

22ND ANNUAL

**RONALD E. MCNAIR SCHOLARS
UNDERGRADUATE RESEARCH SYMPOSIUM**

APRIL 29, 2021

PRESENTED BY: CAL POLY POMONA MCNAIR SCHOLARS PROGRAM

DIRECTOR'S NOTE

DR. WINNY DONG

Welcome to the 22nd Annual Ronald E. McNair Postbaccalaureate Achievement Program Symposium. Thank you for joining us online in celebrating the achievements of our McNair Scholars, and I congratulate all the scholars and mentors for their accomplishment and their creativity and ingenuity in continuing to conduct research while dealing with many unforeseen situations presented with the pandemic, campus closure, and quarantine. I hope next year we will get to celebrate in person.

The McNair Scholars Program has brought great distinction to Cal Poly Pomona, and the program continues to provide student scholars with valuable research experience and encouragement that give them a distinct advantage when they undertake the demands of graduate school. The McNair Scholars Program has been a model for promoting academic success and for ensuring that underrepresented students pursue doctoral studies. Most of our scholars hail from low-income, first-generation college backgrounds and they have overcome economic, social, and cultural barriers on their academic journey. Few aspects of human endeavor are more stimulating than actions that nurture intellectual creativity among young individuals.

As Director of the program, I have had the privilege of interacting with exceptional students, faculty, staff, and administrators. We are fortunate to have a wonderful staff and I am consistently awed and humbled by their dedication to the scholars. I want to thank current and past McNair Scholars for continuing to demonstrate the power of moral integrity in their academic and personal lives, as they apply the virtues of enthusiasm, loyalty, cooperation, friendship, and industriousness. Since the inception of the program by Dr. Frank Torres in 1999, over 154 students have graduated with either a Master's Degree or Doctorate of Philosophy in programs across the nation.

SYMPOSIUM SCHEDULE

BREAKOUT ROOM 1

Time	Scholar	Major	Research Topic
3:30pm	Kelly Nguyen	Psychology	Cultivating a diverse workforce: Examining the relationship between leadership and diversity climate
3:45pm	Julia LeFrancois	Psychology	Embodied Narratives: Bodymind Resistance Through Storytelling
4:00pm	Steven Lopez	Psychology	Substance Use Expectancies: A Holistic Exploration of Expectancies and Their Role on Illicit Substance Use Behaviors Among College Students

10 minute break

Time	Scholar	Major	Research Topic
4:25pm	Frankie Nieblas	Psychology	Approach Coping is Associated with Higher Flourishing and Post Traumatic Growth during the lockdown of the Covid-19 pandemic
4:40pm	Jillian Munoz	Psychology	The Impact of Pandemic Working Conditions on Essential Workers' Well-Being

BREAKOUT ROOM 2

Time	Scholar	Major	Research Topic
3:30pm	Geovani Munoz	Psychology	Predicting Latinx College Student Civic Engagement
3:45pm	Cintia Alaniz	Psychology	Mentoring Relationships among First-generation Latina/o/x College Students
4:00pm	Audriana Gregorio	Psychology	Emotional Memory Encoding

10 minute break

Time	Scholar	Major	Research Topic
4:25pm	Ruben Arredondo	Psychology	Understanding the Circular Migration Processes of U.S. Born Latinx Adults
4:40pm	Valerie Tapia	Psychology	Investigating the Influence Racial Bias has on Misinformation Correction

SYMPOSIUM SCHEDULE

BREAKOUT ROOM 3

Time	Scholar	Major	Research Topic
3:30pm	Diego Roque Aguayo	Animal Science	Effect of winter annuals on animal performance of early weaned calves
3:45pm	Elvis Garcia	Food Science & Technology	Using consumer feedback to determine the most desirable attribute of food products enriched with orange pomace
4:00pm	Carlos Calderon	Animal Health Science	The Effect of Cold Plasma Treatment on Long Chain Cyanoacrylates for Enhanced Adhesion

10 minute break

Time	Scholar	Major	Research Topic
4:25pm	Lizette Enriquez	Chemistry	Quantifying Butanol and Butyrate in Cell Cultures using NMR Spectroscopy
4:40pm	Haocheng Liang	Chemistry	Smartphone-based Analytical Methods in Water Quality Monitoring
4:55pm	Christian Ordaz	Plant Science	Identifying the potential pest and disease threats on production and economy to the coffee growing industry in California

BREAKOUT ROOM 4

Time	Scholar	Major	Research Topic
3:30pm	Ryan Sandoval	Computer Engineering	Photonic Crystal Behavior in Guiding Structures
3:45pm	Tristan Scharfenstein-Montgomery	Computer Engineering	Reconfigurable S-Curve Motion Controller
4:00pm	Charles Bickham	Computer Science	Reducing Authorial Burden for Story Sifting: Creating a Kismet to Felt Compiler

10 minute break

Time	Scholar	Major	Research Topic
4:25pm	Emely Giron	Biology	Do Antibodies Play a Role in the killing of the Sexually Transmitted Pathogen <i>Trichomonas vaginalis</i>
4:40pm	Jeaney Munoz	Biology	Synthesis and Computational Evaluation of Bisbenzylisoquinoline Compound

SYMPOSIUM SCHEDULE

BREAKOUT ROOM 5

Time	Scholar	Major	Research Topic
3:30pm	Phoenix Chen	Business Administration	Covid-19 and Work Life of American Workers
3:45pm	Tammy Phan	Anthropology	Loot boxes in Virtual Worlds
4:00pm	Thisuri Fonseka	Anthropology	Cal Poly Pomona Students vs. Tempting Technology

10 minute break

Time	Scholar	Major	Research Topic
4:25pm	Angelica Villavicencio	Sociology	Mothering as a Latina Student Parent
4:40pm	Karina Ortiz Villa	Philosophy	Can Men be Oppressed as Men? Lessons from Intersectionality
4:55pm	Natali Mendez	Food & Nutrition	The Breakfast Bar Study

CINTIA ALANIZ

MENTOR: DR. ALEJANDRO MORALES

TITLE: MENTORING RELATIONSHIPS AMONG FIRST-GENERATION LATINA/O/X COLLEGE STUDENTS

Abstract: The U.S. Hispanic population reached 60.6 million in 2018 making them the nation's largest ethnic and racial minority. Additionally, the Hispanic undergraduate enrollment more than doubled a 134 percent increase from 1.4 million to 3.2 million students. Despite the changes in demographics, Latina/o/x college students remain at risk of not completing college.

First-generation college students, specifically Latina/o/x students are often underrepresented and are faced with many challenges across their academic careers. They often lack basic knowledge about college, including degree expectations and planning, expenses and funding, and career preparation, placing them at risk for non-enrollment, poor adjustment, and lack of persistence (Moschetti, Plunkett, Efrat & Yomtov, 2012). Over the past few decades research has found that mentorship is related to several desired outcomes in college students including academic success, connectedness and career development. Students that have a mentor or role model in their lives are less likely to deal with stress and other factors that can influence their psychological well-being and academic self-efficacy. Students' level of involvement, connectedness, and integration with the university are important determinants of their academic persistence and success (Tinto, 2006). Furthermore, students who have a mentor have a higher chance of succeeding academically and professionally. As a result, when college students have a strong source of support their connectedness and sense of belonging increases. Despite the growing literature in the area of Latina/o/x college students, mentorship remains understudied. Thus, the purpose of this study is to look at the interrelationships between mentoring and cultural variables on psychological outcomes of first-generation Latina/o/x college students.

Biography: Cintia Alaniz is a fourth-year undergraduate at California State Polytechnic University, Pomona who is studying Psychology. She is part of Dr. Alejandro Morales' research lab and a member of Psi Chi. As a DACA recipient and first-generation college student she has learned the importance of mentorship relationships. As a result, her research focuses on the relationship between mentoring and academic self-efficacy. She will be applying for Counseling Psychology programs in the fall. After obtaining a PhD in Counseling Psychology, she will secure a tenure-track faculty position where she plans to teach, mentor, and help underserved communities. Her goal is to continue conducting research related to first-generation and undocumented college students.

