



URSCA

Student Scholarship & Research

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2019 URSCA Abstracts

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Jordan Alcares

Faculty mentor: Cheryl Swift

The Current Status of Long-Term Storage Plans for Radioactive and Nuclear Waste in the United States

Currently, there is no long-term plan in place for the permanent storage or disposal of radioactive and nuclear waste despite the fact that this material has been accumulating on decommissioned nuclear power plants and testing sites around the nation. Since there is no long-term disposal site, such as the Yucca Mountain Nuclear Waste Repository, a Department of Energy (DOE) sponsored deep borehole in place, many communities are becoming frustrated, because the longer the nuclear and radioactive waste remains on site, the more risk it poses to the local communities. Using environmental impact reports (EIR), I examined five decommissioned sites in the United States, currently storing radioactive and nuclear waste for an indefinite amount of time, given the lack of a long-term DOE facility. I found that the EIRs planned for short-term storage, despite the lack of an existence of a long term disposal site. Additionally, the EIRs did not have a plan in place in case the canisters leak after the decommissioning process was completed. Because overall canister integrity was not addressed, and the canisters are remaining on site for longer than planned for, surrounding communities could be exposed to the harmful effects of radiation or nuclear exposure. Despite there being no plans to continue construction of a long term or interim disposal site, such as the Yucca Mountain Nuclear Waste Repository, the EIRs are planning for short-term on-site storage, placing the respective communities at risk when the canisters holding the nuclear and radioactive waste reach their life expectancy, and remain on-site.

Audrey Armienta

Faculty mentor: Joyce Kaufman

Sex and War

Men and women will join the military for similar reasons. Whether it would be for a career, a political cause, or for the nation, both genders participate in both traditional or insurgent militaries - that is if both are able to do so. Women are considered essential to insurgent military groups and are critical to their success (Cohn & Enloe). If women have been seen to prove their capabilities in being qualified soldiers, then why have traditional militaries been hesitant to accept them? To help explain this question, the study will take an empirical approach using both qualitative and quantitative data. Statistical records will show the proportions of women to men in militaries and the departments to which they are assigned; literary criticisms will describe and identify the cultural conditions to explain and understand the differences between the two militaries. The focus will center around a comparative case study on a traditional military (from the US) and an insurgent militia group. I will consider biological and cultural conditions to understand the differentiation in the inclusion, treatment, and perception of women in the military.

Alyssa Ascencio

Faculty mentor: Roger White

Marriage and Wage Disparity: Examining Marriage Effects on U.S. Workers

Using the most recent data available, for the year 2017, from the American Community Survey, we examine the effects of marriage on United States worker's wages and whether the influence of marriage provides a wage premium to men and wage penalty to women compared to single workers of the same gender, all else held equal. The wage equation will be used to isolate and control for the effect of marital status on worker's wages, all else held equal, to determine the relationship multiple ordinary least squares regression wage equations will be examined; and controlled for on the basis of marital status as well as gender. Coefficients on marital status are expected to be positive and significant for married men compared to non-married men; and expected to be negative for married women to non-married males and females, as well as married men, overall.

Michael Atwood

Faculty mentor: Teresa LeVelle

Musical Nationalism in the Romantic Era: British Art Song and German Lieder

The arts can serve as a powerful tool to understand the thoughts and emotions of a particular people in a time and place. Europe in the nineteenth century saw the rise of nationalism, identification with one's own nation and support for its interests. In the Romantic musical era (1820-1900), composers started to produce music that would sound appealing to a national audience being sure to emphasize national pride and unity. These composers had a powerful platform to voice political discourse, under the façade of making new music. British Art Song and German Lieder, both with solo voice and piano, made music much more accessible to an emerging middle-class audience as a result of a changing economy characteristic of nineteenth century Europe. Both genres were popularized in the Romantic era and embodied many similar elements of

this musical nationalism. Although both Art Song and Lieder draw attention to yearning for a time gone by, the methods composers used to achieve took very different forms from different compositional techniques to the use of different tone colors. The two varieties of the same concept sounded very different and helped establish a firm national identity under the backdrop of a mass identity crisis of a dynamic nineteenth century European society.

Martha Avila-Zavala and Dr. Edward Blumenthal

Faculty mentor: Sylvia Vetrone

Genetic Interaction Between Drop-Dead (drd) and Fatty Acid Transport Protein (Fatp) in *Drosophila melanogaster*

Drop-dead (drd) is a gene that encodes a membrane protein in *Drosophila*. Drd mutant flies exhibit several phenotypes including female sterility, caused by the failure of eggshell proteins to crosslink to each other. Previous studies found that drd and Fatty Acid Transport Protein (Fatp), another membrane protein, are both required for eggshell assembly. Knocking down or decreasing the expression, of these genes individually causes similar phenotypes. To further investigate a possible interaction between drd and Fatp, and their effects, if any, on developing egg chambers and/or laid eggs, flies with Fatp and drd simultaneously knocked down were compared to flies with a knockdown of Fatp and an overexpression of drd. There was no significant difference in egg chamber shape, suggesting that the interaction between Fatp and drd does not affect the elongation of the egg chamber during oogenesis. The interaction was evident in the eggs. Knocking down only Fatp and overexpressing drd produce collapsed eggs. In contrast, concurrently knocking down both Fatp and drd produced non-collapsed eggs that were similar in shape to the control eggs that were structured and oval. Eggshell integrity of these non-collapsed eggs was tested using Neutral Red dye. Results suggested that although non-collapsed eggs seem normal in shape, they had a weak

eggshell inner layer. The interaction between *drd* and *Fatp* is most evident and significant in eggs, only producing non-collapsed eggs when both *drd* and *Fatp* are knocked down simultaneously. These results strongly suggest that *drd* and *Fatp* are on the same biochemical pathway in *Drosophila*.

Chaandan Badesha

Faculty mentor: Joyce Kaufman

The Progression of Women's Rights in 20th Century Mexican Revolution

Throughout history, women have been subject to various forms of gender subordination amongst different cultures across the world. According to Cynthia Cockburn in her article titled *A Continuum of Violence: A Gender Perspective of War and Peace*, a constant theme of feminist gender analysis is, "the differentiation and relative positioning of women and men is seen as an important ordering principle that pervades the system of power and is sometimes its very embodiment" (Cockburn, 2004). This differentiation that Cockburn is alluding to relates to the fact that the voices of women tend to be held to a lesser standard of merit (in both political and economic matters), regardless of the situation. Women have been subject to various systems of governance, which in most cases, were already masculinized in its fundamental values. This research will examine the factors that play a part in the establishment of the gender subordination against women, within a particular society. For this particular case, the nation of Mexico will be used for a retrospective case study involving the progression of women's rights (along with societal positioning) during the 20th century. Throughout the 20th century, Mexico underwent a series of changes to its political system, with each having profound effects on the societal positioning of women. Drawing

historical analyses undertaken by Latin American historian John Womack on the topic of the Mexican Revolution (and particularly data gathered on Emiliano Zapata who was a leading figure in this movement), it is evident that the voices of women have purposefully been pushed to the side as a result of a highly masculinized political culture (within the region of Latin America as a whole). Data gathered by the research conducted by this examination shall be presented visually via poster presentation.

Cindy Banh

Faculty mentor: Joyce Kaufman

Women of ISIS: A Feminist International Relations Analysis

Why do women join ISIS? I will use feminist International Relations theories to explain that this is an active choice made by these women. Women who take political action through joining non-state military institutions is antithesis to traditional gender roles, specifically in a society that is traditionally patriarchal. In 2015, 4,000 Westerners traveled to Syria to join ISIS, 550 of whom were women. I argue that women who choose to join terrorist groups do so due to personal choice, not through coercion or manipulation by men. These choices can stem from a range of issues, from religious piety to a reaction to personal trauma. My methodology will entail looking at primary and secondary sources to analyze the different reasons why women sacrifice their lives for ISIS and how that fits into the bigger narrative of the different types of political action that women are involved in. The purpose of my research is to broaden the discourse around women in war time and dismantle the gendered options women are usually relegated to.

Cindy Banh

Faculty mentor: Mike McBride

You Do Not Belong Here: Analyzing American and German Right-Wing Political Discourse Towards Migrants

Political discourse plays an important role in how demographic groups are viewed in society. I will analyze the political discourse tools utilized by Donald Trump during his 2016 presidential campaign and by the Alternative für Deutschland, Germany's far right-wing party, during their 2017 campaign. My methodology includes comparing and contrasting campaign materials and analyzing the rhetoric through political discourse theory. I will argue that his rhetoric is harmful to the future of society since the end goal of these parties are a heterogeneous society. My analysis will prove that this rhetoric has led to an increase in violence and inhumane policies towards minorities and migrants.

Aubrey Baran

Faculty mentor: Anne Sebanc

Reshaping Athletic and Academic Integration the Danish Way

Physical activity is critical to young children and is not valued enough in classrooms across most content areas in the United States. While many forms of physical activity are valued in extracurricular activities, there is very little implementation of it within our typical school day. This is a recurring issue that negatively affects the health and fitness statistics as well as attention abilities among United States students. This led my research to expand internationally, seeking an education system that differed from the United States in a more positive manner regarding physical activity. The Barbara Ondrasik and David Groce Fellowship

allowed me to travel abroad to explore my topic and gather research for this paper. I found that there is sufficient data to indicate that Denmark has success in integrating academics with athletics in a school setting which has had a positive effect on school-aged students' health and success. There are countless reports of the outdoor play and learning approach that Denmark has in place for school-aged children. This will be a focus of my study as it differs greatly from the education that I have observed and received in the United States. In addition, I have seen through my initial research that Danish children's health and well-being have been positively impacted according to average statistical evidence, in regards to student's physical activity (Waller et al., 2017). Therefore, I will present a literature review that analyzes the importance of integrating physical education into the curriculum of school-aged students across all subjects and proposes a way to implement these findings into curriculum here in the United States. While Denmark may be ahead of the US in integration, there are various studies in which US teachers have displayed interesting and beneficial ways to integrate academics and athletics. Students have been found to have high rates of achievement with the implementation of similar methods and the rate of success is surprisingly high (Whittle et al., 2018). However, the US has more barriers to implementing activity due to lack of attention placed on physical activity and teachers' lack of training on how to implement various fields. With this in mind, it is important to consider the success that has been achieved through integration and the necessary benefits that are derived from increased activity including heightened student physical health, positive self-esteem, and aid in student focus.

