed clinical assessments of anxiety and depression. Children also completed the Family Environment Scale, which includes the following subscales: Cohesion, Expressiveness, Conflict, Independence, Achievement Orientation, Intellectual-Cultural Orientation, Active-Recreational Orientation, Moral-Religious Emphasis, Organization, and Control. Results indicated that parents' stress predicted poorer academic achievement in their children, and that this relation was mediated by parent and children's emotional functioning. However, this relation was not mediated by aspects of the family environment. These findings were inconsistent with the limited existing research in this area and, thus, warrant further study.

17 Religions and 17 Sustainable Development Goals

Avalon Jade Theisen

Faculty Mentor: Adib Farhadi (Department of Religious Studies)

The United Nations started the Sustainable Development Goals (SDGs) as a way to balance the needs of the human population and the environment on which all known life depends. There are 17 goals in total, including issues such as poverty, climate change, healthcare, and sustainable consumption. The SDGs are designed to be implemented not only by governments, but also by businesses and individuals. Many religious communities, therefore, form a vital part in the enactment of these goals. Faith communities are extremely important for the mitigation of social issues. As about 85% of the global population belongs to a religion, belief systems are vital forces in the world. For the purpose of this research, religion, including its synonyms faith and belief systems, was defined as a system of beliefs and practices which binds

a group of people together in their search for ultimate meaning. By their very nature, religions provide a framework for establishing meaning and a value system. Religions also help provide the necessary motivation, funding, and human power to create systematic change. As a result, faith traditions can be extremely effective purveyors of sustainable development. In this research, the efforts of 17 different religions aiding the SDGs were explored.

How COVID 19 Has Affected Dental Operations

Gabrielle Tomeo

Faculty Mentor: Wayne Mathe (College of Science and Mathematics)

This poster will discuss the affects of Covid-19 and how it has affected the dental field and industry. I will go into depth about the underlying factors of my results and discuss what this could mean for the future of dentistry.

Aging Florida's Horse Conch (*Triplofuses giganteus*) Using Isotope Sclerochronology, Morphology and Laser Ablation (LA-ICP-MS)

Morgan Tomlin

Faculty Mentor: Gregory Herbert (School of Geosciences)

The Horse Conch (*Triplofusus giganteus*) is heavily sought-after by collectors and harvested by commercial fisheries with little or no regulation and oversight and, thus, high risk of overexploitation. Management of Horse Conch populations should ideally consider how rapidly harvested individuals can be replaced by reproduction, a rate determined by life history traits (e.g., lifetime fecundity, age at reproductive maturation). In this presentation, we summarize oxygen isotope sclerochronology-based estimates of Horse Conch age and refine them with new data from Laser Ablation (LA-ICP-MS). Geochemistry-based age estimates are also used to test whether years of growth can be reliably and more rapidly assessed with morphology (e.g., growth lines on the operculum and growth breaks on the shell). Fish and Wildlife researchers conjectured that this species may live up to 80 years based on other molluscan growth rates. Our preliminary data suggest that Horse Conchs usually live at most around 15 years. Thus, recovery time for populations of this species being harvested is still slow, but more rapid than initially hypothesized.

The Affects of Climate Change & Public Health in Nepal

Chyenne Tran

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

Among the plethora of critical political and social issues threatening the world today, climate change proves to be one of the most threatening of all. South Asia is bearing the brunt of it, with populations dealing with failing health, the gradual disappearance of medicinal plants, and the rise in labor migration. Specifically, the country of Nepal will be studied for this project because of how the effects of climate change are exacerbated. Monsoon patterns, rising sea levels, and shrinking glaciers are all ways in which the population of the country is vulnerable. Due to its geography, Nepal, in particular, is facing environmental challenges at a faster and more serious rate than the global average, with snow and ice melts in the mountains threatening infrastructure and torrential rainfall during the monsoon season in the foothills. In addition, a rise in temperatures and greenhouse gas emissions means an influx of new and foreign diseases that the healthcare sector will not be prepared for. Millions of Nepalese are now exposed to serious public health risks, food insecurity, a decrease

in agricultural production, and the loss of forestry and biodiversity. How and why do all of these changes contribute to the evolution of healthcare, medicine, and healing? With all of these issues Nepal is facing, plant-based traditional knowledge and the livelihoods of many are now at risk. A loss of traditional methods of healing also means the disappearance of cultural practices and a means of community for many Nepalese people. Thus, this project's main focus is the effect of climate change and deteriorating environmental conditions on medicine and healing practices in Nepal.