RUBEN ARREDONDO

MENTOR: DR. ALEJANDRO MORALES

TITLE: UNDERSTANDING THE CIRCULAR MIGRATION PROCESSES OF U.S. BORN LATINX ADULTS

Abstract: This qualitative study explores circular acculturation processes in U.S. born Latinx adults who relocated temporarily to any Latin American country during their childhood and later returned to the U.S. This investigation seeks to understand how the experience of circular migration affects adults' overall psychological adjustment and identify coping strategies developed as a result of this experience. This two-way, repetitive relocation may not fit in with the current models of migration and acculturation. Although the evidence for the impact of the acculturation process and acculturative stress on Latinx mental health is accumulating, little is known about the processes that support positive adaptation. A better understanding of the potential protective processes that may alleviate the risks involved could provide valuable information for developing interventions to mitigate the adverse effects of stressors such as acculturative stress. A preliminary analysis of U.S.-born adults (n=8) who participated in semi-structured interviews and moved back to Mexico during their childhood showed that circular migration experiences between two countries varied among participants. Notably, interviewees unanimously described moving back to the U.S. as an experience that involved an element of fear and a degree of adjustment. The most common adjustments involved learning a new language, entering a new education system, and adopting a new culture. Interviewees described the need to develop coping strategies to overcome the challenges they faced, including making friends, family support, and the lapse of time after migration. We expect further analysis will provide valuable information on processes that support positive adaptation.

Biography: Ruben Arredondo is a third-year transfer student at California State Polytechnic University, Pomona who is studying Psychology and Spanish. He is a member of the Psychology of Immigration Lab where he conducts research on the experiences of immigrant populations. His current research focuses on understanding the acculturation experiences of the U.S. born Latinx adults who engaged in circular migration between Latin American countries and the U.S. Outside of academics, he currently works as a behavior instructor for children with a diagnosis of autism spectrum disorder and is a member of the Imperial Valley Equity and Justice Coalition, a social justice advocacy group focused on health equity, civic engagement, and environmental justice. He is aspiring to attend graduate school and obtain a Ph.D. in Counseling Psychology. His career plans include research to learn about the experiences of immigrant populations, their educational outcomes and wellbeing; increase accessibility to mental health services in Spanish-speaking populations; and mentor students from diverse and underrepresented backgrounds. Ruben will be graduating from Cal Poly Pomona in the spring of 2021 and enrolling in a graduate program fall 2021.

CHARLES BICKHAM

MENTOR: DR. ADAM SUMMERVILLE

TITLE: REDUCING AUTHORIAL BURDEN FOR STORY SIFTING:
CREATING A KISMET TO FELT COMPILER

Abstract: Social simulation has been a popular domain for computational creativity. Even though it is very simple to use for end users, in the past it has not been modifiable for the end users. Since Meehan developed TALE-SPIN there have been numerous applications that include social simulation which include stories, games, theatrical performances, and audio plays. I will be implementing Kismet which is a simple social simulation language. Even though it is not as powerful as other social simulation languages it leverages computational machinery and is authored using natural language inspired syntax that is designed to be end user facing. The purpose of Kismet is to help distribute the authoring of scenario content modules, such as those in tabletop role-playing games. Felt is an existing social simulation engine that has been implemented and utilized in two games. However, Felt comes with a high authorial burden, and requires a lot of boilerplate code to be copied for it to work. This boilerplate code can create a lot of issues for a novice author – What code should be copied? What pieces need to be changed? --leading to difficulties in authoring. I have integrated the strengths of both languages by creating a Kismet to Felt compiler. I will be analyzing how effective the compiler is by testing it against the existing Felt games.

Biography: Charles Bickham is a fifth year undergraduate at California State Polytechnic University, Pomona from San Diego, California. Charles is pursuing a major in Computer Science with a minor in Mathematics. His current research focuses on Games and Artificial Intelligence. He plans to receive his PhD in Computer Science to be able to lead by example and impact the people not only in his community but the world. His short-term plans are continuing research in Artificial Intelligence. His long-term plans are to receive his PhD and start businesses to be able to provide opportunities for people in his community.

CARLOS CALDERON

MENTOR: DR. JOANNE SOHN & DR. NINA ABRAMZON

TITLE: THE EFFECT OF COLD PLASMA TREATMENT ON LONG CHAIN CYANOACRYLATES FOR ENHANCED ADHESION

Abstract: Cyanoacrylates are a group of strong, fast-acting adhesives. Short-chain cyanoacrylates (SCCAs) have been contended by researchers to be more adhesive than long-chain cyanoacrylates (LCCAs) and thus more reliable; however, SCCAs are known to cause tissue toxicities and have been replaced by LCCAs for medical purposes. Currently, LCCAs are primarily used in wound healing, but are also used in research procedures such as installing cranial windows. This study will focus on using cold plasma to increase the adhesiveness of the tissue-safe LCCAs. Over the last few decades, cold plasma has emerged as a focus of research in the biomedical field. Cold plasma has the ability to alter the surface characteristics such as wettability and sterility. The study will observe the effect of cold plasma on the adhesiveness of LCCAs on two groups of CD1 mice (chosen to minimize genetic variability). Both groups will receive a pre-set amount of LCCA on their skulls followed by the attachment of a 1mm strip of metal. The experimental group will be treated with cold plasma prior to receiving their LCCA and metal strip application. The LCCA will be given 3 minutes to set before the metal strips are hooked onto a digital force cage. The force required to break the adhesive skull-metal bond will be recorded for each mouse and compared. If the experimental group yields higher forces required to break the bond, this study will serve as proof of concept that cold plasma can increase the adhesiveness of LCCAs in medical applications. We predict that with a smaller contact angle from decreasing wettability, the LCCA will spread more thoroughly, and its overall adhesion will increase.

Biography: Carlos Calderon is a second-year transfer student at California State Polytechnic University, Pomona studying animal health science. His goal is to obtain a Ph.D. in biomedical sciences and conduct translational research with a focus on bridging the human medical and veterinary fields. Carlos has extensive experience working with animals as a caretaker at the Rancho Cucamonga Animal Center. Additionally, Carlos is a member of a physics lab that studies non-thermal plasma applications. His current study looks at whether non-thermal plasma's ability to sterilize and increase the wettability of a surface will have positive effects on the adhesiveness of long-chain cyanoacrylates (e.g., skin glues). Alongside research, Carlos' goals include opening his own animal clinic and returning to academia as a faculty member.

PHOENIX CHEN

MENTOR: DR. ZEYNEP AYTUG

TITLE: COVID-19 AND WORK LIFE OF AMERICAN WORKERS

Abstract: The global pandemic Covid-19 has significantly impacted humanity's lives in various aspects. While some businesses adopted creative modifications to maintain day-to-day operations, others have experienced interruptions due to compliance with public health measures, such as social distancing, lockdown, and shelter-in-place orders. Empirical studies have shown that national and economic crises were key stressors that had negative impacts on people's mental health and well-being. The economic downturn engendered by the outbreak along with unexpected changes in individual work life has exposed workers to feelings of isolation, uncertainty, and anxiety. Our study intends to investigate the impacts of the COVID-19 outbreak on workers in the United States based on their race, gender, age, socioeconomic status, industry, employment type, and family traits. We also investigate changes in workers' income levels, work environment, job security, job satisfaction, and job performance as they adapt to new work styles and work conditions. Participants(N=420) from 43 states reported changes in their professional work life and mental well-being on a 30-minute anonymous Qualtrics survey via Amazon Mechanical Turk. All participants have worked for at least 2 weeks during any period since March 2020 on a part-[me or full-[me basis. The future implication for this study is for organizations to develop family and well-being support networks for workers during crises and recessions, especially for low-income minority workers, with the goal of bringing awareness to the adverse impacts historically and systemically disadvantaged groups are experiencing during the pandemic.

Biography: Jinfeng "Phoenix" Chen is a fourth-year undergraduate researcher at California State Polytechnic University, Pomona. She is majoring in Business Administration, with a minor in Psychology. She currently works as a Lead Learning Strategist at the Education Opportunity Program Learning Center, where she empowers students to academic self-efficacy through developing learning skills and strategies. Her intellectual curiosity and passion for knowledge connected her with her research mentor Dr. Zeynep Aytug, who inspired her to become a researcher with prominent areas of interest in diversity, community engagement, and equity. Her next academic goal is to pursue a Ph.D. in Management / Organizational Behavior. The goal of her research is to raise awareness of the benefits of a respective and inclusive environment at the workplace.

