



**Student Research Conference**

**In Person Abstracts**

**Thursday, February 17, 2022**

- Behavioral and Social Sciences
- Natural Science
- Arts and Humanities

## **Behavioral and Social Sciences**

**Angelica Nino, Myrick Nguyen, Jenna Leland, Leticia Ortiz**, Graduate Student

*Lived Experiences of Post-Graduates with a Family History of Mood Disorder: Examining Lifestyle Choices and Occupational Engagement*

Faculty Mentor: Sheryl Ryan, Occupational Therapy

Risks of developing mood disorders increase with a family history and during life changes. This study seeks to understand how the awareness of these risks impacts the lifestyle choices of newly graduated individuals. Methods This qualitative study included four recent graduates with a family history of a mood disorder. The case study approach utilized an interview, a photo-elicitation activity, and a time use wheel activity. Results Analysis identified five emergent themes: (1) changing the environment to allow for personal growth, (2) proactively creating healthy routines, (3) navigating changing relationship dynamics, (4) engaging in leisure activities, and (5) being mindful of mental needs. Conclusion All participants engaged in preventive wellness practices. Due to a higher risk for mood disorder, this population may benefit from similar practices. OT expertise in wellness habits and lifestyle modification can play a vital role in preventive care for this population.

**Therese Rafaela, Patricia Tom, Elisa Yao, Jann Ramirez**, Graduate Student

*Inclusion Among Ethnically Diverse Families Within an EI Pediatric Clinic*

Faculty Mentor: Sheryl Ryan, Occupational Therapy

There is a lack of representation in research regarding the perspectives of minority research regarding the perspectives of minority caregivers with children with developmental disabilities/delays and occupational therapy (OT) practitioners in early intervention (EI). There is a need for inclusion among ethnically diverse families due to their multicultural context in pediatric OT. This study examines a culturally fluid pediatric clinic and how their values impact this population. Methods: This qualitative single case study conducted semi-structured interviews with 2 OT supervisors who have over 40 years of experience in interactions between minority caregivers and occupational therapists in EI. The data was analyzed through coding and thematic analysis. Results: Data analysis produced 4 themes: unconscious cultural responsivity, investing in staff, investing in parents, and always growing. Conclusion: Clinics serving ethnically diverse families must reflect on their practices to enact changes that consider specific needs, demographics, and values of their clients and staff to cultivate an all-inclusive workspace. Changes may include abstaining from only celebrating common cultural holidays and broadly referring to them as the “holiday season.”

**Kasey Reeve, Jenny Phung, Bobby Woodcock**, Graduate Student

*Investigating the Formation and Maintenance of Friendships in Autistic Adolescents: A Qualitative Study Using Narrative with Photo-Elicitation*

Faculty Mentor: Sheryl Ryan, Occupational Therapy

The formation and maintenance of friendships is a critical developmental milestone during adolescence. Adolescents with Autism Spectrum Disorder (ASD) experience challenges with social skills and communication as well as making and keeping friends. Purpose: This study seeks to better understand their lived experience regarding friendships. Method: Our two participants with ASD were 18-24 years of age. Using a narrative with photo-elicitation methodology, researchers conducted Zoom interviews where participants provided one photo representing how they form friendships and one representing how they maintain friendships. Results: Four themes emerged: setting, common interest, effort, and desired characteristics. Implications: The results emphasize the importance of understanding the lived experiences of autistic adolescents. Considering common interests like video games will help health practitioners to design interventions to enhance autistic adolescents' social participation.