Two Effective Theories of Turbulence in Two Dimensions

Antonino Travia

Faculty Mentors: Razvan Teodorescu (Department of Mathematics & Statistics) & David A. Rabson (Department of Physics)

Two effective theories are explored with respect to the long search for a theory of turbulence. We start by considering dynamical systems of fractal type, as it applies to both theories. The higher-dimensional effective theory, based on systems of integrable type and non-commutative gauge theories, will be explained along with recent results. Then, a standard lower-dimensional effective theory, coherent structures, is shown to bring with it a common time-frequency localization question of the best way to represent a signal. We show that work on this question also has implications for electronic wave-function basis sets. This material is based in part on work done by DAR while serving at the National Science Foundation. Any opinion, findings, conclusions, or recommendations expressed are those of the authors and do not necessarily reflect the views of the National Science Foundation.

Who Do You Trust? College Students and COVID-19 Misinformation

Collin Robert Tripp, Ottavio Benjamin Barbanente, Campbell Martin Mikell, & Victoria Lynn Maddex

Faculty Mentor: Donna Ettel-Gambino (Judy Genshaft Honors College)

The ongoing COVID-19 pandemic has adversely affected much of the population in the U.S. and around the world. There has been a plethora of misinformation in circulation regarding COVID-19 pandemic. College students are savvy with their ability to navigate social media sites may be susceptible to misinformation regarding the pandemic. In recent years, internet utilization for health information has risen. Despite convenience, health information on the internet has potential to be inaccurate and misleading. This study examines Judy Genshaft Honors College students' preferences among resources regarding COVID-19 information and guidelines. The population consisted of students who are enrolled in the Judy Genshaft Honors College at the University of South Florida. A quantitative causal-comparative approach was used. Initially, a MANOVA was conducted to identify significant trends across groups. The independent variable was the participants' political affiliation. The dependent variables were their sources of information pertaining to COVID-19, trust in internet resources, and use CDC as a resource. Overall, the MANOVA showed statistically significant differences between the criteria: trust in internet sources and use of the CDC as a resource. This information is the first of its kind in the area of the assessment of information (and misinformation) concerning COVID-19 in a Higher Educational Institution in the Southeastern United States. This information may assist policymakers and other key stakeholders in Florida; and nationally in identifying, designing, and implementing strategies to provide information providers with the appropriate tools that will assist them in maximizing the most effective distribution of accurate information concerning COVID-19.

Efficacy of Different Biofouling Agents

Casey Urtecho & Virginia Zeigler

Faculty Mentor: James Ivey (School of Geosciences)

In this experiment, it will be determined which agents display the most efficacy regarding anti-biofouling, or the removal and dispersal of undesired marine plants, micro-organisms, algae and/or calcareous animals as found in the Tampa Bay waterways which serve as the parameter of the research. The mediums to be studied will be comparing the efficiency of the Nitto antifouling adhesive film, alongside traditionally common copper antifouling boat-bottom paint (as applied to plastic wrap, attached to a SONDES water quality instrument) and a control with no antifouling agent. The previous research in this experiment displays that a soy-wax and capsaicin mixture was moderately effective in preventing biofouling, with decent growth evidenced, leading to a continuation of the experiment, comparing this previous research with more commonplace marine mediums. Periodically checking on the rates of biofouling and a myriad of water quality elements, the product with the least amount of biofouling will be deemed the best option after consideration of its impact on the larger ecological system.

A Study of the Rake and the Coquette as Literary Figures: Societal Perception in Hannah Webster Foster's The Coquette

Victoria Vadell

Faculty Mentor: Kristin Allukian (Department of English)

Hannah Webster Foster in her acclaimed novel *The Coquette* explores the implications of gossip and assumptions made by the community that influence the future thoughts and endeavors of others. This concept is explored through analysis of advice, domesticity and marriage, and patriarchal influences. This study takes a look at these concepts in relation to the common archetypes of the rake and coquette within 19th-century literature. The research concludes and discusses that these figures are portrayed as antagonists in the period due to other people's gossip and views and are not inherently immoral.