LIZETTE ENRIQUEZ

MENTOR: DR. GREGORY BARDING

TITLE: QUANTIFYING BUTANOL AND BUTYRATE IN CELL CULTURES USING NMR SPECTROSCOPY

Abstract: As the Earth's climate increases every year due to carbon emissions, green house gases and fossil fuels, many governments and research has been dedicated to finding alternatives for fuels. Ethanol has previously shown promise as a prominent biofuel as energy source for cars in gasoline. However, recent discoveries have indicated that butanol might be better than ethanol due to its hydroscopic tendencies and low volatility. This research dives deeper into an ethical and sustainable source of butanol production, from the bacteria *Clostridium beijerinckii*. This research seeks to establish an optimal method using NMR spectroscopy to detect and quantify organic materials of butanol and butyric acid. As typical one-dimensional nuclear magnetic resonance (NMR) could not be utilized due to overlapping spectras of the two structures, instead two-dimensional NMR was run named Total Correlation Spectroscopy (TOSCY). Findings of this research concluded that two-dimensional NMR proved to be an adequate method in quantifying organic materials such as butanol and butyric acid. This method is speculated to have a limit of detection (LOD) around 1 mM and 2 mM, however further research needs to be conducted.

Biography: Lizette Enriquez is a fourth year undergraduate Chemistry student at California State Polytechnic University, Pomona. Her favorite field of chemistry is analytical, as she holds two positions as an analytical chemist at Western Analytical Laboratories Inc, and at Element Materials Technology. Her current research also explores analytical and biochemistry as she works with the bacteria *Clostridium beijerinckii*. The research investigates a method in measuring the amount of butanol and butyric acid the bacteria produce. She plans to receive her Ph.D. in Chemistry after finishing her undergraduate degree in the fall.

THISURI FONSEKA

MENTOR: DR. AMY DAO

TITLE: CAL POLY POMONA STUDENTS VS. TEMPTING TECHNOLOGY

Abstract: This project examines the effects of technology on social relationships. There has been much debate about whether technology, such as cell phones, have negatively affected our social relationships. Does technology create a closer or deeper relationship from their perspective of the user or does it create the opposite? Using ethnographic methods, we examine the technological habits of students at Cal Poly Pomona and how they experience their social relationships both face to face and online. We employed to carry out our research through participant observation, interviews, and visual analysis. We recruited our participants from classrooms, the quad area, the marketplace, and the Bronco Student Center. Many of our participants agreed that they would like to engage in social groups where the devices were not the focus. When people are in social settings, they are submersed in their phones and laptops, especially when at school. We examined the reasons for why they are this involved with the devices. We found themes of forced dependency on these devices, as most school procedures including assignments had to be done online rather than handwritten. We also discuss the “agency” of technology devices which “calls” the attention of students. We conclude that there are many reasons that technological devices may have “grey” effects, which are those effects that are either intrinsically good or bad on social relationships For example, spending time on the computer for four hours is considered bad for the body as it puts physical strain in eyes and posture, while isolating themselves from the social environment for long periods of time, this is the black effect. But what if these 6 hours spent on the computer were for a research paper or group assignment, that allows for social interaction online, this is for the betterment of one’s education, this is the White effect. The ‘grey effect’ we have identified is the mixture of the two where it is inevitable but also benefactory. A mix of black and white resulting in Grey. The shades of grey may differ depending on person, device, and situation.

Biography: Thisuri Fonseka is a graduating senior at California State Polytechnic University, Pomona who is majoring in Anthropology and minoring in History and English. In her previous years, she studied at Mount San Antonio Community College where she received an Associates in World Languages and Global Studies. She currently works as a Teacher Assistant in the Anthropology department. Her current research discusses the topic of students' social relationships and the impact technology has on it. Her long-term plans include attending graduate school for a Ph.D. in History where she can gain the necessary tools to become a University level professor, in order to contribute and spark students in a similar way she experienced. She is now waiting for the graduate school decisions to come in.

ELVIS GARCIA

MENTOR: DR. GABRIEL DAVIDOV PARDO

TITLE: USING CONSUMER FEEDBACK TO DETERMINE THE MOST DESIRABLE ATTRIBUTE OF FOOD PRODUCTS ENRICHED WITH ORANGE POMACE

Abstract: Orange pomace is mostly the peel of the oranges that remain after industrial juicing. Orange pomace is usually discarded, creating waste and losing a rich source of polyphenols with beneficial effects on health that could be used to create functional foods. For a food product to be successful in the market it should meet consumer demands in terms of characteristics and attributes. One technique to unveil consumers' preferences and help select product features is conjoint analysis. The objective of the current study is to reveal the characteristics that consumers prefer in a functional product enriched with orange pomace by using conjoint analysis. A conjoint analysis survey was developed and launched. Participants were asked to choose between products with different characteristics that would contain orange pomace. Attributes were: type of day item (breakfast, lunch, snack); served temperature (hot, room temperature, cold); product taste (sweet, savory, sour); nutritional claim (high protein, high fiber, low sugar); texture (crunchy, chewy, liquid); convenience (ready to eat the product, cooking needed, microwavable). After the conjoint analysis data is examined another consumer survey will be used to determine the linking and preference of the two further developed product concepts. Future research is envisioned to make these products and do a sensory evaluation.

Biography: Elvis Garcia Jr is a fourth-year undergraduate at California State Polytechnic University, Pomona (CPP) who is studying Food Science and Technology. His emphasis is Culinology and Plant-Based Nutrition. In his previous years, he studied at Los Angeles City College where he was the Vice President of the Dietetics Club. He worked for Los Angeles Unified School District as a playground supervisor for the program beyond the bell for 3 years. There he helped kids with homework along with teaching them sports, created enriched activities. He also gave a presentation on what to expect in college and the importance of higher education. Last year he was in Ernest Prete Jr. Fellowship Program where he taught them the importance of urban gardening, eating healthy along with created STEM Lesson plans. His plan is to do research with functional foods alongside students as a professor at a university. During the fall semester of 2021, he will be applying to graduate school programs.

EMELY GIRON PERDOMO

MENTOR: DR. FRANCES MERCER

TITLE: DO ANTIBODIES PLAY A ROLE IN THE KILLING OF THE SEXUALLY TRANSMITTED PATHOGEN TRICHOMONAS VAGINALIS

Abstract: Trichomoniasis is a sexually transmitted infection caused by a protozoan pathogen *Trichomonas vaginalis*(Tv). Tv affects more than 300 people worldwide. It has been shown that neutrophils use a process called trogocytosis to kill Tv. Trogocytosis is a process in which a cell, such as a neutrophil, takes “bites” out of its neighboring target cell. It has been shown that the neutrophil trogocytosis may be regulated by antibody opsonization of its target cell. Opsonization is the coating of a pathogen with antibodies to crosslink cells to the pathogen using Fc receptors. Research has shown cell surface receptors, such as FcγRIIIa can be important for the trogocytosis mechanism against cancer cells. We hypothesize that FcγRIIIa is also important for neutrophils to trogocytose and kill Tv. To test this, we will knock out the FcγRIIIa gene using the CRISPR/Cas9 system. We will generate FcγRIIIa knockout neutrophil-like cells (NLCs) and perform several assays that will show whether trogocytosis was affected by that FcγRIIIa knock-out. We have created a ribonucleoprotein that we will use to target and knock out FcγRIIIa. The presence of FcγRIIIa in NLCs has been confirmed through antibody staining and flow cytometry. We have also performed cytolysis assays under different inhibiting and blocking conditions of the FcγRIIIa receptor that further support our findings. We have also created FcγRIIIa transfectants that we will use for functional assays. We hope that our findings will give us more insight into the initiation process of trogocytosis of Tv by neutrophils that we can use to create prevention treatments in the future.