**JiWon Anh, Larissa Arakaki, Jennifer Eo**, Graduate Student

*Neonatal Intensive Care Unit (NICU) Experiences with Compassion Fatigue and Its Effect on Occupations*

Faculty Mentor: Sheryl Ryan, Occupational Therapy

The neonatal or newborn intensive care unit (NICU) cares for extremely vulnerable and high-risk infants. However, research on NICU workers' lived experience with compassion fatigue and burnout is scarce. This narrative qualitative study used interviews and photo-elicitation to research NICU compassion fatigue and burnout. Data analysis generated four themes: (a) unique and enjoyable population, (b) factors relating to workplace burnout, creating boundaries, and (d) coping strategies for compassion fatigue. Our findings emphasize that NICU workers should be aware of compassion fatigue caused by poor workplace communication. Workplace mental health support may not be provided so we suggest that NICU workers engage in coping strategies to combat and prevent compassion fatigue. By integrating these changes into treatment, mental health services can provide a more holistic approach to maintain work-life balance and create health-promoting routines and rituals.

**Ramon Ronquillo, Celine Rezvani, Chris Simmons, Khanh Phan**, Graduate Student

*Tattoos and Six-inch Heels: A Visual Exploration of the Meaning of Clothing for Adults with Mobility Disabilities*

Faculty Mentor: Sheryl Ryan, Occupational Therapy

Because people use clothing for self-expression as well as body covering, and most clothing is made for able-bodied people, it is important to explore how clothing impacts people living with disabilities (PLWD), beyond simply posing limitations with the physical act of dressing. Our study aimed to explore the meaning of clothing for PLWD. Method: Researchers used Photovoice, a participatory action research methodology in which participants take photos in response to prompts pertaining to the research topic. 6 subjects participated in a focus group to discuss their photographic contributions. Results: Four themes emerged: (a) adaptations/innovations, (b) trade offs, (c) being excluded, and (d) breaking barriers. Conclusion: A lack of universal design in clothing forces PLWD to adapt available choices to their needs, leading to a collective feeling of exclusion. Furthermore, it was found that the meaning of clothing went beyond self-expression, as many used clothing to break barriers and dispel preconceived notions about disability.

**Brandon Lawton, John Lorenzo, Sandra Ngo, Faith Ignacio** Graduate Student

*Experiences of Occupational Therapists Working with Unhoused Populations*

Faculty Mentor: Sheryl Ryan, Occupational Therapy

With rates of homelessness rising in the United States, individuals from unhoused populations continue to experience obstacles to health and wellbeing. Occupational therapists are well-positioned to support unhoused individuals with the everyday tasks they want or need to do. However, perspectives on the nature and contribution of occupational therapy to supporting unhoused communities have been scattered. The purpose of this study was to examine the personal experiences of OT professionals working with the unhoused and explore characteristics of their roles in everyday practice, challenges they face, and factors that sustain their work. Methods: Qualitative interviews were conducted with six licensed occupational therapists who had one or more years of experience working with unhoused populations. A phenomenological approach was used to guide the study. Results: Characteristics of occupational therapists' daily work included: a) supporting client centered skills, b) supporting clients with mental health challenges, and c) interdisciplinary team dynamics. Challenges they faced involved: a) limited funding and b) clients' barriers to accessing services. Factors that sustained work included: a) having a supportive staff and b) finding emotional and moral congruence. Conclusions: In uncovering the characteristics of daily work and factors that sustain the roles of occupational therapists working with unhoused communities, this study emphasizes the importance of being comfortable with overlapping professional roles and finding supporting multidisciplinary teams for OT's and other professionals interested in pursuing community-based practice. Furthermore, limited funding and clients' barriers to accessing social and healthcare still prove to be major challenges that need to be addressed.

**Tracy Bertka, Anita Kapila-Ramirez**, Undergraduate Student

*Morning versus Evening Exercise– What's Better for Your Diet? Evidence From an Event-Related Potential (ERP) Study*