Assessing the Impact of Social Factors on Women's Health in Dominican Republic Bateyes

Padma Vasanthakumar, Maha Uppal, Heather Hare, Maysee Huynh, & Manisha Antony

Faculty Mentor: Lindy Davidson (Judy Genshaft Honors College)

Women living in Dominican Republic bateyes (rural communities around a sugar mill) have systematically experienced discrimination in the area of education and economic opportunities, which has compromised their health to a great extent. There is limited awareness of how the lack of access to education can be the root of malfeasance when considering the health of women in these bateyes. This issue will be addressed through a comprehensive analysis of previous study findings, data from current community initiatives, and personal accounts of women who experience health disparities. Preliminary findings suggest that a lack of access to education and economic opportunity leads to a greater risk of diseases like HIV/AIDS, dangerous pregnancies, and poor general health. Findings also suggest that discriminatory government policies contribute to the repression of women in the bateyes. Exploration of this issue will lead to a greater understanding

of how social factors contribute to health disparities in the bateyes. Furthermore, increasing awareness of this issue in the international community can enable global health leaders to take action and encourage the Dominican Republic to enact policy changes, education reform, and healthcare equity.

Health and Equity in the Dominican Republic

Prakash Vasanthakumar, Bradley Jasper, Lahari Sadineni, Hari-Krishna Koipallil, & Nickolas Bryan

Faculty Mentor: Lindy Davidson (Judy Genshaft Honors College)

Throughout the 20th century, the Dominican Republic (DR) brought people from Haiti to work in the sugarcane industry. However, the drop in the sugarcane industry left many sugarcane workers impoverished, living in quarters called Bateyes. Bateyes and other rural communities have suffered from communicable diseases that result from lack of healthcare and poor housing conditions. Article 61 of the D.R. Constitution states that all people of the D.R. should have access to integral healthcare. The D.R.'s healthcare structure disproportionately affects rural communities through lack of federal regulation, inefficient use of resources, and lack of access to healthcare providers. Through the compilation of information from published literature, including interviews, government documents, and scholarly articles, this study finds that a lack of government oversight allows healthcare facilities to deny services to impoverished members of Bateyes and rural communities. Additionally, due to a lack of funding in the public healthcare sector, physicians participate in medical tourism for profit, thereby diverting healthcare resources from poverty-stricken communities to a wealthier international clientele. Furthermore, recent studies suggest the use of teleconsultations effectively increases healthcare access in the D.R. These findings suggest a need to thoroughly evaluate the federal health infrastructure, resource distribution, and community health disparities. The implications of this research include increasing health equity across all socioeconomic classes and evaluating potential solutions to achieve the goal of health equity in the D.R., including telehealth. Future research should assess increasing funding to the public health sector to bridge the divide between healthcare providers and rural communities.

Uncovering Race and Class Biases of Floridian Law Enforcement: A Geospatial Analysis

Mariah (Matthew) Viera

Faculty Mentor: Barnali Dixon (School of Geosciences)

United States Law Enforcement has been under the watchful eye of the public in recent years due to national media coverage of events such as the Ferguson Riots of 2014 and the death of George Floyd in 2020. Given that the inception of the U.S. police force has an inception rooted in racist ideals of the past (i.e. slavecatching), it is becoming more pertinent to observe and assess the behavior and practices of modern-day police officers. This study serves to create a geospatial analysis of the relationship between instances of police brutality within the state of Florida and the minority status, socioeconomic status, as well as gentrification indicators associated with different census tracts. The use of geographic information systems (GIS) will be used to conduct said geospatial analysis using crowdsourced data on instances of police violence as well as census data that contains various demographic characteristics over time.