Alejandro Bautista

Faculty mentor: Joyce Kaufman

Political Mobility of Kurdish Women

Kurdish women have been in the political limelight in recent times, because of their direct involvement in leading military and political actions against armed conflict on multiple fronts. Without a formal government, the Kurdish people organize in autonomous regions within the nation-states they inhabit. This research study will answer to what extent are Kurdish women able to access organizational bodies that make decisions for their communities within Syria and Iraq, in the absence of an official state? The methodology included deriving information from American and British academic journals, and attention directed on the fieldwork that researchers completed in subjects of dialectic processes of gender equality and analyzing the activities of Kurdish women's organizations in the previously listed nation-states. In further detail, I will conduct investigation of the Kurdish Regional Government in Iraq, to determine if policies made by this organization truly equate to individual rights for women in society. This study will also magnify the effects of Kurdish involvement in the Syrian conflict, to determine whether it creates more access for women to obtain leadership roles.

Amelia Bell

Faculty mentor: Rosemary Carbine

Clergy Sex Abuse

Drawing on the interdisciplinary perspectives of religious studies, this paper explores the problem of how the systematic cover-up of clergy sex abuse in the U.S. Catholic Church has eroded church and state relations over time. In this paper, both the Boston, Massachusetts, and Pittsburgh, Pennsylvania cases were closely examined as well as the work of Barbara Susan Balboni, who wrote the personal statements of 22 victims. These

sources were used to gain better insight into the survivors' experiences as well as the legal issues involved in shielding and prosecuting predatory clergy. In doing so, this paper argues that the Catholic Church was complicit in covering up the abuse and had established plans for keeping the allegations undisclosed. The Catholic Church's repeated cover-ups of clergy sex abuse cases challenges its political credibility, because, as this paper concludes, it violates the first amendment. The first amendment was founded on the basis of peaceful gathering and through the perpetuating cycle of sexual abuse; the Catholic Church is violating those terms.

Nora Berguem

Faculty mentor: Rebecca Overmyer-Velázquez

Racialization of the Great [White] Outdoors: What's Up with Wilderness Recreation Being "White People S**t?"

A connection to nature is essential to our overall health and well-being, and the inequalities in access and participation in wilderness activities among demographics today is extremely unfortunate. Recent history in the United States has shaped wilderness areas and activities done in them to be, as the young folks say, "white people s**t," meaning that they are normalized and popularized as being for white people and not for people of color, especially African Americans. These constructed norms stem from colonial systems of thought and are even understood by communities of color themselves. The literature that exists, which has been extremely influential in government agency research for the past few decades, suggests that racial disparities in participation is due to two main theoretical perspectives: Socioeconomic Inequalities and Subcultural Differences, but it is much more multifaceted than that. There has been

little to no research done to find young African Americans' attitudes towards nature in today's unprecedented era of technology. This project, through an online survey that includes two scales developed by F. S. Mayer and C. M. Frantz, along with my own modernized scale, aims to capture those attitudes, with the ultimate goal of building tangible programs that can increase African Americans' rates of positive experiences in and connections to nature. Participants include African American Whittier College students and alumni, along with African Americans from all over the U.S. contacted through Facebook, Instagram, and Twitter. A key finding is that the vast majority of participants, even if they have low connections to nature now, hope and wish to form one, contrary to what past literature claims. The results entail that outdoor organizations and programs that cater to marginalized communities and/or African Americans specifically can have a large, positive impact on the rates of racial/ethnic diversity in wilderness areas and activities. Those that are seeking diversity, like the National Park Service and the recreational equipment industry, need to look to and support existing organizations and programs whose aims are to empower black and brown people to reclaim their spaces.

Alexa Bernal

Faculty mentor: Brian Gross

Policies on Plastic Pollution in California and Pollution Effects on Marine Life and Humanity

To decrease consumers' excessive usage of plastic, Californians voted on Proposition 67- better known as- The California Plastic Bag Ban Veto Referendum in the November 2016 ballot. Since the majority voted 'yes' to have this proposal become law, California has become the first U.S. state to ban the sale of single-use plastic bags in grocery stores,

pharmacies, and other large retail stores. To reduce litter and plastic pollution, consumers now must pay a small fee per single-use plastic bag when shopping. With California being located along the coastal region, this policy has the capability of making a strong impact on marine species as well as the rest of their environment. California voting in a new law to ban plastic bags is just the start of finding a solution to limit plastic pollution. With changes being made environmentally, many other places around the world are now developing more changes of their own as well. Plastic pollution was first recognized as a problem in the 1970s as a local issue but as consumers began to purchase and throw out more plastic, it has now become a worldwide issue. In 2014, policies to reduce micro-beads began to develop, but it was not till 2016 the proposal of banning single-use plastic bags came into action in the state of California. Research has been done to evaluate the effectiveness of California's newest law of banning single-use plastic bags in order to determine how it has impacted both the marine environment and human activity. Changes can now be noticed through adjustments in the amount of debris found in oceans, to the levies on plastic bags, as well as other states creating policies and regulations of their own when it comes to plastic bag pollution. California's plastic bag ban itself has made a numerous amount of impacts throughout the state, but not just environmentally. Changes are also being made socially and economically.

Oliver Bineth

Faculty mentor: Rebecca Overmyer-Velázquez

Ghosts in the Machine? Lives behind medical communications

This study examines the individuals who are operating the medical knowledge bureaucracy of the pharmaceutical industry. Attending a major industry workshop and conducting seven in-depth interviews with

leading insiders within pharmaceutical communications the research aims to humanize a stereotype and open new avenues for the future of pharmaceutical studies research. The main objective of the study is revealing the emotional and logical reasoning patterns of the participants concerning their position within the pharmaceutical industry's medical knowledge bureaucracy and then examine how these cognitive functions evolved and matured through the course of the individual's biography and how were they influenced by different forces on the historical level. Based on the ethnographic data collected and supported by previous literature, new theoretical concepts are presented to better understand the personal realities of these middle-class professionals. Additionally, the research reflects on the relationship between the individual employee and the greater corporate structure they are operating in, in order to make connections to the larger public issues faced in our historical moment.

Mason Blansett

Faculty mentor: Cinzia Fissore

Physical Fractionation of Soil: Organic Carbon Accumulation Between Grassland and Agricultural Soils in Fillmore Co., Minnesota

The purpose of this study was to understand how management and topography affect soil carbon (C) accumulations in soils with two distinct management types. Specifically, soil samples (two depths 0-5cm and 20-25cm) were collected at six sites, four from cultivated corn fields and two from an unmanaged grassland in Fillmore Co., MN. At these sites, soils have been exposed to erosion and depositional processes due to management and slope, which varies between 2% and 27.2%. I relied on physical fractionation to separate diagnostic fractions of soil organic carbon (SOC), namely a free light fraction (fLF), an occluded light fraction (oLF), and a heavy fraction (HF) for each soil sample. Physical

fractionation is an effective tool to inform on SOC dynamics and stabilization potential in soil. Soil %C and %N were obtained for each fraction across sites and depths. My results show that grasslands, even when they develop at high slope, results in greater SOC stabilization than agricultural soils. The mineral-associated HF represented the largest portion of total SOC (97.2%), oLF was 2.4% and fLF was 0.36% of total SOC. The fLF had the largest %C at depth 0-5cm in grasslands (32%), whereas agricultural soils' fLF had 23% C at the depth of 0-5cm. Grassland soils showed significantly greater C accumulations in the oLF at 0-5cm depth compared to agricultural soils, likely an indication that perennial grasslands, even at high slope class, retain SOC in aggregates. In the HF, %C at erosional sites were lower in the 0-5cm depth than 20-25cm. At depositional sites, %C for the fLF was greater at depth 0-5cm than depth 20-25cm, and for HF, %C was lower in the 0-5cm depth than the 20-25cm depth, possibly due to the fact that as erosion increased, more C was accumulated at the depth 0-5cm. Management seems to affect overall SOC in soils sampled at 0-5cm in HF, but does not seem to affect fLF and oLF significantly at depth 0-5cm. My research emphasizes the notion that agricultural practices deplete SOC and that slope class further exacerbates the ability of soils to retain C, especially in the more stable fractions (oLF and HF). Further research into management practices such as conservation tillage may provide information on whether crops can be grown productively without depleting organic C accumulations in the surface soils, especially at high slope classes.

Jewel Boyd

Faculty mentor: Joyce Kaufman

State stabilization through women's integration into structural power roles

In greater effort to understand the importance of women in state leadership roles through processes of peace restoration and state security through demonstrated state political stability, given the expanding field of feminist international relations, a study of historically fragile states will be conducted. By examining states where there has been recorded trends of physically violent flashpoints, a history of military political intervention in civilian governments and unsuccessful power transitions to new governments--will reveal the internal social structures of that state's power dynamics. By looking through a feminist lens to examine women's positions in those governments, it will reveal the progress and stability of these states. Furthermore, by evaluating areas crossing development sectors which relate to their positions in government, such through education, rural market growth and the development of women's working groups will give meaning to the role that women have played to assist these areas. Through drawing on the work of Nancy Adler, Sanam Aderlini and Megan Mackenzie I will illuminate the importance of women in leadership roles to the success of states.