Biography: Emely Giron is a senior at the California Polytechnic University, Pomona who transferred from Citrus Community College. Emely is a first-generation Dreamer student. She is a biology student who is currently working in the Mercer lab. She is studying the molecular effects of the immune system on the pathogen *Trichomonas vaginalis*. Emely pursuing a Masters in Public Health degree Fall of 2021. Her passion is using the knowledge she gained at California Polytechnic University, Pomona to make health care more accessible to underrepresented communities. She also hopes to create resources to educate people about healthcare.

AUDRIANA GREGORIO

MENTOR: DR. ROBERT BLUMENFELD

TITLE: EMOTIONAL MEMORY ENCODING

Abstract: Emotions have a powerful influences on memory formation. We know that aspects of memory, including how and where in the brain they are formed, can differ depending on the valence of the stimuli. It is theorized that emotional events and experiences tend to be remembered with greater clarity and detail in comparison to unemotional events and experiences. Over the past decade there has been a growing interest in understanding the brain mechanisms associated with the formation of emotional memories. When emotionally arousing stimuli are encountered, the interpretation and significance of that emotional experience influences the neural activity and interactions of different memory regions within in brain. Research studies using fMRI data have been used to identify the neural correlates of emotional memory encoding. The majority of these fMRI studies have provided evidence that there is consistent functional interactions between the amygdala and prefrontal medial temporal lobe structures, which includes the hippocampus. These two systems appear to be responsible for the formation and storage of emotional memories. This meta-analysis aims to identify how emotion influences memory encoding and consolidation, and the brain regions that are associated with emotional memory formation. It also aims to distinguish the contributions of each identified region and structure. It is anticipated that this research and future research of emotional memory could provide insight regarding the neural structures that regulate emotions, which could provide more effective strategies for psychological interventions and treatments.

Biography: Audriana Gregorio is a fourth-year undergraduate student at California Sate Polytechnic University, Pomona who is majoring in Psychology. Audriana is a McNair scholar, and a member of Psi Chi Honors Society. She currently serves as an e-board member for the Love Button Cal Poly Pomona chapter. She is currently working as a lab assistant in the Brain Networks Lab under the supervision of her mentor, Dr. Robert Blumenfeld. Her current research aims to explore emotional memory, and discover how and where emotional memories are encoded in the brain. She has recently been accepted into to California State Polytechnic University, Pomona's Master of Science degree program in psychology for fall of 2021. Ultimately, she hopes to achieve her dream of becoming a fully licensed Marriage and Family Therapist, and someday having her own private practice.

JULIA LEFRANCOIS

MENTOR: DR. SHAYDA KAFAI

TITLE: EMBODIED NARRATIVES: BODYMIND RESISTANCE THROUGH STORYTELLING

Abstract: We live in a world governed by a racist, ableist, cisgender patriarchy. Yet, our world is, and has always been, rich in bodymind diversity and non-binary identities. With each generation, our culture continues the work to dismantle inequitable systems. We get closer to more equal distributions of power and more honest about the problematic foundations from which our sociocultural systems were created. The binary system in which we live is what governs how we educate, manage, and even view our bodyminds. It is how we learn from history and honor trailblazers from the past. It is the way in which we assign value to communities and social positions and how we apply meaning to the complex intersections of our culture. These systems produce inaccurate and incomplete histories within standardized curriculums, to which we are exposed for the majority of our education. These narratives are told from structural positions of power that reify and claim ownership of marginalized bodyminds' stories. In doing so, histories and truths are silenced and often erased. The study, *Embodied Narratives: Bodymind Resistance Through Storytelling*, gives voice to the suppressed truths that come from the communities of womxn (womxn as a non-binary, inclusive term), People of Color, and Persons with disabilities. It challenges the inaccurate narratives, implicit racism and discrimination, and other conditioned beliefs that are deeply imbedded into our culture. These beliefs are at the center of this study's work of dismantling and redistributing power and access to education. Communities of activists, academics, and humanists are developing ways to intervene in this systemic and oppressive silencing. By collecting ethnographic histories from primary sources, this research centers the stories of forgotten or silenced communities by reclaiming and contributing to this generation's civil rights movement.

Biography: Julia LeFrancois is a senior undergraduate at California State Polytechnic University, Pomona. She is currently studying psychology and plans to merge her experience into social justice-centered work. Prior to becoming a scholar of psychology, Julia trained as a sign language interpreter and has been professionally working in the field since 2012. While studying at Cal Poly Pomona, she has continued her work as an interpreter, volunteer for several organizations, and activist for systemic and social change. She developed her current research project as a tool for redistribution of power and ownership within marginalized communities by collecting stories and histories from womxn, Black, Indigenous, or People of Color, and/or persons with disabilities. As a graduate student, she plans to expand her research in transdisciplinary ways in order to apply empowered storytelling as a tool for remedying social, gender, and racial inequalities in higher education. She plans to receive her master's in community psychology at the University of New Haven and continue to receive her PhD.

HAOCHENG LIANG

MENTOR: DR. YAN LIU

TITLE: SMARTPHONE-BASED ANALYTICAL METHODS IN WATER QUALITY MONITORING

Abstract: Water is an important component of our environment, and its quality is crucial for the sustainability of ecosystem. Due to the increased amount of pollution, water quality is declining over years, and the water quality monitoring has been an important topic of environmental and analytical science. Even though many traditional methods have been developed, the requirement of expensive and bulky instruments limits the use of traditional methods for water quality monitoring. A rapid and accurate analytical method for on-site analysis is still desired in the field studies where the power source is unavailable. Recently, smartphones are rapidly developed and popularized around the globe. Smartphone-based analytical methods have been reported in many literatures, and these methods are capable for the detection of many water quality parameters, such as the trace levels of metal ions, inorganic nonmetals, organic compounds, and the pH values. Based on the target analytes, a variety of sensing techniques, such as test strips, gold nanoparticles, and electrodes, are integrated with the smartphone-based analytical methods. A review was conducted with a focus on smartphone-based analytical methods from 2018 to present. The performance and the potential of smartphones in water quality monitoring was discussed in detail. The purpose of this review is to provide an overview and the future prospective of on-site water analysis and at-home water analysis using a smartphone.

Biography: Haocheng Liang is a fourth-year undergraduate at California State Polytechnic University, Pomona, who will be graduating in May with a Bachelor of Science. He developed his interest in chemistry during middle school, and he entered the college as a chemistry major. In Fall 2018, Haocheng started his undergraduate research with Dr. Yan Liu, associate professor of the Chemistry and Biochemistry Department, with a focus on the development of smartphone-based analytical method for the detection of environmental water pH. In Fall 2020, Haocheng's was awarded American Chemical Society Undergraduate Award in Analytical Chemistry. After graduating, Haocheng will start a Ph.D. program at University of Wisconsin-Madison. Upon the completion of the Ph.D. program, Haocheng is looking forward to pursuing a career in academia.

STEVEN LOPEZ

MENTOR: DR. JAMES STURGES

TITLE: SUBSTANCE USE EXPECTANCIES: A HOLISTIC EXPLORATION OF EXPECTANCIES AND THEIR ROLE ON ILLICIT SUBSTANCE USE BEHAVIORS AMONG COLLEGE STUDENTS

Abstract: The aim of this research is to explore the expectancies that college students hold regarding use of illicit substances, more commonly referred to as substance use expectancies. The rationale behind this scholarship is that there is a growing epidemic in this country (Jones, Bruera, Abdi, Kantarjian, 2018), suggesting the need for new approaches to this problem. As current practice stands, most standard forms of treatment for substance use disorder involves some form of behavioral counseling, medication, evaluation & treatment for dual diagnosis, and long term follow ups that track sobriety (NIDA, 2019). The hypothesis as it currently stands is the reason why students partake in harder illicit drugs like prescription stimulants is different for why they may use more socially acceptable substances like alcohol. If this study is able to better identify some of the expectancies that college students have regarding the use of specific substances, then there may be a way to deconstruct the positive substance use expectancies and provide more realistic information that could potentially lead to fewer negative expectancies, which will result in cessation of use. Within this study, students will be surveyed to assess their expectancies regarding usage on a socially acceptable substance like alcohol and another that can be seen as more socially deviant, such as, the improper use of prescription stimulants. Upon examination of expectancies, risk factors will also be looked at to see if they are contributing to the creation of these expectancies, if so, recommendations will be made to address these risk factors that students face. Upon completion of this report, further suggestions regarding relevant psychoeducational materials based on the findings will also be made to address this problem of students falling into troubled substance use behavior.