Prevalence of Limited Mental Health Licenses Among Assisted Living Communities in Rural and Urban Florida

Tomas Vivas, Carlyn Vogel, & Lindsay Peterson

Faculty Mentor: Hillary Rouse (School of Aging Studies)

Florida has the largest proportion of adults 65+. With this population comes growing mental health needs. Long-term care facilities, such as assisted living communities (ALCs), can provide older adults with care to properly address these mental health concerns if they hold a Limited Mental Health (LMH) license. The goal of this research was to investigate if there are disparities in access to ALCs with LMH licenses in Florida's rural and urban counties. Data on the location of the ALCs and whether they have an LMH license were obtained from Florida's Agency for Healthcare Administration. The ALCs' addresses were then categorized as rural or urban based on the 2010 U.S. census data. There were a total of 3,090 ALCs in Florida, 3,022 of which were in urban counties. Of the urban ALCs, 712 had an LMH license. However, over 60% of these urban LMH ALCs were located within one county, Miami-Dade. In comparison, there were only 79 ALCs in the 30 rural counties statewide. Of those ALCs, only 29 had an LMH license, and most of those had fewer than 25 beds. These findings suggest that there is a limited number of ALCs in Florida that provide mental health services. Additionally, there is a considerable rural disparity in the availability of these LMH ALCs, largely because of the low numbers of ALCs in rural areas. This suggests that many adults may be underserved and have mental health needs that go uncared for depending on where they live.

Adventurous Women: From Moll Flanders to Ariana Grande

Shelby Wagers

Faculty Mentor: Jessica Cook (Department of English)

Adventurous Women: From Moll Flanders to Ariana Grande studies the relationship between eighteenth century women like Moll Flanders to contemporary teen idols like Ariana Grande and highlights how their expressions through art not only correlate but also continues to inspire empowerment of womanhood. The focal question to this creative research is: What makes an adventurous woman? This study of adventurous women of the eighteenth century analyzes feminist works such as Moll Flanders by Daniel Defoe, Evelina by Francis Burney, Fantomina by Eliza Haywood, The History of the Nun by Aphra Behn, and The Italian by Ann Radcliffe and connects them to modern-day pop culture in order to distinguish how the representation of feminine power has changed throughout the centuries. The conclusion was this: it has only changed in terms of medium. This creative project also includes intertextual portraits to depict eighteenth century women as if they were Ariana Grande's "thank u, next" album cover with their respective adventurous quote.

Optimizing Home Workspaces with Biophilic Design

Zachary Warhul & Jalal Ibrahim

Faculty Mentor: Atsuko Sakai (Judy Genshaft Honors College)

The impact of COVID-19 has caused many changes to social practices to accommodate necessary precautions that minimize the spread of COVID-19. One change is the shift to remote work, which has increased the amount of time spent inside homes. Due to this increased amount of time working from home it is important to investigate how these residential turned quasi-commercial areas are affecting individuals. The purpose of this study is to provide design recommendations for

optimizing the home workspace to reduce stress, minimize fatigue, and increase quality of life through a review of literature regarding environmental psychology and biophilia. Environmental psychology research has established a general consensus that design influences occupants' health and well-being. This study focuses on the effects of biophilic design, which entails the benefits of human-nature interaction. Biophilia poses that humans greatly benefit from incorporating natural elements into modern built environments. To construct these biophilic design recommendations for home workspaces, individuals working from home will be assessed. A survey will examine how an individual's environment impacts their overall well-being while working from home. A questionnaire will be used for design feedback which focuses on rating current workspace, selecting an ideal prototype office, biggest stressors from remote work, and preferences in design elements. The expected outcome of this study is a design guideline to help individuals elicit positive effects as it relates to working remotely by promoting a myriad of benefits including reduced stress, increased productivity, and increased attentional restoration.

Japanese Working Culture: A Study of Karo-Jisatsu and Mental Health

Thushara Weerasuriya & Jordyn Bizzell

Faculty Mentor: Atsuko Sakai (Judy Genshaft Honors College)

Occupational mortality due to overwork is a huge concern in Japan. Karoshi, or death due to overwork, is a form of occupational mortality that is characterized by the development of fatal stress-related health conditions. The Japanese Ministry of Labor reported that work-related suicides, a subset of karoshi called karo-jisatsu, had risen to 45% between 2011 and 2014 amongst the younger Japanese population. What aspects of Japanese working culture create these negative environments, and where do these practices originate culturally? This study aims to answer this and characterize the way Japanese collectivism, patriarchy, and mental health stigma contribute to the working environment that creates conditions like karoshi and other mental health problems. The three categories considered for analysis in this study are: Japanese culture, working environment, and mental health. Based on the research, it appears the manifestation of these cultural practices in the work environment has a direct correlation with conditions like karoshi and karo-jisatsu. These issues are manifesting at higher rates due to the reluctance to seek treatment. For this reason, it is imperative to develop an initiative that modifies the work environment and reduces the mental health stigma to prevent future generations from developing these issues.