Andres Buendia

Faculty mentor: Rebecca Overmyer-Velázquez

How Life Appeared, Creation or Evolution? The Beliefs of People on How Life Began through Creationism or Evolution

Earth is a place filled with discovery, life, and creation, but how did this all begin? Most people believe that all life came to be from the process of evolution, while some people believed that the Earth and all life was made from creationism. This in turn causes conflicts between people's opinions on how life originated on planet Earth. However, this may relate to people's backgrounds such as those who believe in creationism may have a religious background or believe that religious events that took place in the

bible or in other religious teachings reflect on their view of the world. People who believe in evolution will have a background in scientific knowledge and will believe scientific facts and discoveries that support the theory of evolution. The research conducted here will discuss how people's beliefs in creationism and evolution will reflect on how they view the world and its origins. This research will focus on college students within Whittier college to examine how their beliefs reflect how they believe that life came to be. Previous researchers have conducted this type of research within other universities and colleges in the United States such as Randy Moore's research conducted within the University of Minnesota where she distributed 1,008 surveys to college students in the university. Here in Whittier college at least 68 surveys have been distributed and completed within four different classes, one biology class, one religion class, and two anthropology classes. The research conducted here will add new information to previous research studies on how people believed life originated and how their views reflect on their perception of the world.

Christopher Burley

Faculty mentor: Roger White

Sleep, Academic Success, and Future Wealth

The majority of economics studies tend to stray away from sleep as a factor that may impact our overall productivity and health. This study makes it one of our primary variables of interest, in order to determine the impacts on education and future wealth that a lack of sleep during our adolescents may have. Using data from the National Longitudinal Study of Adolescent to Adult Health (Add Health), 1994-1995 [Public Use] dataset,

this study employs linear and logistical regression techniques to determine the effects that sleep has on educational attainment by measuring differences in sleep and GPA. The future wealth of students is also measured, and results are stratified by three different classes of wealth to look for differences in adolescent sleep and educational attainment and whether or not these factors make a difference in deciding what class of wealth they end up later in life. Estimation results find that sleep has no significant impact on a student's ability to perform in school, and it also was not a predictor of where a student ended up later in life. However, factors that may impact a student's ability to perform well academically, such as depression or the education level of the mother were found to be significant, which creates reason to believe a relationship exists between sleep and educational attainment exists due to the effects depression has on a person's ability to get a good night's sleep.

Valerie Carmona

Faculty mentor: Anne Sebanc

Overrepresentation of English Language Learners in Special Education

English Language Learners (ELL) are often placed in Special Education, sometimes when they do not have a learning or mental disorder. This paper will be looking at whether ELLs are being placed appropriately and whether they are given alternative support. These students are being

tested to decide whether they qualify for Special Education services or not. Often the most common mistake is confusing ELLs for having a learning disability than language being the barrier that impedes learning outcomes. Inadequate placement of ELLs results in the over representation of these students in Special Education. There are both positive and negative outcomes for ELLs being in Special Education settings. Those positive and negative outcomes are dependent on whether the qualification is appropriate and ELLs acquisition of the language. A school should determine whether ELLs receive additional support or programs that are not related to Special Education. The 20 literature reviews find that English Language Learners are most likely to be placed in Special Education under the category Learning Disability. Though these students seem to qualify for additional services, there is uncertainty on the validity of their diagnosis. It is questioned whether these students are being referred to Special Education too quickly and whether the referral is unintended. Schools need to ensure that ELLs are not misidentified and that they are equipped to assess and help these students. Being an ELL is not a disability and though there are some ELLs that need Special Education services, not all students benefit or need those services.

Manuel Chavez

Faculty mentor: Sylvia Vetrone

The Relationship Between Automobile Traffic and Particulate Matter in Los Angeles, CA

Four major factors that contribute to air quality are ground-level ozone, carbon monoxide, sulfur dioxide, and particle pollution. Additionally,

diesel traffic, along with non-diesel modes of transportation and factories, also contribute to air pollution. This study aimed to investigate the effects of high-density diesel truck and non-diesel automobile traffic and its relationship to localized particle pollution within the cities of Pico Rivera and Whittier, CA. The city of Pico Rivera is considered a gateway city that connects urban Los Angeles to nearby suburban-based communities, such as Whittier. Pico Rivera neighbors the City of Commerce, is adjacent to a major freeway, and has a high density of warehouses which generates diesel truck traffic. Pico Rivera consists of various pockets of residential communities, which have been shown to have higher rates of health risks, specifically high asthma rates, and increased environmental risks. Briefly, a Temtop Particulate Matter (PM) Sensor was used to measure PM 2.5 and PM 10 levels, three times a day, for five consecutive days, measured independently for ten minutes at consistent times at the same specific street intersection. The amount of diesel truck and non-diesel automobile traffic density was tallied. Results indicate Pico Rivera had 53% higher PM 2.5 levels and 53% higher PM 10 levels than Whittier. Pico Rivera also had 33% more diesel truck traffic and 5% less automobile traffic than Whittier. Although PM 2.5 and PM 10 levels can be influenced by other factors not directly related to traffic density, such as coarse particles and point source pollution, diesel truck emissions and fuel combustion remain a major non-point source of contamination.

Elizabeth Christopherson

Faculty mentor: Anne Sebanc

Long Term Impact of Childhood Emotional Abuse on the Brain

Child abuse is an issue that affects many people in the United States and other countries around the world. The impact of child abuse is not only felt and seen in childhood, but also in adulthood. As a result, many people are living with the negative effects caused by the adverse circumstances, stemming from child abuse. Currently, there is more research available on the impact of physical and some sexual abuse, and less research is available that focuses solely on the effects of emotional abuse. This paper will look at the negative impact of emotional abuse on brain development that emerges and lasts into adulthood on people who endured emotional abuse as children, 0 to 18 years old. This paper will review 20 empirical studies to understand the long-term effects of emotional abuse in childhood on later brain functioning and the adult overall well-being. As of now, the research shows that emotional abuse in childhood has harmful effects on the brain's development and mental health going into adulthood. The negative effects most commonly exhibited in adults having issues with mental health, are problems with lowered abilities to regulate emotions, and increased levels of depression, anxiety, and PTSD. These issues may be due to the nature of emotional abuse and the continual abuse that the child is affected by. Understanding the long-term effects of negative and traumatic events that occurred in childhood can create awareness and lead to prevention programs that can lower the negative effects associated with emotional abuse that occurs later in one's life.

Keywords: Emotional Abuse, Depression, PTSD, Mental Health

Ivelis Colon

Faculty mentor: Jake Carbine

A Woman's Worth: Prison Culture with an Emphasis on Prison Religion and its Effect on Women in the LGBTQ+ Community Inside and Out of Incarceration

For many women, especially those part of the LGBTQ community, prison is a site for various kinds of violence, abuse, and dehumanization. Those who are incarcerated in the United States lose their rights to vote and their ability to have public housing, receive support from government aid, sustain contact with children, maintain a job post incarceration, and pathways to education. Many who are incarcerated turn to religion as a method of rehabilitation to reestablish hope in their lives. Religiosity, however, often comes with its own baggage, including histories of stigmatization and rejection toward so-called deviant sexual orientations. Nevertheless, many women who are part of the LGBTQ community and who are incarcerated are strong in their faith despite the stigmatization from their religion. To help understand all of these dynamics, this study explored the role that religion plays in the lives of incarcerated women who are members of the LGBTQ community and identify as religious. In pursuing this project, I was affiliated with the Los Angeles Centers of Alcohol and Drug Abuse (LA CADA) and established my research at one of their centers, The Allen House Residential Treatment Center. There, qualitative research was collected from a sample group of women who were released by the jail to reside at the Allen House to complete the rehabilitation program in lieu of further jail time. The women were given a pre-survey to fill out regarding their experiences as a religious incarcerated queer woman. I then facilitated a focus group to collect narrative data from the women, and the session closed out with a post-survey. The study revealed how these women saw themselves worthy for a life of unapologetic sexual orientation while staying strong in faith, all in the midst of facing the very difficult challenges and consequences of incarceration. The results are situated against the backdrop of research that has been done on religion, incarceration, and LGBTQ identity, including Andrea Ritchie, et. al, *Queer (In)Justice: The Criminalization of LGBT People in the United States*.

Marisol Contreras

Faculty mentor: Paul Kjellberg

Contemporary U.S. Popular Culture: Differentiating Actual Truths from Fabricated Truths

In this project, the theoretical frameworks outlined in Guy Debord's *Society of the Spectacle* and Jean Baudrillard's *Simulation and Simulacra* are synthesized together and used to analyze four individuals prominent in U.S. popular culture. In doing so, I show how their identities blend together fantasy and reality, thereby making truth inaccessible and mirroring the effects of capitalism on the general societal perception of reality in the United States. The individuals that I analyze are: Father John Misty, Eleanor Antin, Don Draper, and Truman Burbank. The former two are living persons, who perform under the guise of either a single invented persona (Misty) or a multitude of invented personas (Antin). For them, I analyze critical reactions to their artistic works in popular publications in addition to their self-perception by looking at how they speak of their artistic works in interviews. The latter two individuals are fictional characters, depicted either in television (Draper) or in film (Burbank). For them, I analyze critical studies of these characters in popular publications in addition to how they are treated by others within the context of their respective narratives. I then conclude my project by ascribing the creation and perpetuation of this fantasy/reality hybrid in the creative outputs and identities of the aforementioned individuals to the omnipresence of capitalism. I show how the masking of truth in each example discussed is caused by the fragmentation and disillusionment which stems from the widespread aggressively pro-capitalist sentiments ingrained in the United States. Though Debord and Baudrillard wrote in the mid to late 20th century, this project proves that their writings remain relevant to contemporary happenings in the United States.

Marisol Contreras

Faculty mentor: Paul Kjellberg

Supreme: Debordian Spectacle and Baudrillardian Simulation Embodied

This paper creates an analytical framework out of Guy Debord's Society of the Spectacle and Jean Baudrillard's Simulation and Simulacra which is used to analyze the clothing brand entitled Supreme. In fleshing out the Debordian concept of "spectacle" and the Baudrillardian concept of "simulation" and applying these concepts to Supreme, this paper explains how the brand has come to embody the manipulative aspects of capitalism. Thus, this research provides an academic analysis of the brand's business model as well as its surrounding culture. Additionally, this research aids in setting the precedent for philosophical analysis of streetwear brands and hypebeast culture.

Madeline Curiel

Faculty mentor: Roger White

The Gender Wage Gap: Year 2007 & 2017 in the U.S.