Biography: Steven Lopez is currently on his last year of his undergraduate at California State Polytechnic University, Pomona and is studying Psychology in the C.L.A.S.S college. His current research aims to explore the expectancies students have that may influence substance use behavior on a college campus. He plans to receive his Master's in Social Work where he will be able to expand his knowledge on social issues and continue his research to address community needs and improve health among various communities. He also plans to gain experience professionally by working in community clinics as an outreach organizer so that there can be an improvement in health and wellness in vulnerable communities that need the assistance. His long-term plans include receiving a PhD in psychology so that he may open his own practice and make lasting meaningful impacts in the community he serves. He will be graduating in spring 2021.

NATALI MENDEZ

MENTOR: DR. BONNY BURNS-WHITMORE

TITLE: THE BREAKFAST BAR STUDY

Abstract: Curious about new products that are seen in our supermarkets promising health improvement and disease prevention components determined by their ingredients, I chose to do my project on breakfast bars. In this study, I compare the nutritional analyses of 40g (RDA reference amount) of 15 commonly consumed breakfast bars, also known as cereal bars. The research question is, "Is there a clear difference in nutrient composition between 40g of commonly consumed breakfast bars that contain nuts (peanuts/peanut butter) and chocolate, and a Snickers candy bar that also contains nuts (peanuts/peanut butter) and chocolate?" My null hypothesis is that there will be no nutritional difference between the Snickers candy bar and the breakfast bars. There are only a few studies that have done comparative research like mine; therefore, my study will enhance the consumer nutritional knowledge of breakfast bars. Consumption is influenced by the labels, therefore by analyzing and comparing, using SPSS, the nutrition labels of the bars I will reveal if having a candy bar for breakfast delivers the same energy and nutrients as a breakfast bar. A secondary part of my study is to find out what college students believe are "healthy" nutrients and ultimately, aid them in selecting healthier choices of foods. The survey shall determine college students' perspective as to what makes a product healthy (in this case breakfast bars) and determine which one is the healthiest. Results show that the majority of students (35%) consume breakfast bars 'very infrequently' versus only 15% consuming them 'very' to 'somewhat' frequently. The survey also reveals that 58% have replaced a breakfast bar for a meal but, only 16% have replaced a meal with a candy bar. The student responses also helped to determine which bars are considered the healthiest among the eight options presented in the survey. They were bar H (Fiber One Chewy Bar, Chocolate Peanut Butter) and Bar E (Clif Kid Z Bar, Peanut Brownie) which from the data given they were the two bars contained the least amount of total lipid, saturated fat, and sugar. In using both the nutrition labels on the bars and the USDA FoodData Central database, it was revealed that Kind dark chocolate nuts & sea salt and Kirkland Signature nut bars have a greater total lipid content of than a Snickers bar; and Nature Valley bars have approximately the same total lipid content (> 1g difference). All bars except Nature's Path Organic Sunrise chunky chocolate peanut granola bar, contain more sodium (>52%) in a serving compared to the Snickers bar. In regard to protein content, the Snickers bar contains more protein than three bars and only less than a gram difference to six other bars.

Biography: Natali Mendez is a second-year transfer student from Ventura County who is studying Nutrition, with an emphasis in Dietetics. Natali is actively involved on campus serving as the 2020-2021 EOP Student Union President, the website/blog manager for Food and Nutrition Forum, and being a McNair Scholar. Her current research focuses on analyzing the nutritional value of fifteen commonly consumed breakfast bars, also known as cereal bars, and statistically comparing them to a Snickers candy bar to ultimately reveal if there is a clear difference between a candy bar and a breakfast bar. After graduating from California Polytechnic State University, Pomona in Spring 2022, Natali hopes to attend a PhD program in Nutritional Sciences, focusing on the diet-genome interaction which is the impact of nutrients and other dietary components on the genome. Her long-term goals and career plans are to become a Registered Dietitian and a professor at a university. She wants to help others like her mentors helped her when she most needed the support, motivation, and guidance. Therefore, during the summer and fall of this year, she will be applying to in-state and out-of-state graduate school programs.

JEANNEY MUNOZ

MENTOR: DR. THOMAS OSBERGER

TITLE: SYNTHESIS AND COMPUTATIONAL EVALUATION OF BISBENZYLISOQUINOLINE COMPOUND

Abstract: Worldwide diseases that affect the world population causing millions of deaths annually are due in part to treatments that are losing their effectiveness, have significant negative side effects, or have no treatment at all. The family of Bisbenzylisoquinoline (BBIQ) natural products may provide an effective starting point for new and/or preventable treatments for the parasitic disease leishmania and the global pandemic disease Covid-19, but the methods for their synthesis are limited. The BBIQs are macrocyclic compounds containing two benzyl- substituted tetrahydroisoquinoline rings connected through diarylether linkages. Many synthetic studies have been conducted; however, no systematic studies have been performed to determine how these molecules exhibit their biological activities including antiparasitic, anti-inflammatory and antiviral activities. The intent of this study is to use a double Piclet-Spengler reaction to provide a BBIQ core of the natural product Tetrandrine and to use computational modeling techniques in order to investigate the antiviral potential of Tetrandrine and other BBIQs by comparing them to Cepharanthine, a BBIQ known to inhibit the SARS-CoV-2 virus. Therefore, this study has the ability to provide compounds that are useful in the long-term goal to find new and/or preventable treatments for worldwide diseases.

Biography: Jeanney Munoz is a second-year undergraduate at California State Polytechnic University, Pomona who is studying General Biology and Biochemistry. In her previous years, she studied at Citrus Community College and intern with a couple of organizations. Her current research is exploring Bisbenzylisoquinoline (BBIQ) natural products using computational evaluation for their potential utility as coronavirus treatments. She plans to receive her Ph.D. in in Chemical Biology, where she will be able to practice and utilize the skills as a medical research scientist. Ultimately, she wants to be able to design drugs of her own in a lab using natural products that will provide a more effective and less toxic way to cure diseases. During the fall of 2021, she will be applying to graduate school programs.

JILLIAN MUNOZ

MENTOR: DR. SARA LANGFORD

TITLE: THE IMPACT OF PANDEMIC WORKING CONDITIONS ON ESSENTIAL WORKERS' WELL-BEING

Abstract: On December 31, 2019, the World Health Organization became aware of a highly contagious virus which would later be known as COVID-19 and the cause of the current pandemic. Despite widespread quarantine orders, millions of people were still expected to continue working to maintain critical operations and services. While the pandemic presents a unique challenge to humanity, it also further compounds the struggles of impoverished communities. The key to mitigating the long-term mental health consequences that will disproportionately affect these communities includes addressing the current struggles of our most exposed individuals, essential workers. This paper responds to the calls for research on the emotional and psychological well-being of essential employees during the COVID-19 pandemic. I will investigate the relationship between employment status, mortality salience, and depressive symptoms. The primary objective of this paper is to identify possible differences between the death anxiety levels and depressive symptoms of essential workers who telework, those who don't telework, non-essential employees, and the unemployed. In an online survey, participants will be asked a set of multi-dimensional mortality salience questions as well as an adjusted version of the Patient Health Questionnaire used to objectify the degree of depression severity. The results of this study will provide further insights into the ongoing pandemic and inform the professional and academic community of the possible consequences of pandemic work.

Biography: Jillian Muñoz is fourth year undergraduate student at California State Polytechnic University, Pomona (CPP) who is studying Psychology and Marketing Management. Jillian transferred from Chaffey College where she graduated with honors and received the Outstanding Graduating Student Scholarship. Currently, she is a member of the Kellogg Honors Program and is involved in several research projects on product origin labeling, cultural influences on social media use, and pandemic working conditions. Recently she has won the competitive Business, Economics and Hospitality Management session at the 2021 RSCA Conference and won first place at the international GfK NextGen Data Science Hackathon. She plans to receive her Ph.D. in Organizational Behavior where she can further bridge the gap between organizational psychology and management. Jillian will apply to business graduate programs in the Fall 2021 semester and plans on becoming the first in her family to receive a post-graduate degree.