The Caste System's Impact on Modern-Day India

Jillian Wilson

Faculty Mentor: Holly Singh (Judy Genshaft Honors College)

This research paper will discuss the social discrimination in India due to the caste system. The caste system divided people based on their heritage, occupation, and class. It has created large socioeconomic boundaries between the higher and lower castes, separating many groups in India from one another. The castes were in place for over 1,000 years and despite the modern Indian constitution outlawing caste discrimination, the social hierarchy continues to be prominent throughout society. Though the government has denounced and distanced itself from castes, change has yet to be made to dismantle the caste system in its entirety. Furthermore, the caste system was implemented for centuries which makes its presence difficult to disband. Castes continue to be omnipresent due to their historical significance within the country and due to a lack of government legislation to help improve the quality of life for the lower castes and Untouchables. Inter-caste

relationships and connections have become more common, but many social constructs persist in not allowing people in higher castes to intermingle with lower castes. In this research study, it will explore what the modern-day caste system looks like and elaborate on its impact, or lack of impact, on the lower castes.

From Clever Hans to Bunny the TikTok Dog: An Exploration into Animal-to-Human Communication

Lindsay Wilson

Faculty Mentor: Simon Dutton (Department of Philosophy)

Clever Hans was a German horse who, around the turn of the twentieth century, would perform in shows where he would answer math problems by tapping his hoof. While he wasn't 100% accurate, he caught the attention of spectators and scientists alike. Upon investigation and testing, it was revealed that while Hans was not clever enough to do math, he was clever enough to pick up on unintentional cues from his questioner. More contemporary examples of animal-to-human communication, specifically seen in Koko the Gorilla, Alex the Parrot, and Bunny the Dog, also catch the attention of spectators and scientists, though it is unclear whether the animals truly know what they are saying. Through an examination of these animals' relationships with their handlers, it is evident that regardless of the animal's language capabilities, communication with an animal still plays a valuable role in the animal-to-human bond and that it is worth studying for its potential to revolutionize veterinary care.

Isolation and Characterization of Novel Metabolites from the Antarctic Nudibranch Doris Kerguelenensis

Candice Woodruff & Jennifer Williams

Faculty Mentors: Bill Baker (Chemistry) & Sarah Dietrick (Chemistry)

In recent years, natural product research has identified an Antarctic specimen, *Doris kerguelenensis*, to contain unique metabolites with remarkable pharmacological application. The chemodiversity of *D. kerguelenensis* results from its exclusive nutrient intake and extreme habitat. One study uncovered palmadorin diterpenoids (novel compounds native to *Doris kerguelenensis*) to be effective inhibitors against Jak2/STAT5-dependent HEL leukemia cells¹, thus possessing potential to aid in future drug development. Prompted by the pharmacological potential of palmadorin diterpenoids, further investigation of the chemodiverse *D. kerguelenensis* continues in pursuit of other metabolites that display bioactive potential against different human ailments, such as various cancers and Covid-19 proteins. Methods of investigation include targeted isolation and extraction from *D. kerguelenensis* samples, followed by analysis via NMR, MS, and HPLC. The characterization data is then used to compile a catalogue of the identified metabolites, their observed quantities, and the phylogroup of origin. This collection of data facilitates a dynamic comparison of phylogenetic and metabolomic properties -- a critical component in the pursuit to understand the full pharmacological potential of *D. kerguelenensis*. References: (1) Maschek, J. A.; Mevers, E.; Diyabalanage, T.; Chen, L.; Ren, Y.; McClintock, J. B.; Amsler, C. D.; Wu, J.; Baker, B. J. Palmadorin Chemodiversity from the Antarctic Nudibranch *Austrodris Kerguelenensis* and Inhibition of Jak2/STAT5-Dependent HEL Leukemia Cells. *Tetrahedron* 2012, 68(44), 9095–9104.

Factors that Influence USF Student Perceptions' of Loneliness: What is Making Our Students Lonely?