Generating and running a regression analysis, we are able to identify the gender wage gap in the United States using 392,553 observations from Current Survey Population performed by the Institute for Social Research (ICPSR) at the University of Michigan in 2007 and in 2017. We develop a regression model by using our economic literature review to determine the gender wage gap determinants including education. We examine the different significant or non-significant effects the factors have toward the gender wage gap, so we decide to include mixed effect variables. We find

that the numbers in both years have slightly narrowed and conclude that gender pay remains a prominent socioeconomic issue that undermines economic development.

Koren Dalipe

Faculty mentor: Elena Kazakova

Courtly Love and the Lais of Marie de France

A fairy, a knight, a king and a bathtub. All these people and things are connected by an author named Marie de France. Marie de France was a popular author during the Middle Ages when the genre of courtly love was equally popular. Marie de France is most known for her collection of lais and this paper argues that she wrote her lais in the genre of courtly love in order to criticize the genre. Lais were a popular form of short story in the Middle Ages and they were often written under the genre of courtly love. In her lai, Equitan, the main characters are punished for their selfish love, but in her lai, Lanval, the main characters stay together as a result of their true love. The two lais are categorized under the genre of courtly love, but Marie de France changed certain elements, typical of the genre in order to reinforce her ideas on love. She used the themes and tropes of courtly love to demonstrate what love should be like.

Koren Dalipe

Faculty mentor: Elizabeth Sage

Language as a Tool of Colonization in French West Africa, 1903-1960

School has been described as a place of learning, but can it also be used to indoctrinate? The main argument of my Mellon Mays Research Project is that the French Empire used the French language as a tool of colonization throughout schools in French West Africa. My research is centered around the idea that language can be used as a political weapon by colonial empires and it is important because of its implications in West Africa today. The era I am most interested in begins when French West Africa began its plans for a comprehensive education system throughout the federation in 1903. There has been scholarship done on French West Africa's education system, but not much on how language was used to assimilate and manipulate students within these schools. I hope to fill in this gap and I plan on using concepts from sociolinguistics in my research to discover how and why schools tried to assimilate children into the French Empire. My Mellon Mays Research Project will bring a new understanding to language learning, one that has not been researched much before and one that will hopefully bring more people to realize how easy it is to abuse the power of language.

Marina Daroca Bazán

Faculty mentor: Joyce Kaufman

Approaches to peace: The Strategic Logic of Civil Disobedience

Over the years, civil disobedience has been alluded as a threat and danger to any democratic country where civilians practice it. Although many philosophers and prestigious political thinkers as Martin Luther King Jr or Henry David Thoreau have stated over the years, it is not anti-democratic per se, but a mechanism that, in some cases, can aim to improve the

system. Analyzing the case study of the Liberian Civil war and its transition to a democratic system through the implementation of civil disobedience, this research paper will analyze the strategic logic of nonviolent political activism towards the achievement of peace and the normative reasons for which transitioning from war to peace is one of the most complicated issues that International Relationships have to deal with.

Felicia Delgadillo and Dr. David N. M. Mbora

Faculty mentor: David Mbora

From Bed Bugs to Dead Bugs: Exploring Natural Alternatives to Eliminate Bed Bugs, *Cimex lectularius* with Essential Oils

Due to the countless unverified claims on natural bed bug remedies on the internet, the purpose of this research was to determine if two natural remedies - a tea tree oil treatment and an essential oil mixture of eucalyptus, lavender, and rosemary - would be effective in eliminating bed bugs, *Cimex lectularius*. I predicted that the tea tree oil treatment would be the most efficient in eliminating bed bugs because of its antimicrobial and solvent properties to suffocate insects. I tested my hypothesis by comparing the elimination efficiency on an equal number of male and female bed bugs under three treatments: tea tree oil treatment, essential oil mixture treatment, and a de-ionized water control. Each treatment had three replications of two separate jars - one containing 16 males and one containing 16 females. The males and females were separated into gendered tubs to ensure no reproduction within the experiment. Before treatment started, the subjects were given 7 days to acclimate along with one blood meal. After acclimation, the bed bugs were sprayed three times with their respective treatment once a day until the populations were eliminated. The effectiveness of the treatments was

then measured by counting the amount of bed bugs that were alive every day of the experiment until every treatment's population was eliminated. The main findings were that both natural remedies I tested were effective in eliminating bed bugs. The essential oil mixture proved to be the most efficient in eliminating bed bugs. On the 7th day after one spraying treatment, the essential oil mixture only had 3 males and 3 females left alive while the tea tree oil treatment still had 15 females and all males alive. After a second spraying treatment, both treatment groups eliminated the rest of their respective populations, and the entire control population survived.

Julissa Del Rio

Faculty mentor: Lana Nino

Diversity in Higher Education

The purpose of this literature review is to understand and analyze how private colleges demonstrate and implement diversity within their campuses and to then develop a rubric for comparison of the actual diversity that is placed within their campuses. The topics explored throughout this literature review include: understanding the struggles and reasons for incorporating diversity, understanding how diversity is defined within these institutions, analyzing the benefits that diversity has on its students and faculty, examining the actual commitments institutions are placing to implement and to advocate for diversity, and finally, conducting an analysis that will allow us to understand how private and liberal arts institutions are incorporating diversity. In this literature review, nine different private or liberal arts colleges from three different regions were chosen in order to analyze their mission statement, their student and faculty demographics, and how these institutions are advocating and implementing diversity through the use of specific

programs or events. The names of the nine institutions will not be provided in the research, but they will be distinguished through the use of specific labeling. In order to compare and understand how diverse these nine private or liberal arts colleges are, a non-bias rubric was developed through the use of multiple sources that allow me to analyze how an institution practices diversity. The findings in this study indicate that implementing cultural diversity as a benchmark for private or liberal institutions is beneficial as it presents opportunities for students to interact with multiple backgrounds while maintaining and increasing an inclusive, diverse, and well-represented environment for its students and faculty.

Gisselle Diaz

Faculty mentor: Rebecca Overmyer-Velázquez

The Voices Left Behind: The Impacts of Dual Immersion Programs in Bilingual Education

Following the Bilingual Education Act of 1968, there has been an ongoing conversation on the relationship between language and educational opportunity. The Bilingual Education Act of 1968 federally funded bilingual educational programs in order to address the "special educational needs" of students with limited English speaking ability. In the interest of equal educational opportunity, the funding of bilingual programs aimed to provide a specialized space in education for students to learn English, reinforce cultural pride, and instill in students the social and linguistic skills to obtain an equal education to that of their English speaking peers. In examining this, some have concluded Bilingual Education to be a step towards inclusion for the Latino community. Others have perceived it as only a bandage for the concrete social and economic problems facing the Latino population. While past studies have proposed theoretical models of teaching bilingual education, and questioned the systematic pretenses of

the Bilingual Education Act, little is understood of its development and implementation in classrooms. Today, Bilingual Education has effectively been replaced by Dual Immersion, or two-way language immersion programs, that aim to foster biliteracy and bilingualism. This shift raises new questions of minority accessibility, representation, and the future of bilingual programs. Who does Dual Immersion serve? What do teachers and administrators think about Dual Immersion, and its goals today? To what extent have Bilingual Education's promises of cultural revitalization been carried into the new immersion programs? What impact does the shift from Bilingual Education to Dual Immersion have on students? The study follows a singular Spanish Dual Immersion fourth grade classroom and its school site in Montebello, California. Following classroom observations and staff interviews, results demonstrated that the original purpose of Bilingual Education has changed to a newfound desire for bilingualism and biliteracy from monolingual families as a chance for educational advancement. Findings showed that students who are in need of English-language development are being left behind in the shift from Bilingual Education to Dual Immersion, and services that aid a student in learning English are being phased out as the preference for Dual Immersion increases dramatically. Discussion focuses on the implications of the results and findings.

Cynthia Esparza

Faculty mentor: Michelle Chihara

Witnessing Trauma in Postcolonial Literature: Reevaluating Modern Perceptions of Reality

Trauma, a force borne out of an inconceivable violation that jars survivors into repetitive cycles of self-deprecation, is a phenomenon that transcends time, cultures, the physical/mental divide, and even philosophy itself. It

has found its place in literature by the practice of testimony as catharsis has manifested into metaphorical stories with both exaggerated and uncanny elements to the real-life occurrences they are meant to represent. But to what measure are these stories taken seriously if they are judged for their fictitious material? The graphic novel *American Born Chinese* tells the story of a Chinese-American teenager who imagines himself to be magically turned into a white boy, and redeemed by an ancient mythological monkey king; but does this portrayal make the struggles of identity and self-acceptance any less true to children of immigrants? *One Hundred Years of Solitude* is most remembered for its interesting use of magical realism, portraying characters as ghosts, immortal, or beings who literally wield magic. But does this mythological portrayal actually make the ghosts of the past and the unexplained miracles and catastrophes that occurred for Latin American countries during colonization any less real? In this project, I evaluate how the modern standards of what makes a novel's premise "real" or "fiction" can be in danger of undermining stories of colored peoples' trauma either by scrutinizing them too much for historical accuracy, or even lauding them too much for their fictitious writing that the story's real values are lost.

Brianna Esparza

Faculty mentor: Rebecca Overmyer-Velázquez

Get Ready with Me: Gendered Interactions on YouTube

Literature on new media suggests that YouTube serves as a platform of support and unity for marginalized communities. Through YouTube's interactive style with producer and subscriber, this research started with the premise that this media in particular would be the best when looking at female viewer-producer interactions. The purpose of this qualitative research project was to look at the impact of new media on female viewers

and the types of relationships between viewers and female creators on YouTube. It is known already that social media is seen to be influential to identify and support to the younger generation. This research can provide additional insight on the potential of media as an avenue for cohesiveness as an unconstrained space for political and social activity. This research applies content analysis on the amount of subscribers, comments and likes and dislike quantities per video and video bloggers (vloggers) to examine potential patterns in word usage and communication styles. The research consisted of collecting data from three female lead YouTube channels with a total of six Get Ready with Me Videos analyzed. The three YouTube vloggers selected were Jaclyn Hill, Nyma Tang and Nikkietutorials. These vloggers were chosen on the basis of popularity, representation and originality. Initial findings reveal that the quality and type of content of responses through comments vary between types of vlogs and vloggers with the most relationship development and interaction in Get Ready with Me themes. Though this preliminary research, it has brought some insight on these questions further cross-media research is needed to better understand the ways in which creators and viewers interact across different social media platforms aside from YouTube.