GEOVANI MUNOZ

MENTOR: DR. ALEJANDRO MORALES

TITLE: PREDICTING LATINX COLLEGE STUDENT CIVIC ENGAGEMENT

Abstract: Civic engagement (e.g., voting, volunteerism, protesting) is an important factor in a healthy democracy. Throughout history, college campuses have been the focal point of social movements across the United States, with researchers acknowledging that college student civic engagement is vital to American democracy. Furthermore, scholars have found that student civic engagement is vital to student development with studies finding that students who are active citizens are more likely to: attend graduate school, have higher critical thinking skills, greater leadership ability, have more social self-confidence, display higher self-esteem, and show higher academic self-efficacy. Unfortunately, Latinx college students have the lowest rates of civic participation in comparison to White students and other minority groups. There has been an increase in studies examining how to increase civic engagement among the Latinx population with researchers covering numerous fields. Research has found that family cohesion/bonding is an important factor in the development of civic engagement among youth and is an indicator of civic participation behaviors in young adulthood. In addition, culture and demographics are also key indicators of civic participation in the Latinx population. The purpose of this study is to determine predictors of civic engagement among Latinx college students. We want to see how family, culture, and demographics play a role in civic engagement. Surveys on demographics, family variables, and civic engagement will be administered to self-identified Latinx college students, where a series of bivariate correlations will be conducted in order to determine the effect of key variables on civic engagement.

Biography: Geovani Muñoz is a senior transfer student at California State Polytechnic University, Pomona, who previously went to Citrus Community College. He is currently studying Psychology with a minor in Political Science. He is a member of Psi Chi, the International Honor Society in Psychology, and the McNair Scholars Program. His current research looks into what predicts civic engagement among Latinx college students. Geovani plans to receive his Ph.D. in Counseling Psychology where he can gain the tools needed to benefit the community through professorship, research, and service. His short-term plans consist of preparing for his transition from undergraduate studies to graduate school. During the Fall semester of 2021, he will be attending graduate school at Virginia Commonwealth to pursue a doctoral degree in Counseling Psychology

KELLY NGUYEN

MENTOR: DR. MARY YU DANICO

TITLE: CULTIVATING A DIVERSE WORKFORCE: EXAMINING THE RELATIONSHIP BETWEEN LEADERSHIP AND DIVERSITY CLIMATE

Abstract: As the workforce became increasingly diverse over the past few decades, organizations have managed diversity by implementing diversity training and policies. Moreover, organizations are compelled to better understand social justice and performance issues related to diversity. Scholars and practitioners have paid close attention to the positive effect of diversity climate which is broadly defined as the employees' perceptions about the extent to which their organization values diversity as reflected in policies, practices, and procedures (Cox, 1994). Scholars and practitioners have paid close attention to the positive effect of diversity climate and previous research has found a positive link between pro-diversity climate and individual-level outcomes such as performance, perceived organizational justice, commitment, and job satisfaction (Perry & Li, 2019). However, organizational leaders have impacting effects on creating such diverse climate, yet research explaining the relationship between leadership and diversity climate is severely lacking. Therefore, the purpose of this study is to understand the mediating effects of diversity climate between leadership styles and individual-level outcomes. An extensive literature review is conducted to better understand these relationships. This study will contribute greatly to the lacking preexisting literature on leadership and diversity climate and future implications will help businesses to learn how to better maintain a diverse workforce and organizational culture.

Biography: Kelly Nguyen is a fourth-year undergraduate at California State Polytechnic University, Pomona who is majoring in Psychology with an emphasis in Industrial/Organizational Psychology. She is involved with many on-campus activities and some of her involvements include being a research assistant for the Asian American Transnational Research Initiative, a McNair Scholar, and she currently serves as the President for Psi Chi Psychology Honors Society organization. Her current research focuses on investigating the relationship between leadership and diversity climate to better understand how leaders of color are fostering diverse, inclusive, and anti-racist organizational climate and cultures. She plans to receive her Ph.D. in Psychology where she can continue to investigate gender and racial disparities within the workplace, and to examine and combat organizational inequalities. During this past Fall semester of 2020, she applied to in and out-of-state graduate school Ph.D. programs to reach towards her goals of becoming an academic psychologist.

FRANK NIEBLAS

MENTOR: DR. VIVIANE SEYRANIAN

TITLE: APPROACH COPING IS ASSOCIATED WITH HIGHER FLOURISHING AND POST TRAUMATIC GROWTH DURING THE LOCKDOWN OF THE COVID-19 PANDEMIC

Abstract: The Covid-19 outbreak changed life for many people with physical distancing, the stress of becoming ill, unprecedented closures, and transitions to online classes and work from home (UNESCO, 2020). Students in particular were challenged with a shift to online settings, which radically changed learning and social interactions. Little is scientifically known about students initially coped (Folkman, 1984; Folkman & Lazarus, 1988) during the pandemic. The current study investigated how four types of coping (approach, avoid, humor, and religion) affected students' flourishing and posttraumatic growth (positive life changes) during the lockdown (April 25-May 8th, 2020) in Southern California. In line with the coping literature (Gustems-Carnicer & Calderon, 2012), we predicted that approach coping (active coping, positive reframing, planning, acceptance, seeking emotional support, and seeking informational support) would be associated with better student outcomes. Students (N=257) from a Hispanic-Serving Institution in Southern California were recruited via the psychology subject pool to complete an online survey with the brief coping measure (Carver, 1997), Flourishing (Diener & Biwas-Diener, 2009), PostTraumatic Growth Inventory (relating to others subscale, Tedeschi & Calhoun, 1996). Two separate multiple regression analyses showed that the four different coping styles significantly predicted flourishing ($R^2 = .28$, $R^2 \text{ adj}=.26$, $F(4, 253)=23.97$, $p<.001$) and PTGI ($R^2 = .15$, $R^2 \text{ adj}=.14$, $F(4, 253)=11.05$, $p<.001$). In line with expectations, results indicated that approach coping was associated with higher flourishing ($\beta = .45$, $t(253) = 7.71$, $p<.001$) and avoidant coping was associated with lower flourishing ($\beta = -.27$, $t(253) = -4.75$, $p<.001$). Results also revealed that approach coping was associated with more PTGI ($\beta = .38$, $t(253) = 5.93$, $p<.001$) and humor coping was associated with less PTGI ($\beta = -.13$, $t(253) = -2.06$, $p<.001$). These results underline the positive mental health benefits of employing approach coping to support well-being and help spur positive life changes during difficult times.

Biography: Frankie Nieblas is a fourth-year undergraduate psychology student and McNair Scholar at California State Polytechnic University, Pomona (CPP). Before transferring to CPP, he studied at Mt. San Antonio College and received an associate's degree in psychology. Frankie Nieblas has worked as a high school tutor as well as a research assistant for a National Science Foundation (NSF) funded grant to promote student success in STEM courses at Hispanic-Serving Institutions. His short-term plans include researching psychological health in diverse populations as well as being admitted into a Ph.D. program in clinical psychology. Frankie's long-term goals consist of becoming a scientist-practitioner and professor at a university, and his long term research goals broadly include diversifying and improving interventions to prevent and treat addictive, depressive, and neurodevelopmental disorders in diverse populations. During the fall semester of 2021, he will be applying to in and out-of-state graduate programs.