Faculty Mentor: Kaylie Carbine, Psychology

Food-related inhibitory control, or one's ability to withhold dominant responses towards desired foods, is critical for managing diet and health. Acute aerobic exercise may improve food-related inhibitory control and one's diet, but it's unclear if morning versus evening exercise has a greater effect on food-related inhibitory control. To test if time of day and exercise affect food-related inhibitory control, we measured event-related potentials (ERPs), which are changes in the brain's electrical activity in response to stimuli during an electroencephalogram (EEG). We measured the N2 and the P3 ERPs in response to food stimuli after morning and evening exercise, as these ERPs get larger when withholding dominant responses, reflecting increased inhibitory control. Method: 138 participants (MAge = 25.67; 54% female) attended two sessions held a week apart, either both in the morning (7-10am; n = 71) or evening (7-10pm; n = 67). For one session they rested and the other they walked on a treadmill at 3.8mph, both for 45 minutes. After they completed two food go/no-go tasks, one where they withheld responses to high-calorie foods and the other where they withheld responses to low-calorie foods, while EEG data were recorded. Results: Separate 2-time (morning/evening) x 2 session (rest/exercise) x 2-task (high/low-calorie) ANOVAs for the N2 and P3 ERPs both showed a main effect of task, with the high-calorie task eliciting a larger inhibitory response than the low-calorie task (all ps < .001). The effect of time, exercise, and any interactions were not significant for the N2 or P3 (all ps > .063). Conclusion: Regardless of the time of day or exercise, individuals require increased recruitment of inhibitory control resources to withhold from eating high calorie compared to low-calorie foods. Future research may wish to consider other interventions (e.g., cognitive-based interventions) or health factors (e.g., sleep deprivation, BMI status) that could affect food-related inhibitory control.

**Nicole Figueroa-Sierra**, Undergraduate Student  
*Batched Notifications Reduce Smartphone Addiction*  
Faculty Mentor: Nancy Cheever, Communications

Previous research has assessed the impact of smartphone notifications, uncovering the negative impacts they have on one's cognitive load, smartphone usage, productivity, and attention levels (Kim, Kim, & Kang, 2016; Kushlev, Proulx, & Dunn, 2016). One study found that receiving phone notifications impairs one's attention performance, even without interacting with the device. Just seeing or hearing notifications led to distracting thoughts, mind-wandering, and task-irrelevant thoughts. While there is a copious amount of research regarding the obstructiveness of notifications, there is minimal research on how batched notifications impact smartphone use/addiction, which is the primary goal of this study. Researchers recruited 50 adult student participants from California State University, Dominguez Hills via convenience sampling. The participants resided in the United States, utilized notifications, had an Android smartphone, and were able to complete a total of three surveys, one given every two weeks. Participants were randomly assigned into two groups, one of which utilized an app called Daywise to receive batched notifications at three intervals throughout the day (9 a.m., 3 p.m., and 9 p.m.), while the control group received their notifications normally. Participants then received a link to a survey every two weeks for a month. The surveys measured their technology usage, smartphone addiction, executive functioning, attention, stress, and well-being. While 28 participants completed the first survey, only 12 completed the last survey, indicating a significant drop off rate. Of those who received the batched notifications, there was a 17% drop in those who reported high smartphone addiction between the first and last survey administrations, and a 21% increase in those reporting low smartphone addiction. For those in the control group, there was an increase of 33% who reported high levels of smartphone addiction. These results help contribute to the current literature on notifications and smartphone addiction.

**Alex (Adriana) Perez**, Undergraduate Student  
*Adoption of Distributed Energy Resources in Disadvantaged Communities and Climate Change related Challenges*  
Faculty Mentor: Parveen Chhetri, Earth Science