Tiger Fawaz

Faculty mentor: Roger White

Examining the price ratio between competing inter-commodity energy products in the United States: Crude Oil v. Natural Gas, 2000-2017

Crude oil and natural gas are known to be inter-commodity spreads, which means that they are alternatives in consumption and rivals in production. This can change the prices of the energy products; however, there are factors from the demand and supply side that cause the prices to

decouple. Over recent years, we have seen an inconsistent relationship between crude oils and natural gas. Even though the global crude oil market is much larger than the domestic natural gas market, we see that natural gas still competes with the crude oil market in the U.S. Both crude oil and natural gas are fossil fuels used for manufacturing vehicles, industrial machines, cooking, fertilizing, and most importantly, heating. The economic theory of natural gas and crude oil prices state that they should be related because they are alternatives in consumption and rivals in production. We will be following this theory to understand the energy market behavior and identify why changes in oil prices doesn't always change natural gas prices in the U.S. Since crude oils and natural gases have been showing to act independently, we will examine how the market behaves through the explanatory variables necessary to measure the price ratio between natural gas and crude oil commodities. These variables include: the production levels, consumption levels, net imports and net exports of both crude oils and natural gases. From the economic theory, we should expect to see that an increase in crude oil prices motivate consumers to substitute natural gas for petroleum products in consumption, which should result in an increase in natural gas demand and price. From the supply side, we should see an increase in crude oil prices as a result from an increase in crude oil demand. This should increase natural gas production, therefore leading to a decrease in natural gas prices.

Alicia Figueroa

Faculty mentor: Roger White

Travel & Tourism: The Relationship Between Exchange Rates and International Tourism Flows

We attempt to determine the type of relationship that is held between international tourism flows and exchange rates. By exploring the prior literature pertaining to international tourism, we conclude that there are a total of seven independent variables that cause changes in international tourism arrivals. Six of these variables include: Gross Domestic Product of a source country, Gross Domestic Product of a destination country, the distance between the source and destination country, the population of a source country, and whether the source and destination countries share a border and a common language. The seventh variable is dedicated to the exchange rates between the source and destination countries. This analysis, unlike others, focuses on which type of exchange rate, either real or nominal, has a greater impact on international tourism arrivals. We implement an econometrics methodology by running a regression analysis using the Ordinary Least Squares and Feasible Generalized Least Squares techniques. Doing so derives a coefficient attached to our independent variables and, essentially, reveals the type of relationship that international tourism and exchange rates hold. Data was collected from the World Tourism Organization database, the International Monetary Fund database, and a dataset from Tadesse-White (2012). To shine light on a Latin American country, we chose Mexico as our destination country. Given the available data, we take the years 1995 to 2015 into consideration.

Ethan Fletcher

Faculty mentor: Sylvia Vetrone

Goji Berry Extract May Decrease the Viability of Liquid Tumor Forming Cancers

Modern cancer treatments such as chemotherapy and radiation have demonstrated success in the treatment of a wide variety of cancers over

the course of many years. While effective, the negative and toxic side effects arising as a result of these treatments have driven people to take a more natural approach in combating cancer. Leukemia is a cancer of the bone marrow and lymphatic system, which affects the cells which help our bodies fight infection. Breast cancer forms solid tumors in the breast, and can spread to form tumors in the liver, brain, and lungs. Goji berry and red sage extracts have demonstrated anti-cancer effects when tested on various solid tumor forming cancer cell lines, as they decrease cell viability and proliferation by interfering with the EGFR/ERK, PI3K/AKT/mTOR, and Ras/Raf pathways. Red sage was also shown to activate important mechanisms to block inhibitors of apoptosis that help keep cancer cells alive. While these extracts have demonstrated success in treating solid cancers, there is limited studies which analyze their effects on liquid cancers. Therefore, we hypothesized that Chronic Myeloid Leukemia cells exposed to varying concentrations of goji berry and red sage extract would exhibit lower levels of viability and proliferation as a result of inhibition of important cellular signaling pathways. For this study, we exposed both breast cancer (MCF-7) and leukemia cells (CML) to varying concentrations of goji berry and red sage extracts. Colorimetric assays were conducted to assess the overall viability and proliferation of cancer cells treated with these natural extracts. Our results depict a significant reduction in viability of CML cells treated with goji berry extract. These findings are promising, as they indicate not only that goji berry extract may be able to reduce the viability of leukemia cells, but also that this extract may be effective against liquid cancers as well.

Jessica Gabela

Faculty mentor: Kathy Barlow

Golf Putting: Investigating Schema Development and Practice Strategy

The aim of this study is to determine the effect of practicing golf putting using normal size targets, oversized targets, and secondary targets on performance accuracy and schema development. In targeting sports, the most important criterion is accuracy and this is related to both the invariant feature and specific parameters of the motor movement.

Developing accuracy has been found to be challenging for beginners in any targeting sport; however, more skilled participants are able to modify the invariant features and parameters needed to be successful in aiming. In most cases, participants who practice with regular sized targets are more focused on the outcome of the skill rather than the invariant feature of the motor skill. For beginners who are learning how to perform targeting sports, researchers have concluded that beginners who do not use targets in practice or use larger sized targets develop greater performance accuracy. The practice trials in the experiment will lead to greater schema development in performance accuracy, using kinesthetic recollection of parameter modification. The study will consist of 26 college students who attend Whittier College, male [15] and female [11], ages 18-23.

Participants were randomly assigned to either a control group (normal target) [8], a larger target group [9], or a secondary target group [9].

Everyone was pre-tested using 20 putting trials to a (normal) target from 5.5ft. During the two weeks of practicing (3 times a day) putting 40 trials each practice session, the control group putted to the normal sized target (1ft. by 4in.) as the pre-test. The large target group putted to a 1ft. by 1ft. target. The secondary target group putted 40 trials to a target size 1ft by 4in, positioned to the right side and left side of the original target of that same size. Post-test will be conducted one week after the completion of all practice trials. Post-test will be from the distance of 5.5 ft. to the original target of 1ft. by 4in. Findings of the study will identify the best practice method for developing performance accuracy and if practicing 3 days per week for two weeks had a significant effect on schema development. Data collection will be conducted each training session and will be analyzed using t-tests and ANOVA.

Daniel Garcia

Faculty mentor: Joyce Kaufman

Women's Roles in the Mexican Revolution

This research paper takes a look into the many roles women played in the Mexican Revolution. The 1910-1920 civil war in Mexico allowed for several major transformations in government and culture that benefited Mexican women and laborers. The revolution resulted in the overthrowing of a dictatorship and the transition towards democracy. Women are often forgotten in the history of the revolution, but this paper identifies their roles as peacemakers and combatants (or soldaderas). By identifying the roles of women in the revolution, it clarifies the presence and impact the women had in the revolution. The women identified in this paper are cited from accounts from other research articles such as Mexico's Nobodies and Fearless Women in the Mexican Revolution and Spanish Civil War. These articles were used to identify Mexican women's place in society before, during and after the war. This paper will also show how laws developed after the revolution to provide gender equality. Finally, this paper will show how women's rights have benefited from the war and where Mexico still needs to progress to fulfill gender equality.

Mariana Garcia

Faculty mentor: Rebecca Overmyer-Velázquez

HR: A Catalyst for the #MeToo Movement?

The rise of the #MeToo movement empowered women to tell their stories surrounding sexual harassment; however, it also exposed an immense flaw

in the way sexual harassment is handled. Rather than discussing the challenges the human resources department (HR) faces, prior literature written about sexual harassment focuses on the different laws and regulations aimed at preventing sexual harassment. For this reason, my research turns to HR to explain why the #MeToo movement occurred given that existing laws and regulations should theoretically prevent sexual harassment. Initially, I hypothesized that a male-centered work culture was the source of persisting sexual harassment. By interviewing eight HR professionals in different industries, my goal was to get a sense of why the #MeToo movement happened, as well as gain more insight regarding specific sexual harassment trainings. The results of my interviews showed that sexual harassment complaints do not always take the same route depending on the company. This means that employees might go to the manager first and then HR, which complicates power dynamics within companies. My findings suggest that interviewees did not share my initial hypothesis; rather, they pointed to an array of different issues ranging from bureaucratic profit to individual agency as some of the main explanations why sexual harassment persists.

Jehan Godrej

Faculty mentor: Cheryl Swift

Whittier's Recycling Dilemma

Recycling on small college campuses in the United States is essential to reducing the amount of waste that colleges produce. On average, college students in the U.S. produce 640lbs (290kg) of solid waste every academic year. Waste reduction and recycling solutions provide the perfect opportunity to reduce the impact college students have on their local environments when it comes to waste. My work explores three separate case studies to investigate the possibility of setting up a recycling program at Whittier College using any of those three systems. The first case study

focuses on a recycling program organized through Athens Services, Whittier's refuse provider, in affiliation with the school. Since Athens Services does not offer a recycling program at an affordable price for Whittier College, this was not a feasible route. The second case study explores the option of running a recycling program through the college's facilities department, FSP Group. Establishing a recycling program using this strategy would be quite simple. This approach includes: more recycling and compost bins, color coordinated recycling bags, training staff members about recycling collection, and pick-up and drop-off at a recycling facility. However, the facilities department would need approval from the financial coordinator at Whittier College before this program can be put into place. Ultimately, the third case study investigates the most feasible for the college - a student-run recycling program through the school's Sustainability Club. This case study examines other academic institutions' recycling programs, and modeled the recycling program after those institutions. Students in the Sustainability Club would implement their own recycling bins (with money raised from senate) around campus and create a schedule for pickup. The recycling would be dropped off at a recycling center in Los Angeles at the end of every week. Recycling is a cornerstone in waste management, and reduces the amount of waste sent to landfills and incinerators; this paper presents results to guide small colleges toward establishing a recycling program and improving sustainability.