CHRISTIAN ORDAZ

MENTOR: DR. VALERIE MELLANO

TITLE: IDENTIFYING THE POTENTIAL PEST AND DISEASE THREATS ON PRODUCTION AND ECONOMY TO THE COFFEE GROWING INDUSTRY IN CALIFORNIA

Abstract: Coffee is mainly grown in tropical/sub-tropical regions like Brazil, Columbia, Africa, and now in the United States. California is known for its Mediterranean climate, which is considered the next prime location to grow coffee. We are looking to identify the potential pest and disease threats on production and economy to the coffee-growing industry in California in order for local growers to succeed and compete in the market. Information on locally grown coffee is limited and the reason why we need to prepare for the potential problems. Especially when pests and diseases are considered the top agronomic challenge, an estimated 24.9% of effort and resources goes to management, right above climate change projected to influence or deter infestation rates. In other words, due to its uncertainty, it makes pest and disease management difficult. Since California grown coffee is still in its infancy stage, we need to develop an Integrated Pest Management (IPM) plan to prevent, protect, and prepare for what lies ahead. Climate conditions like temperature, humidity, and elevation play a significant role in infestation rates and are the key to gaining a better perspective on management practices. We compiled a list using data from coffee-growing regions worldwide and narrowed it down to those that potentially threatened production and economy to the industry. The pests and diseases that are considered to be problematic: coffee berry borer (CBB) *Hypothenemus hampei*, coffee white stem borer (CWSB) *Xylotrechus quadripes*, polyphagous shot hole borer *Euwallacea fornicates*, spider mites *Tetranychus* sp., glassy-winged sharpshooter (CWSS) *Homalodisca vitripennis*, mealybugs, *Pseudococcus* spp, coffee rust *H. vastatrix*, coffee brown eye spot *C. coffeicola*, coffee wilt disease (CWD) *F. xylarioides*, bacterial blight *P. syringae*, and coffee berry disease *C. kahawae* are a significant concern worldwide, costing farmers millions of dollars annually to manage and in revenue-loss. In conclusion, coffee in the states is here to stay, so determining the potential pest and diseases and preparing an IPM program is the only way to prevail against poor performance and failure.

Biography: Christian J. Ordaz is a fifth-year undergraduate at California State Polytechnic University, Pomona, studying Plant Science with a focus on pest and disease management. Christian has studied at Mount San Antonio Community College, served in the United States Marine Corps (USMC), volunteers as UCCE Master Gardener, works as a Notary public, and a father of two young boys. His current research focuses on identifying the potential pest and disease threats on production and economy to California's coffee-growing industry. He was inspired to change his direction to cancer research and development because of his wife, who is currently undergoing treatment. His short-term plans include spending time with family, volunteering in his community, and researching how biological dietary supplements can support the immune system. His long-term plans are to promote and support underrepresented students to pursue higher education.

KARINA ORTIZ VILLA

MENTOR: DR. KATHERINE GASDAGLIS

TITLE: CAN MEN BE OPPRESSED AS MEN? LESSONS FROM INTERSECTIONALITY

Abstract: As women gain rights and freedoms, and sometimes in reaction to this progress, some men have tried to analyze whether they themselves are oppressed. Scholars in masculinist studies are more interested in the toxicity of certain masculinities and masculine norms for men in general (i.e. men simpliciter). However, our aim is not to engage with these arguments but rather to consider the ways race, class, ability, and sexuality—among other social categories—interact with and shape gender norms including masculinity. We are interested in the theorizing the oppression of men of color as men. Some scholars argue that men of color face systemic violence that targets them as men of color, that is, on the basis that their gender intersects with other facets of identity and/or social location but not as men simpliciter. We argue (1) intersectionality teaches us that this is an instance of oppression of men as men; (2) certain models of intersectionality implicitly hold problematic assumptions that obscure the way certain men are targeted; and (3) modeling intersectionality itself in a methodological way, as a “heuristic device”, “analytical lens” or “regulative ideal” is better equipped to handle complex and nuanced questions. Ultimately, if we take seriously the implications of this model of intersectionality, then men can be oppressed qua men.

Biography: Karina Ortiz Villa is a senior at California State Polytechnic University, Pomona who is studying Philosophy with an emphasis in law in society. Throughout most of her adult life, Karina has been an immigration paralegal and is an immigrant as well. Because of this, most of her current work incorporates her own experiences and drives her passion in philosophy. Her current research delves into issues in intersectional theory and the implications it has while doing empirical work on structural injustice. She plans to receive her Ph.D. in Philosophy where she can gain the tools to benefit her community specifically first-generation students and students of color. Her long-term plan is to become a Philosophy professor with a specific area of interest/competency in social and political philosophy and its intersection with latinx philosophy, feminist philosophy, and philosophy of race. She plans to begin her Ph.D. program in the fall of 2021.

TAMMY PHAN

MENTOR: DR. JAMES BLAIR

TITLE: LOOT BOXES IN VIRTUAL WORLDS

Abstract: Loot boxes are purchasable items in video games that are consistent with items of randomized rarity. Current studies on loot boxes have only covered the possible effects of loot boxes and habitual gambling. However, my work explores how loot boxes affect virtual economies and player experience. As many games have integrated loot boxes into their core gameplay, loot boxes have also helped establish virtual marketplaces that allow players to sell and purchase items. The purchasable items on these online markets can vary in rarity and are bought by using in-game currency that gamers can eventually work towards. Gamers engage with this economy by grinding, which may be viewed as labor; players can spend hours trying to obtain enough materials to purchase items on the market to become more viable within the game. Without access to rarer materials, players who do not indulge in loot boxes are at a disadvantage, having to play longer and to reach the same levels as people who spend money. Contributing to economic anthropological theories of commodity and gift exchange through virtual ethnography, this paper will look into divisions of statuses among gamers based on the differences in Free to Players versus those who pay for loot boxes.

Biography: Tammy Phan is a fourth-year undergraduate at California State Polytechnic University, Pomona, who is studying Anthropology. Previously, she studied at Mt. San Antonio College studying Biology and Anthropology while also serving as Vice President and then President of Circle K International. Currently, she is serving as Vice President of Cal Poly Pomona's Anthropological Society. Her current research delves into capitalism in Virtual Worlds and their impacts on the player experience. She plans to receive her Ph.D. in Anthropology to obtain the knowledge and skills she needs to continue researching the Digital Realm and eventually teach as a professor for her local community. Her short-term goal is to research video games by applying anthropological methods to assist in providing a better gaming experience for players. While her long-term goals are to teach as a professor for her local community.

JUAN DIEGO ROQUE AGUAYO

MENTOR: DR. ONDIEKI GEKARA

TITLE: EFFECT OF WINTER ANNUALS ON ANIMAL PERFORMANCE OF EARLY WEANED CALVES

Abstract: California farms and ranches generated more than \$50 billion in cash receipts with dairy leading the way at \$6.56 billion, followed by grapes (\$5.79 billion), almonds (\$5.60 billion), strawberries (\$3.10 billion), and cattle and calves (\$2.53 billion). In southern California, weaned calves are often backgrounded in part by feeding costly concentrate-roughage feed supplements. Lack of suitable and reliable forages year-round contributes to this feeding strategy. In this study winter grasses, small grains, mainly barley (*Hordeum vulgare* L.), will be inter-seeded with winter legume winter vetch (*Vicia villosa* L.) and a permanent pasture will be established, and grazed directly by early weaned (stocker) calves. The objective will be to research the effect of changing pasture conditions on animal performance. Winter annuals will be established in September 2020 to be ready for grazing in December 2020 through April 2021. The average daily gain will be measured to determine the performance of early weaned calves during the winter annuals. We hypothesize that animal performance of early weaned (stocker) calves grazing winter annuals comprising grass/legume mixtures will not differ with those backgrounded on conventional roughage-concentrate mixtures typically fed to weaned calves in California. This research will provide valuable information that will benefit cattle producers in California, students, and the scientific community.

Biography: Diego Roque Aguayo is currently a last year undergraduate student at California State Polytechnic University, Pomona who is studying Animal Science. He lived in Mexico for the majority of his life and moved to the US to pursue his educational goals. Previously, he studied at Fullerton Community College and works as a server in an organic restaurant near his home. His current research delves into the effect on animal performance and behavior that grazing winter annuals have on early weaned calves and comparing the results with the traditional feedlot system widely used in US farms. He plans to receive a PhD in Animal Behavior and ultimately attend veterinary school to gain knowledge of the field he is passionate about. His short-term plans are to gain veterinary exposure and experience. His long-term plans relate to helping others through giving back to his community in Mexico by providing affordable animal veterinary care.