Many studies have focused on energy burdens across the United States, yet few have focused specifically on Los Angeles (LA) County. The energy infrastructure and the distribution of services are adapting to the demand for alternative forms of energy, such as photovoltaic (PV) technology (solar power), as a response to climate change and the ever-increasing demand for energy in our day-to-day lives. In order to understand how the infrastructure works we looked at the multiple components of Distributed Energy Resources (DER), which include photovoltaics, fuel cells, microturbines, batteries, energy efficiency, demand response technologies, and electric vehicles. Widespread adoption of DER is critical to California's compliance with the 100 Percent Clean Energy Act of 2018 (SB 100), which has set a goal of powering all retail electricity sold in CA with renewable and zero-carbon resources by 2045. Our study examines Disadvantaged Communities (DACs), as defined by CalEnviroScreen Cumulative Impact Score data, and explores whether there is a correlation between DACs and low integration capacity (<100 kW Uniform Generation Static Grid, obtained from Southern California Edison's Distributed Resources Plan External Portal), thereby inhibiting the adoption of DER in disadvantaged communities in Los Angeles County. Unequal access to energy infrastructure (energy generation and battery storage), can potentially cause DACs to be more vulnerable to power outages due to the rising number of significant weather events caused by climate change. To address how DACs are currently being disproportionately affected by climate change-related energy issues, we used DACs data from CalEnviroScreen and climate extreme data from Cal-Adapt to identify the most vulnerable communities associated with climate change-related energy issues. Because a large proportion of the LA County population is classified as DACs, understanding the current services available, along with the current distribution of these services, is critical to ensure that future policies and the development within these communities are arranged equitably.

## Natural Science

**George Contreras**, Undergraduate Student

*Genetic & Geographical Evidence for New Species of Notoscincus*

Faculty Mentor: Sonal Singhal, Biology

The lizard species *Notoscincus ornatus* is found in Northern Australia, and it consists of two subspecies: *Notoscincus ornatus ornatus* and *Notoscincus ornatus wotjulum*. Though these two subspecies have been deemed the same species for many years, recent evidence in morphology and DNA has shown that this may no longer be true. We analyzed nuclear and mitochondrial genetic data from 20 individuals from both subspecies to determine if these two subspecies are better characterized as different species. Our nuclear DNA was acquired through Double Digest Restriction Aided Digest (ddRAD), and we used these data to create a phylogeny of these lizards. With this phylogeny, we were able to group species into clades that correlate to different geographical environments when the individuals were plotted on a map. We then looked at the mitochondrial DNA (mtDNA) for 13 individuals and analyzed their evolutionary rate through a series of molecular clocks. This allows us to create a different phylogeny that approximates a timeline from which each lizard diverged from one another. In this phylogeny, we were able to approximate the earliest time of divergence was 15.3 million years ago, while our most recent time of divergence of *Notoscincus ornatus wotjulum* is less than half a million years ago. In continuing our research, we hope to use our data to revise species boundaries in *Notoscincus ornatus*.

**Benjamin Garcia Morales**, Undergraduate Student

*Density of Length Spectra of Natural Numbers*

Faculty Mentor: Wai Yan Pong, Mathematics

decomposition of a natural number  $m$  is a sequence of consecutive natural numbers that sum to  $m$ . The length of a decomposition is the number of its terms. The spectrum of  $m$ , denoted by  $\text{spec}(m)$ , is the set of lengths of its decompositions. For example, 9 has three different decompositions: 9, 4+5, 2+3+4. So,  $|\text{spec}(9)| = \{1,2,3\}$ . The spectral class of a number  $m$  is the set of all numbers that have the same spectrum as  $m$ .

A fact that the size of a spectral class can only be 1,2 or infinite was proved by W.Y. Pong in *Length Spectral of Natural Numbers*, *International Journal of Number Theory* Vol. 05, No. 06, pp. 1089-1102 (2009). The goal of this project is to answer a natural question that arises from this result: how often one can 'guess' the number from its spectrum? The question is related to the densities of sets of numbers with a specific size of their spectral classes.