John Paul Gomez-Reed

Faculty mentor: Jordan Hanson

A 100 MHz Frequency-Counter Deployed in FPGA for RF Neutrino Research in Antarctica

The Antarctic Ross Ice-Shelf ANtenna Neutrino Array (ARIANNA) is a group of semi-autonomous stations designed to detect ultra-high energy (UHE) neutrino particles via radio frequency (RF) pulses. Each ARIANNA station utilizes a field programmable gate array (FPGA) as a means to both communicate between different components within itself and to define a digital logic trigger on an incoming RF signal. The winds and man-made activities in Antarctica affect the trigger rate of ARIANNA stations by creating false positives that uses system memory resources that could be used for UHE neutrino data. Currently, ARIANNA stations are manually set to accept certain range of RF pulses. The automation of this procedure would maximize the efficiency of system memory resources dedicated towards UHE neutrino detection, rather than false positives. We have designed a component, currently dubbed the multi-mode frequency counter (MMFC), that calculates the RF pulse detected by an ARIANNA station with the hopes that it will serve a larger purpose in furthering the automation of the ARIANNA station. The MMFC was tested using a multi-domain oscilloscope (MDO). The MMFC currently measures 100 Hz to 25 MHz using 16 to 32 bit counter. The algorithm and the performance and design of MMFC will be presented.

Alyssa Gonzalez

Faculty mentor: Joyce Kaufman

Why don't women lead Wars?

For my research, I will answer the question, “Why is there a lack of female defense ministers worldwide?” Furthermore, I want to be able to understand and address the political and social limitations that are inherent in systems that restrict women from trying to attain a role that is generally held by a male. I will be approaching this research by exploring case studies of nations which have never appointed a woman as their defense minister, and analyze their reasons for not taking this action. My working thesis is, if we explore social and cultural stereotypes, along with

taking into consideration the transitional processes a country goes through from a time of conflict to peace, we will be better able to understand why there is a lack of female defense ministers. The methods I will be using to investigate this thesis are both quantitative and qualitative research.

Quantitative data will give me an understanding of the number of women who have been appointed as a defense minister. For this research I will be drawing from Tiffany D. Barnes and Dianan Z. O'Brien's article, *Defending the Realm: The Appointment of Female Defense Ministers Worldwide* (2018). Qualitative research will give me an understanding of what are the limitations that are holding back women from being appointed into the "male-dominated" position. For this research I will be drawing from Maria Escobar-Lemmon's article, *Getting to the Top: Career Paths of Women in Latin American Cabinets* (2009), Mirya Holman's article, *Sex, Stereotypes, and Security: An experimental Study of the Effect of Crises on Assessments of Gender and Leadership* (2011), and Carol Cohn's book, *Women and Wars* (2013).

Frankie Grijalva

Faculty mentor: Roger White

School Attendance of Children in Cocoa Farming

Child labor in Ghana and Côte d'Ivoire within cocoa farms is seen as a normative, this is in opposition to the global rate of child labor slowly decreasing with time. This paper presents evidence, collected from Tulane University's Final Report of Survey Research on Child Labor in West African Cocoa Growing Areas in 2013/2014 and previous case studies were done on similar features of this phenomenon. This presentation examines

the relationship between the number of children participating in the workforce within cocoa farms and how many of those children also attend school during the year. Additional factors are also taken into account including age, gender, ethnicity, activities completed on the cocoa farms, primary caretaker, etc. In our model, we display various relationships between our variables and determine that there is indeed a shocking conclusion that younger male children are less likely to go to school as oppose to older male children.

Lillian Grossman

Faculty mentor: Joyce Kaufman

War of Words

The portrayal of war in the mass media varies throughout the world. By only focusing on a handful of countries, it makes it simpler to demonstrate how war is depicted in the mass media. The mass media has not always shown the "full story" on what actually occurs during times of war and conflict. According to an academic article written by Cynthia Banham, journalists are expected to report on news that the government would rather keep secret, instead of only reporting on what the government wants them to cover. The government often diminishes the number of casualties to make it appear that they are doing better in the fight against the enemy, however, they are not. How is war portrayed in the mass media around the world? In comparing the United States as well as other countries, the government reports war differently through their actions, support, and involvement. Depending on the government, news can be delayed or censored, which ultimately affects how citizens learn about what is happening in the country and around the world. By using a comparative analysis method, my research suggests that the portrayal of

war in countries differ from one another through the information they wish to disclose in order to further their own political agenda.

Vanessa Guerra

Faculty mentor: Anne Sebanc

Academic gender stereotypes and how they affect students

There is an abundance of gender stereotypes, several center around children's academic settings. These various academic gender stereotypes are known to students, parents and teachers and focus around boys' and girls' effort and achievements, which differ on specific school subjects such as math. Stereotypes not only have an impact on the child, potentially stifling academic success, but can also affect parent and teacher interactions in and out of the classroom. Academic gender stereotypes create a stereotype threat that can lead to the child fulfilling that stereotype thus proving to themselves that they are in fact what the stereotype says. This paper will review 20 empirical studies to identify the different academic gender stereotypes, who holds these beliefs, and the implications they have for students, specifically their negative impact. There is a belief that girls do better overall in school and that showing effort is feminine, while boys are not as academically inclined as their female peers and displaying no effort is masculine. Students and adults alike, also believe that STEM fields are male-dominated and associate the terms smart and studious to these subjects. These stereotypes not only affect how the student might perceive themselves but also how adults might interact with them. Parents tend to provide more academic support to sons than daughters because of the stereotyped belief that males do not do well in school. A few studies found that female students tend to doubt their mathematical abilities because of the stereotype that it is a male-dominated subject despite the fact that more female students were

excelling at it. Other studies found that teachers who held the belief that males did not do well in school tended to challenge them less than other students. All these stereotypes have implications for students within the classroom and indicate that parents and teachers should be aware of their academic beliefs to minimize the impact that they may have on children.

Jordan Hanson, Delilah Perez, Katherine Mercado, Jocelyn Jimenez, Kaitlin Fundell, and Emi Eastman

Faculty mentor: Jordan Hanson

Physics Education Analytics with Python

A major topic within physics education research focuses on understanding how students learn to solve word problems. This research informs instructors at the college level how to classify learners, and therefore how to optimally present new material. Word problems involve translating numbers within text to a physics equation. We have written a python module that presents multiple-choice mechanics questions to the user while collecting accuracy and timing data. We performed a machine-learning based statistical analysis on the results after sharing the code with a sample of students and classmates, and find that we can classify the results into several learning groups.

Annie Hawkins

Faculty mentor: Roger White

Effects of Accumulative Polarization and Ethnicity on Immigration Opinion

The opinions of United States voters about immigrants and immigration policy are important in numerous areas that impact the lives of these immigrants, and knowledge about them can help decide the best way to

conduct advocacy on behalf of immigrants, who are often disenfranchised and have little political voice of their own; it can inform policy decisions that can and should be made about them in legislature; and it can contribute to a better understanding of the relationship that these opinions have with different political and social identifications that people hold. The purpose of this paper is to compare polarization on the issue of immigration with the larger polarization in party identification, and to examine the effect of a respondents' ethnicity on their opinions about immigrants and immigration. This study uses American National Election Studies data from both the 2016 dataset and the cumulative dataset, the latter of which began including questions relevant to this study in the late 1980s. The key dependent variables are questions regarding respondents' opinions on immigrants and immigration, and independent variables detail respondents' ethnicity, political party affiliation, gender, income, and race. The study expects to find that the topic of immigration has been polarizing more or less steadily over the years of the study and that a respondent's ethnicity is increasingly relevant to the equation.

Malory Henry

Faculty mentor: Ann Kakaliouras

The Iatrogenic Consequences of Global Health Initiatives

Despite best intentions, global health development initiatives have historically drawn on a universalized notion of 'traditional medicine' as the basis for intervention. These international organizations generate a discourse of development in which the global attempts to control the local, complicating relational paradigms and experiences. A concrete example of the way in which the international institutions attempt to 'develop' local communities is through the implementation of training programs. Although these interventions are supported as progressive attempts to 'bridge gaps' between local realities and global imaginaries, they establish paradigms that ignore lived experience. Thus, this study aims to discuss the history and lived experiences of Tanzanian traditional birth attendants (TBA) as a focal point through which to understand the interactions between multiple contending paradigms. Through surveys and interviews with regional TBAs and Tanzanian biomedical professionals at the Foundation for African Medicine and Education (FAME), this study deconstructs preconceived notions of what constitutes quality care by analyzing their attitudes towards national and international policy, Western biomedicine, and Tanzanian dawa zakienyeji (traditional medicine). In juxtaposing the intentions and actions of global health institutions with the lived experience of Tanzanian TBAs, I contest that the systematic imposition of technomedicine has inflicted a series of inalterable consequences that can be felt on local, national, and international levels. By attempting to understand these consequences, postcolonial health organizations including FAME can engage in ethical progress that is framed around the perspectives of the communities involved, rather than projecting neocolonial ideologies onto indigenous populations and others. However, the relationship between WHO discourse and practical lived experience constitutes only one of the myriads of ways in which global medicine constitutes a discourse of development, and this paper cannot speak to the overwhelming fluidity of Tanzanian practice.

Jessica Hernandez

Faculty mentor: Roger White

Generational Fashion Styles in China

By analyzing photos taken throughout China, we compile data looking at age, color schemes, and brands and logos, which allows us to conduct an analysis of different factors that contribute to the way people dress. We specifically look into whether or not the time period in which one was born affects the way that they dress now. Using China's GDP per capita from the years 1960 to 2017, we also analyze how the economic climate of the time period influences the way people dress. By running a series of simple Ordinary Least Squares regression models, we determine the relationship between our constructed age and color variables and look into the economic implications over time. Our results give us the likelihood of which age groups are more likely to wear specific color schemes. The models used contain several holes and fail to account for the majority of the variation in the variables, and therefore we look to future researchers to work off of the basic framework and ideas provided to create a better understanding of what can be done in the fashion industry to better cater to the needs and interests of the different generations in China.