Julia Wooley, Morgan Bachmann, Kaleigh Hoffman, & Kelisabeth Rivera-Morales

Faculty Mentor: Amber Gum (College of Behavioral and Community Sciences)

Loneliness among college students has been an increasing problem over many years due to a variety of factors, especially during the COVID-19 pandemic. The purpose of our study was to understand USF students' perception of loneliness and what factors influence this perception. We conducted an online survey distributed by email to USF Undergraduate and Graduate students who are part of the College of Behavioral and Community Sciences. We asked seven questions pertaining to students' experiences with loneliness and factors contributing to loneliness. Of the 122 students who completed the survey, 99.17% of participants reported loneliness to be an issue among USF students. Additionally, 85.12% of students reported to "strongly agree" that there are increased levels of loneliness present during the COVID-19 pandemic. Also, many students indicated specific feelings of words that they may associate with loneliness. In these findings, it was found that many associated words among students correlate with behavioral health disorders and symptoms. It is clear that loneliness among USF students is prevalent at this time, especially during the COVID-19 pandemic and associated with behavioral health. Additional research is needed in assessing the behavioral health impacts that loneliness, specifically during the COVID-19 pandemic, may be causing among USF students.

Convergence of Auditory Nerve Fibers onto Globular Bushy Cells

Carolyna Yamamoto Alves Pinto

Faculty Mentor: George Spirou (College of Engineering and Morsani School of Medicine)

Globular bushy cells (GBCs) are well-studied neurons in the ventral cochlear nucleus and are remarkable for encoding temporal features of sound with more precision than auditory nerve fibers (ANFs). Multiple ANFs are known to synapse onto a single GBC, but the average number, size, and physiological effects of these inputs have not been systematically investigated in a fully developed brain. This information is necessary for a comprehensive understanding of the neural encoding of binaural hearing since GBCs are part of binaural convergence pathways in the lower auditory system. Here, Serial-Block-Face-Scanning-Electron-Microscopy was employed to obtain high-resolution images of auditory inputs synapsing onto GBCs. Essentially, 21 GBCs and all their large inputs were carefully reconstructed with cutting-edge meshing algorithms. We found that a range of 5 – 12 large auditory nerve inputs converge onto each GBC, which is higher than previous estimates. GBCs are thought to follow a coincidence detection model of innervation where multiple subthreshold inputs drive cellular activity. Interestingly, this innervation pattern was observed for some of the reconstructed GBCs, while other cells had a distinctly large, dominant input. Thus, we conclude that there are two models of GBC innervation – i.e., a mixed model (1 or 2 suprathreshold inputs and multiple subthreshold) and a coincidence detection model (all subthreshold inputs). The input sizes, somatic/dendritic surface areas, and dendritic branching patterns were incorporated into a GBC computational model, which confirmed the presence of the two innervation models. Furthermore, we present novel discoveries about GBC dendritic structure and explore their functional significance through computational modeling.

Leeches: A Comparative Look on Leech Therapy in Ayurvedic Medicine and Other Cultures

Jared Zulueta

Faculty Mentor: Holly Donahue Singh (Judy Genshaft Honors College)

Hirudino therapy or Leech therapy has been used as a method to treat many ailments throughout history. Leech therapy is generally used as a method to thin the blood because leeches inject an anticoagulant to make sure that their victim's blood does not clot. There have been other instances of leech therapy usage in ayurvedic medicine, such as treating, alopecia, gout, hemorrhoids, and a variety of other conditions. The goal of the research that will be conducted is to examine why leech therapy is still used in ayurvedic medicine. This question will be answered by examining other cultures and their use of leech therapy, as well as the history behind leech usage in medicine. In terms of historical usage, leech therapy has seen usage in ancient Egypt, Greece, and the middle east. In fact, leech therapy has been used in ayurvedic medicine for a substantial amount of time, which is why it is surprising that it is still used somewhat today. Leech therapy in ayurvedic medicine has seen somewhat of a disappearance in the early 20th century because antibiotics were becoming more popular methods to treat ailments. Leech usage has since made somewhat of a resurgence. On the other hand, leeches have also been known to contribute to ailments, such as infection. Based on the preliminary research, it is safe to assume that leeches in ayurvedic medicine have seen a resurgence because enough research has been conducted on them in order to use them safely.

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