RYAN SANDOVAL

MENTOR: DR. ILDAR SALAKHUTDINOV

TITLE: PHOTONIC CRYSTAL BEHAVIOR IN GUIDING STRUCTURES

Abstract: Hyperbolic Metamaterials (HMMs) are multilayer structures that consist of propagating guiding modes of high effective refractive index (ERI) and nanolayers of alternating conducting and dielectric materials. These modes result in the interaction combination of Surface Plasmon Polaritons (SPPs) and Long-Range Surface Plasmon Polaritons (LRSPPs). HMMs have the potential to be used in biomedical sensors as highly sensitive biosensors. We are studying the behavior of photonic crystals in guiding structures. Our interest in working with photonic crystals is due to their very high effective refractive index (ERI) of modes propagating within these structures. Photonic crystals consist of photonic bands that prevent light from propagating in a specific direction. We are using a one-dimensional (1D) diffraction grating to create this photonic band. The interaction between the diffraction grating and the guiding modes leads to the creation of the "total external effect" when all radiation reflects from the surface of a guiding structure.

Biography: Ryan Sandoval is a second-year transfer undergraduate student at California State Polytechnic University, Pomona who previously attended Mt. San Antonio Community College. He is currently studying in Computer Engineering with an interest in Optics/Photonics. He is currently a member of the Cal Poly Pomona Kendo and Iaido Club, Dr. Ertan Salik & Dr. Ildar Salakhutdinov's Research Group and McNair Scholars Program. His current research revolves around the behavior of photonic crystals in waveguiding structures for biomedical sensors under the advisory of Dr. Ildar Salakhutdinov. He plans to pursue a Ph.D. in Computer/Electrical Engineering with an emphasis in Optics/Photonics. His future goals are to develop holograms for entertainment/learning purposes.

TRISTAN SCHARFENSTEIN-MONTGOMERY

MENTOR: DR. MOHAMED ALY

TITLE: RECONFIGURABLE S-CURVE MOTION CONTROLLER

Abstract: The focus of this study is to investigate smoother velocity curves to eliminate residual vibration caused by sharp corners in a traditional trapezoidal curve. By exploring higher order of s-curve motion controllers, as well as providing a common platform available for people to use that can generate various s-curve motion profile orders, depending on an application's needs. Motion controllers currently found in the industry are non-reconfigurable motion profiles. These motion controllers are often limited to modeling a trapezoidal profile with a linear acceleration/deceleration phase, or an s-curve profile of jerk. Higher order derivatives of velocity are rarely explored to achieve a customized "smoothness" of the motion profile. Achieving higher order derivatives is desired in many real-world applications and robotics systems, but very hard to reach. The project creates a reconfigurable motion profile generating system that accurately showcases velocity and time with different order motion profiles. To exhibit this, the concept and usefulness of higher-order derivatives (of velocity) above acceleration are first introduced, followed by the mechanism of s-curve motion profiling. To fully illustrate the effectiveness, a 1 dimensional moving platform like an assembly line using stepper motors will be demonstrated. The build consists of a motion planning platform to take in data and determine the time, velocity, and jerk when moving back and forth. The second part of this project will show the different orders based on various applications to handle time sensitive tasks and velocity constraints. The future application of this study is to implement the s-curve motion controller with drones to create a motion profile flight, by proceeding to test it in a two-dimensional setup that will use a coupling feedback system and adjust the code for different movements such as circular, straight, and zig-zag movements. The drone application has a closed-loop control which allows for additional implementations, including autonomous capabilities.

Biography: Tristan Scharfenstein-Montgomery is a third year undergraduate at California State Polytechnic University, Pomona who is studying Computer Engineering. He is passionate about education, mentorship, technological advances in artificial intelligence (AI) and autonomous vehicles. He is a tutor in STEM subjects for students in middle through high school. His current research is in reconfigurable motion controllers and implementing them with different applications. He anticipates applying his current research to drones, along with a slam-based camera system to use stream processing framework and computer vision to help first responders better battle wildfires in the future. He hopes to train computers to interpret and understand the visual world, using deep learning models. He plans to pursue his Ph.D. in AI where he can gain the tools needed to benefit his community through professorship, research, and service. During the fall semester of 2022, he will be applying to graduate school programs.

VALERIE TAPIA

MENTOR: DR. VIVIANE SEYRANIAN

TITLE: INVESTIGATING THE INFLUENCE RACIAL BIAS HAS ON MISINFORMATION CORRECTION

Abstract: A common and problematic learned social phenomenon is racial bias. These automatic thought processes have negative implications on the lives of racial minorities. In legal cases, when a jury member relies on and is unaware of the power of the stereotypes that they hold, the information that is presented as facts of a case may be compromised due to their inability to analyze information without their racial biases. Courtroom scenario studies have been previously used to access how prejudice and discrimination manifests in the justice system, and results show racial and ethnic minority defendants are disproportionately convicted more and sentenced harsher (Baldus et al., 1998, Leippe et al., 2017). This experiment attempted to analyze the effects of racial biases on a person's ability to correct misinformation in a courtroom scenario about an auto shop owner that was pulled over for test-driving a stolen vehicle that was dropped off at his shop. A total of 184 participants participated in 1 of 6 conditions that contained either a black or white defendant with a misinformation statement present with or without a correction statement. The misinformation statement was that the defendant was identified as the thief in the courtroom, and the correction statement was that there was video footage that the defendant was fixing a car in a different city during the time that the witness stated her car was being stolen. A 4-item explicit racial bias questionnaire, and an Implicit Association Test(IAT) was designed to measure automatic associations of racial preference participants held. The dependent variable was a 12-item juror evaluation form that measured the juror's opinions about the defendant. The interaction was non-significant and supported that racial bias impacts a person's ability to correct information. However, white defendants were evaluated significantly more positive than black defendants overall.

Biography: Valerie Tapia is a fifth-year undergraduate at California State Polytechnic University, Pomona who is studying Psychology. In her previous years, she studied at Mount San Antonio University and continues to volunteer/intern with numerous organizations such as the Mind and Heart Research Lab, Sources of Strength, Love Button @ Cal Poly Pomona, and in the SADE lab at the University of Southern California. She works two jobs as a teaching assistant on campus and beertender at Brewery X. Her current research delves into misinformation and the implications that racial bias minorities in the justice system. She plans to become a Health Equity Intervention Scientist where she can gain the tools needed to academically and socially benefit the healthcare community and improve health disparities for minorities through professorship, research, and service. Her short-term plans include researching gender minority adult with Autism, developing interventions to aid their functioning while independently living. Her long-term plans include developing interventions that reduce health disparities for minorities with chronic conditions. During the fall semester of 2021, she will begin her first year of her PhD program at the University of Southern California in the Mrs. T.H. Chan Division of Occupational Science and Occupational Therapy.

ANGELICA VILLAVICENCIO

MENTOR: DR. MARY YU DANICO

TITLE: MOTHERING AS A LATINA STUDENT PARENT

Abstract: My research focuses on how students navigate mothering and college as first-generation Latina college students during the pandemic while looking at role conflict and by using the symbolic interaction framework. Using the framework of Erving Goffman, the Presentation of Self in Everyday Life and Arlie Hochschild: Managed Heart I examined how stigma affects the student population. This is an emerging field of study and it is currently growing however there are certain things that are not addressed in current research. The voices of student parents are important because they are part of college diversity.

Biography: Angelica Villavicencio is a fourth-year undergraduate at California State Polytechnic University, Pomona she is studying Sociology. Angelica is part of the Sociology Peer Mentoring program on campus and works part-time in a retail shop. Her current research dives into mothering as a student parent and the impact it has had with remote learning. Angelica is not a mother but she lives with her niece who is like a child to her. Throughout her research and her discovery of Sociology, she decided she wants to get her Ph.D. in Sociology. By obtaining her Ph.D. she will gain the tools necessary to bring awareness to issues that evolve towards social change in her community. She wants to capture the voices of people of color by using the qualitative tools of ethnography and ethnology Her long-term goal is to become a professor within the years. Angelica wants to teach and mentor students in unrepresentative communities. In her future role in academia, she plans to teach others about what she is passionate about and the importance of research. She also wants to be a resource, someone who this population can reach out to.