Rebekah Herrera

Faculty mentor: Anne Sebanc

Social and Emotional Effects of Parental Divorce on Adolescents

Fifty percent of marriages end in divorce, affecting not only the family as a whole, but also children specifically. Previous research has examined the family relationship outcome and emotional effects of divorce for young children. However, little research has been conducted on older children, until recently (Bowen & Jensen, 2015). The purpose of this literature review will be to examine the research conducted on adolescents who have experienced parental divorce. Specifically, this paper will examine the parent-child relationships, risky behavior and emotional effects post-divorce. Studies have found that, after divorce, adolescents become less involved with their parents and report having more high-stress situations (McCabe & Richardson, 2001). A poor relationship with either one or both parents post-divorce has been found to negatively affect children's coping methods. Studies have also found that adolescents from divorced families are more at risk for substance and alcohol abuse compared to children whose families are still intact (Jackson, Rogers, & Sartor, 2016). Combined, poor parent relationships and coping methods may also lead to emotional problems for adolescent children. Existing literature has found that adolescents post-divorce report lower self-image and higher social anxiety at home (Schick, 2011). This may lead to children wanting to make more social connections outside of the family. Adolescents from split families are 82 percent more likely to initiate sexual and romantic relationships than their peers from intact families (Ivanova, Mills, & Veenstra, 2011). This review will continue to examine in depth what previous research has found are the effects of parental divorce on adolescents.

Jared Holguin

Faculty mentor: Sylvia Vetrone

Herbal Extracts; Green Tea, Goji Berry, and Red Sage; Potentially Decrease Viability of Cancerous Cells; RPMI, CML, LNCAP, and MCF-7

While cancer treatments have greatly improved since the 20th century, they continue to result in harmful side-effects for patients. Alternative treatments, therefore, hold a high value in cancer research and are continually being investigated. Many healthy alternatives are being developed and synthesized from plant extracts. Green tea, red sage, and goji berry extracts have all shown to have anti-proliferative properties and reduce viability when exposed to various liquid and solid tumor cancers; such as prostate cancers, breast cancers, myelomas, and lymphomas. The aim of this study was to explore the efficacy of natural homeopathic extracts as an alternative cancer treatment, due to the previous reports of the anti-cancerous effects from such substances. Cell proliferation and viability assays were used to observe the effect of green tea, goji berry, and red sage extracts on two tumor forming cancer cell lines, (LNCAP and MCF-7), and two liquid, non-tumor forming cancer cell lines, (RPMI 8226 and CML), to determine their potential anti-cancerous properties. The RPMI 8226 cells were exposed to 6.25%, 12.50%, 25.0%, and 50.0% green tea extract over 48 hours, while LNCAPs were cultured with 25.0% and 50.0% green tea extract over the same time. CML and MCF-7s were exposed to 10.0%, 20.0%, 40.0%, 60.0% and 80.0% of red sage extract and goji berry extract over 48 hours. Percent viability of cells cultured in 25.0% and 50.0% green tea extract was significantly lower than the controls. Additionally, CML cells cultured in 20% goji berry extract had a statistically lower viability than their control, with an increased number of dead cells. The results for green tea exposed cancer cells were supportive for green tea extract's claimed anti-cancerous properties. As well, the data for goji berry extract is hopeful for the research of its cancer fighting abilities. Both products would be favorable targets for cancer therapy research and should be further investigated.

Stephanie Jackson

Faculty mentor: Christina Bauer

Post Synthetic Modification of a Stilbene MOF with 1-methylimidazole via SALE

Metal-organic frameworks (MOFs) are hybrid materials composed of both organic and inorganic compounds. MOFs have been used in a variety of applications ranging from small-molecule sensors to gas storage. Through the use of post-synthetic modification (PSM), chemical functionality can be altered and used to expand MOF research. In this project, a stilbene-based MOF was synthesized from trans-stilbene-4, 4-dicarboxylic acid, N, N-dimethylformamide, and zinc nitrate. The framework was then post-synthetically modified with 1-methylimidazole and characterized via infrared spectroscopy (IR), x-ray diffraction (XRD), and observations under UV-light and a microscope. The original stilbene-MOF is a pale crystal that emits a blue luminescent color. XRD patterns of the stilbene-MOF displayed peaks around 8, 12, 15, and 20 (2-theta) and IR showed significant peaks at 2928.49, 2854, 1657.56, 1584.94, 1506.06, and 1385.20 cm^{-1} .

Myles Jackson

Faculty mentor: Hector Valenzuela

Micro Unknown Identification

The purpose of this project was to develop a methodology for quickly identifying an unknown genus of bacteria using standard bacteria staining, physiological tests and molecular biology techniques (PCR). The

experimental setup consists of a blind study, where ten commonly hospital acquired bacteria were provided and the bacteria was given to multiple groups of researchers. We tested the bacteria in various ways to identify the bacteria for speed and accuracy. The results of our tests were: the bacteria were Catalase positive, oxidase negative, lactose positive, Indole positive. From these results it was determine that the unknown bacteria was Escherichia coli. Confirmation of our results was done by a PCR reaction with primers specific to E. coli. Conclusion, although staining and physiological test are low in cost, the PCR reactions was faster and accurate.

Alexander Jelloian

Faculty mentor: Roger White

Liberal Economic Policy and its Effects on GDP Growth and Household Income per Capita

I consider the Economic Freedom Index as a primary factor connected with GDP growth and increases in household income. Many debates have arisen recently as to what effective macroeconomic policy actually is. While some are more free-market oriented, others have suggested more restriction oriented policies. I examine the validity of the free-market argument. As far as my methodology is concerned, I run a linear regression using GDP as the dependent variable and a host of independent variables that determine a country's economic freedom. These independent variables come courtesy of the Economic Freedom Index from The Heritage Foundation. We find that increases in economic freedom have beneficial effects on an economy as a whole, as well as individual's household income. It may be wise for developing countries to implement these principles, as there are numerous examples of countries

who have tended away from isolationism, and as a result raised their economic standing on the world stage.

Melissa Johnson, Katie Engle, and Emily Carranza

Faculty mentor: Lisa Ibanez

4Girls Recruitment Material; Measuring Accuracy & Effectiveness

The research aims to assess the effectiveness of the 4Girls recruitment material, in accurately depicting the values of the organization. These materials include pamphlets, videos, flyers, and social media platforms. To do so, interviews will be conducted with seven 4Girls board members, and the data will be compared with that of a focus group. The focus group will consist of professionals in the marketing field. The results of this study seek to measure the correlation between the intended message of the materials, in relationship to the qualities received by the audience. The purpose of this study is to provide 4Girls with the best practices required to properly engage their intended population.

Mitchell Johnson

Faculty mentor: Cinzia Fissore

Effects of Wildfires on Vegetation and Soil Structure in California

Historically, fires have engulfed extensive areas of California and throughout the U.S. and their frequency and intensity are expected to increase due to management choices and climate change. Although technology and containment practices have been developed and changed over time regarding fire suppression and management, fire continue to

have destructive effects on the environment. While large attention is often dedicated to the effect of fires on animal habitat and ecosystem services, the effect of fire on soil health and functions is often overlooked. Depending on specific intensity, fire can release sequestered C and N sinks from the soil into the environment, with potentially large repercussion on both soil ecology and climate. In this study, I simulated fire intensity by combusting two separate sets in two replicates of soils representative of the natural habitat of coastal CA at 120°C, 300°C, and 500°C that were subsequently incubated at 35°C with optimal moisture for 7 days. Measurements of headspace CO₂ concentration allowed to make extrapolations on labile C dynamics post-fire. I hypothesized that increasing fire intensity results in greater soil labile C losses. Initial %C was 1.4% for Turnbull and 1.9% for Turner. After combustion, %C was 1.5%, 1.3%, and 0.37% for Turnbull and 2.1%, 2%, and 0.67% for Turner (at 120°C, 300°C, and 500°C, respectively). My results show that low fire intensity results in greater microbial activity during the incubation period than medium and high intensity at both locations. During the incubation, CO₂ respiration deriving from microbial activity resulted in C losses from soils that were higher in correspondence to low intensity fire, indicating that low intensity fire leaves behind more labile C, which is rapidly utilized by soil microbes and it is an essential component of soil health. My study adds to the body of literature that describe the destructive power of high intensity fires and it emphasizes the importance of preserving soil health for the regeneration of the vegetation by increasing fire suppression and management.

Kimberly A. Jones, Alondra A. Chavira, and Kenneth E. Prehoda

Faculty mentor: Sylvia Vetrone

Determining how Lgl regulates the Par Polarity Complex

Many cells organize their membranes into discrete domains in order to accommodate cellular functions such as directed transport and differentiation. In animal cells, membrane organization or polarity is created through a group of proteins known as the Par Complex, which includes Par6 and aPKC (atypical protein kinase C). The Par Complex localizes to the apical membrane domain of many animal cells where it excludes substrates, such as the protein Miranda. Phosphorylation by aPKC causes proteins like Miranda to be removed from the apical domain, thereby restricting their localization to the basal domain. Lethal giant larvae (Lgl) is a tumor suppressor that is thought to regulate aPKC activity and localization. Loss of Lgl causes aPKC to lose its normal apical localization and to become weakly bound to the entire cortex. This project aims to determine how Lgl regulates Par Complex localization and activity. To determine if Lgl regulates aPKC directly or via another upstream protein known as Bazooka, we will observe the localization of Bazooka, aPKC, and Miranda in *Drosophila* neuroblasts (a powerful model system for studying polarity) using immunofluorescence and confocal microscopy. We will use both expression of RNAi and available mutant alleles of Lgl to visualize where these proteins localize in the absence of Lgl. This will allow us to determine how Lgl fits into this pathway so we can better understand the role this tumor suppressor has in establishing Par Complex polarity.