**Jeisson Pulido**, Undergraduate Student

*Magnetic Flux Rope Reconstruction in the Heliospheric Current Sheet using Parker Solar Probe Data*

Faculty Mentor: Kristoff Paulson, Physics

The Heliospheric Current Sheet (HCS) is a region of the heliosphere that contains multiple flux ropes/plasmoids generated through solar magnetic reconnection and originated from helmet streamers. Parker Solar Probe (PSP) data is used to identify a transit of vicinal flux ropes when the spacecraft navigates through the HCS. We then use the Grad-Shafranov method to solve for the impact parameter and the flux rope axis. The local orientation and thickness of the HCS is ambiguous in PSP crossings because of the single-point measurements, however, we utilize the orientation and centroid locations of several flux ropes occupying the HCS to deduce the local current sheet shape

**Joshua Quiran**, Undergraduate Student

*Affinity Purification of Antibodies (2G8) from Endotoxins*

Faculty Mentor: Teklegiorgis Ghebremariam, Biology

The purpose of this experiment is to remove pyrogens from 2G8 antibody by using Detoxi-Gel Endotoxin removal gel. This fast-small-scale affinity purification of antibodies from endotoxin removes a certain percentage of endotoxins.

Background: Endotoxins can affect many human organ systems and disrupt humoral and cellular host immunity so they must be removed to negligible amounts. The sample in this study is Anti-1, 3 beta-glucan antibody [2G8]. This antibody has been shown to be effective in multiple models of fungal diseases including vaginal and systemic Candida infection, murine invasive Aspergillosis and Cryptococcus neoformans infections. Polymixines are antibiotics that function by binding and hence neutralizing the biological activity of endotoxins. In this study we used immobilized polymixin B gel to bind and remove endotoxin.

Method: The Detoxi-gel resin was regenerated by washing with 5 resin -bed volume of 1% sodium deoxycholate, followed by 5 resin bed volume of pyrogen-free buffer then the sample was applied. The sample was then collected by a gravity flow column and the level of endotoxin was measured by using the Limulus Amebocyte Lysate Endochrome kit.

Result: After applying the 2G8 antibody on the Detoxi-Gel an ~ 43% or 0.3405 mg was recovered from the sample from 0.8 mg. The Endotoxin Units per milliliter (EU/ml) was 12,665 before cleaning and 0.15 EU/ml after.

Conclusion/summary: The FDA regulates the acceptable level of endotoxin contamination to be 0.5 endotoxin EU/ml. Thus, our purification method was successful in producing an acceptable level of endotoxin in the 2G8 antibody. The purified antibody will be tested for its efficacy in protecting against fungal infections in mice.

**Kamila Trzanek**, Undergraduate Student

*Clinical Laboratory: Lessons Learned from COVID-19*

Faculty Mentor: Payman Nasr, Clinical Sciences

COVID-19 pandemic is currently overwhelming the healthcare systems across the world. Aside from the hospitals' ICU's, clinical laboratories are also facing unprecedented demand, primarily due to the surge of testing and the urgency for rapid results turnaround time. As new assays are being implemented with increasing availability to the public, and the COVID-19 cases surge, laboratories struggle in terms of productivity and efficiency. The current report aims to identify the primary challenges facing clinical laboratories during the pandemic. Information from the CDC and other scholarly sources, as well as interviews with the laboratory personnel in the Los Angeles metropolitan were conducted to identify the obstacles in the laboratory operation during the pandemic. The analysis identifies both internal and external obstacles that presented challenges for the effective laboratory operation. As the pandemic reached its peak, the main internal challenge was to meet the staff shortage as an increasing number of staff were either in quarantine or recovering from the infection. These individuals are often highly trained and difficult to replace. Their absence contributes to a significant reduction in productivity and a slower turnaround time. Cross-training of laboratory employees in the different departments is one way to decrease the impact of unforeseen employee shortages and, in turn, to improve turnaround time and productivity. The main external challenge involved the supply chain demand for reagents and personal protective equipment. Central distribution of medical supplies at the level of the Federal government that reduces outbidding practices and ensures regular distribution of supplies deemed necessary for a prompt laboratory response. In summary, the clinical laboratory is an essential element of communicable disease surveillance; therefore, improving multidisciplinary training for the laboratory staff, as well as ways to secure the laboratory supply chain will strengthen the laboratory response in future pandemic investigations.

## Arts and Humanities

**Caitlin Mcclister**, Undergraduate Student

*American Duplicity: How the FDR Administration and American Red Cross Voluntary Aid Bypassed Millions of Jewish Refugees during World War II*

Faculty Mentor: Andrea Johnson, History

World War II will forever be one of the most horrific events in our world history. 75 million people died from a large variety of causes. 6 million of those were Jewish people killed in Nazi concentration camps. For Americans, the war really started in 1941 with the bombing of Pearl Harbor. The reality is that World War II started in 1939. As information has unfolded, and the contribution of the United States in terms of aid to European Jews has come under investigation numerous times. The role of President Franklin D. Roosevelt's administration and the various American voluntary associations that were responsible for providing aid have already been researched. The International Committee of the Red Cross has also released their records, proving to be controversial with regards to their impact on victims of Nazism. Regardless, it's clear that not enough was done. My research focuses on a different aspect of this topic that has not been examined thoroughly. I will analyze how the relationship between the FDR administration and the American Red Cross directly impacted the aid given to European Jews during World War II. This will involve looking at specific individuals within President Roosevelt's administration and the American Red Cross, as well as defining the relationship based off of the correspondence between them. I hope to provide a clearer understanding what really occurred during these years, and fill in the gaps that lead to the millions of people left at the hands of Hitler and the Nazis.

**Danielle J. Enriquez**, Undergraduate Student

*The Making of Prohibition: How Immigrants Became the Reason Prohibition was Enacted into a Law*

Faculty Mentor: Kate Fawver, History

The 18th amendment was ratified in December of 1917, the ratification ultimately led to what is known as the Prohibition Era from 1920 to 1933. Prior to the year 1917, between 1890 to 1915, woman feminist groups alongside religious groups fought for a law to be enacted for legislation to end alcohol consumption. The United States was a rising nation with an influx of immigrants arriving through Ellis Island. In addition, prohibition occurred when the United States was emerging from its involvement in World War I, experiencing the roaring twenties and undergoing the beginning of the Great Depression. Immigrants were seen in a negative light, outcasted and pushed away from society because of the different languages they spoke and their looks. Prior to prohibition, women Temperance movements and organizations like the Anti – Saloon League along with other organizations advocated for the legislation to be passed prohibiting the use, sale, and manufacturing of liquor; all of which was directly correlated to immigrants.



**Michelle Avila**, Undergraduate Student

*Depictions of Fat Women Through the Gazes of Female and Male Artists During the Baroque Period*

Faculty Mentor: Kirstin L. Ellsworth, Art and Design

The female body has been a famed subject for the gazes of artists, models, and audiences. As the female body became a preferred subject, the depictions of diverse body shape diminished. As a result, western society began to uphold unrealistic beauty standards when painting women in art. Due to these unrealistic standards, the male artistic gaze presumably portrays fat women in inaccurate perspectives that demonstrate them as subjects of mockery, misrepresentation, and over-sexualization for example, as seen in paintings of the female heroine Judith. According to the apocryphal Biblical account, Judith saves her town against the ill-ridden Holofernes. Judith quickly became one of the most famous female subjects throughout art history. The depictions of Judith differ depending, to a great extent, on the artist's gender. Artists like Artemisia Gentileschi (1610–1653) strive to reject the typical male gaze to create diverse depictions of women, as seen in *Judith Slaying Holofernes* (1612-1613). Gentileschi utilizes her strengths and experiences as a woman in 17th century Italy to produce art that diminishes the portrayal of frail women. By depicting fat women in positions of power, Gentileschi delivers power to the fat female subject. This research will explore the depictions of the female body of Judith in the art of Artemisia Gentileschi and Peter Paul Rubens (1577-1640) to demonstrate the differences between the female artistic gaze and the male artistic gaze. This project argues that art created by the female artist's gaze of Artemisia Gentileschi portrays larger bodies without the alleged compartmentalized views of women's bodies conserved by the male artistic gaze. By delivering research on diverse female subjects, the narrative of what it means to be a woman in the arts, whether the subject or the artist, can shift to prove that representation matters.