Frances Kelleher

Faculty mentor: Roger White

With Great Power Comes Great Destruction: An Economical Analysis of Terrorism in the MCU

This paper explores the relationship between terrorism and acts of superheroes and villains in the Marvel Cinematic Universe (MCU) to see if superheroes were a benefit or detriment to society. We used the Global Terrorism Index scoring system from the Institute for Economics and Peace to measure the impact that fights between powered individuals have on the fictional economy and compared the values to real world scores. The scoring system factors in the number of incidents, deaths, and injuries as well as the amount of property damage. We found that the MCU feels less of an impact from terrorism than most countries. Knowing this provides insight for the creators of movies within the MCU in how to make the fictional world more realistic and adds to the viewing experience of the movies.

Sopahn Kellogg

Faculty mentor: Rebecca Overmyer-Velázquez

Transnational and Transracial Adoptees; Finding Identity Among Strangers

Adoption remains an important aspect of daily life for many American families. Since before the 20th century, families have been created and have thrived within post-modern and modern society. Past studies on transnational children have made numerous connections between adoptees' identity development and their adoptive parents' involvement in their lives. Today, studies done on transnational/ transracial adoptions have started to decelerate. Historically, articles that have made it into circulation have focused on identity development and environmental impacts. In the past couple of years, newer articles have exposed the political disputes relating to the increased occurrence of transnational adoptions. These articles address concerns centered around the cultural identities of the adopted children becoming obsolete when entering their new adoptive culture. In this study, I will aim to fortify against this

misguided understanding of the retention of identity in these transnational and transracial adoptees. In the research, I will review the effects of these personal interactions between parents and children, to answer the question of, "what environmental/ parental actions affect the development of an adoptive child's identity" and "how much do these factors affect the adult lives of these adoptees?" This study will cover eight, 30 to 40 minute in-depth interviews with four adult adoptees, three females and one male, along with their primary parent, to help clarify significant developing moments within these adopted children's childhoods. From conducting this research, I can reaffirm previous research stating that increased communication and interaction with the child's country of origin can provide them with a stronger understanding of their identity and place in the world. Furthermore, the information gathered demonstrates how American cultural expectations have been used to shape these adoptees' adult lives through their social experiences in childhood. An unexpected insight that I found was the effect bullying had on building resilience within adopted children helping to reinforce cultural identity. The purpose of this study is to update the limited knowledge of transnational and transracial adoptees' identity development and share this information to a broader audience.

Alya Kingsland

Faculty mentor: Cinzia Fissore

Role of management and topography on soil organic carbon between grassland and cropland soils in Minnesota: a spectroscopic approach

Management practices and terrain attributes influence the structure and accumulation of soil organic carbon (SOC) in the landscape. In this study, we examined the role land management (native grassland and cornfields) and topography (eroding and depositional positions) have on SOC dynamics. Twelve soil samples were taken in Fillmore Co., MN from six sites at 0-5cm and 20-25cm depths. Specifically, four sites belonged to

cornfields under intense agricultural production, and two to undisturbed grasslands. We relied on SOC physical fractionation techniques (which separates a free light fraction (fLF), an occluded light fraction (oLF), and a mineral-associated heavy fraction (HF)), to detect changes in SOC distribution. We used Infrared Spectroscopy (FTIR) to qualitatively and semi-quantitatively assess SOC chemical characteristics across fractions, management type, and topography. We selected diagnostic peaks for aliphatic moieties (2850-2855 cm^{-1} and 2910-2930 cm^{-1} : Band A) and aromatic ones (1410-1420 cm^{-1} , 1620-1630 cm^{-1} : Band B). Analysis was conducted on Band A: Band B normalized for C content. Previous ^{13}C analyses indicate that two of the cultivated sites are depositional (slope 2.8% to 3.9%), and two are eroding (3.2% to 8.1%). Grasslands had slope ranging 3.9% to 27.2%. The fLF is a good indicator of organic matter (OM) decomposition, and since grasslands accumulate more SOC near the surface than agricultural soils, we expect that more aliphatic moieties will accumulate in grassland soils compared to cultivated soils and that this will be visible at both depth increments. Greater peak intensity in the 1630 cm^{-1} region was observed for the oLF fraction than in fLF in both management types, likely indication that more decomposed OM accumulated in this fraction, in part favored by aggregation-induced incorporation of microbial metabolites. The HF showed greatly diminished aromatic peaks in both management types, due to decomposed material in mineral-associated sites. We observed evidence of greater labile C accumulating at cultivated depositional sites, likely attributed to addition of material from eroding sites. At eroding sites, slope significantly affected the quality of C in the oLF, which had greater peak intensity for aliphatic and aromatic moieties with lower slope percent. My results show how intensive agriculture negatively affects SOC accumulation and that slope and erosion can exacerbate the effects of agricultural practices.

Alya Kingsland

Faculty mentor: Roger White

Examining the Possible Existence of an Environmental Kuznets Curve Over Different Time Periods

The Environmental Kuznets Curve (EKC) hypothesis posits that the relationship between economic growth and environmental exhaustion follows an inverted U-shaped curve. This is based on the notion that, during the early stages of development, income per capita and pollution per capita both increase; however, after reaching a certain level of average income, pollution per capita begins to diminish as average income continues to rise due to societal preferences for a cleaner environment. Thus, somewhat contrary to intuition, economic growth may be essential for ecological protection. The EKC hypothesis is a general statement and, thus, is not limited by the form of pollution or the unit of observation. The hypothesis should apply across countries and across sub-national units such as states or cities. This study tests the EKC hypothesis by examining the relationship between national carbon dioxide (CO₂) emissions per capita and Gross Domestic Product (GDP) per capita for 169 countries during the period from 1820 through 2016. The dataset consists of annual series for CO₂ emissions per capita, GDP per capita, and GDP per capita squared - the function that allows for an inverted curve. Overall, given results of studies that have examined more recent time periods, we expect to see an inverted U-shaped curve and confirm, generally, that the EKC hypothesis holds. It is also expected that the EKC will vary across time periods depending on the level of industrialization, the impact of war (i.e., we assume the EKC relationship may vary between defeated and victorious nations), and other historically significant events that may affect GDP per capita and CO₂ emissions per capita. Thus, the point in time when the presence of Kuznets' proposed relationship is first found in the data remains an open empirical question. Using econometric techniques, we identify the time period when the EKC is first observed in the data. More specifically, our lengthy reference period allows us to

ascertain if an EKC was present during the 19th century, a time when few countries were very industrialized. Additionally, we are able to consider other factors and events, such as the Industrial Revolution and World War II, as potential sources of empirical regularities.

Alya Kingsland

Faculty mentor: Roger White

Environmental Kuznets Curve Analysis of U.S. State-Level Carbon Dioxide Emissions

The paper examines the relationship between state-level carbon dioxide (CO₂) emissions and state-level economic growth in respect to the Environmental Kuznets Curve (EKC) hypothesis. The purpose of this study is to assess the existence of the EKC at the state-level and to determine what sector within the economy is responsible for the most emissions. Sectors include: commercial, residential, industrial, electric power, and transportation. Econometric analysis is used to determine the applicability of the EKC hypothesis across the 50 states of the U.S., using data from 1997-2015. The dataset consists of CO₂ emissions per capita, gross state product (GSP) per capita, and GSP per capita squared - the function that allows for an inverted curve. Findings show an inverted U-shaped curve for each economic sector, confirming that the EKC hypothesis holds for a state-level analysis of economic development and CO₂ emissions. Additionally, the results indicate varying turning points

for each curve, allowing us to identify emission heavy sectors and proposing institutional solutions tailored towards individual sectors.

Maddie Kirkwood

Faculty mentor: Jose Orozco

Pinpointing Change: An Examination of American Influence in Mexican Immigration Policy and Enforcement from the 1990s-Now

In 21st century America, immigration and the southern border are a hot button issue. The Trump era in America has exacerbated the divide across the nation. The southern border is a key part of America today, spanning 1954 miles and linking the US to a country that is relied on heavily. This border is shared by two countries, but the decisions surrounding the divide have been primarily made by one country, the United States. America forced the border to cross many native Mexicans in 1848 and have been dictating the policies that surround the divide ever since then. Mexico has a voice as well as immigration policies and enforcement that should no longer be overlooked when discussing the United States-Mexico border and immigration law and policy in general. My research is focused around the relationship between the United States and Mexico, specifically on immigration policy and enforcement in the 1990s until present day. I will specifically examine if the United States has always had a role in shaping Mexico's immigration policy and enforcement. My research is driven by the recent offer of \$20 million dollars by the United States to Mexico, this money is supposed to be used for Mexico to enforce their immigration policy and deportation along their southern border. Has the United States always tried to pay their way into Mexican immigration policy or is this a new concept? Tracing the two countries interactions starting in the 1990s with Operation Gatekeeper, moving to the 2000s with the Mérida Initiative, then to present day with the Trump

administration and their relationship with Mexico. My research aims to uncover if the United States has been pushing Mexico for their own agenda or if Mexico has been creating and enforcing policy through their own needs.

Amanda Lane

Faculty mentor: Rebecca Overmyer-Velázquez

Implementations of Anthropology in Museums

This research aims to explore how anthropology is used as a framework for cultural curation in museums, as interpreted by museum or cultural specialists. Current museum studies literature focuses widely on improving museum-indigenous relationships, agency, decolonization, and repatriation. It has not been widely studied how curators think of their work and their role, and an empirical study of this information could reveal some alternative approaches to cultural curation for other museums to implement. Through semi-structured interviews with seven museum professionals or academics, this work uncovers the museum professional's rationale behind their exhibition processes and the role that anthropology has in these decisions. While current anthropological ethics aim to alleviate unequal power dynamics between the anthropologist and indigenous persons, some museum professionals believe that anthropology often struggles ethically with indigenous relationships. Many of these professionals, especially those educated in anthropology before the 2000s, have this outdated knowledge of what anthropology is, and expressed some reservations about anthropology as a discipline, yet their methodologies reflected concepts and theories of modern anthropological ethics as they are taught in higher education today. A larger interview pool including Smithsonian museums could add significantly to this research, since many museum professionals look to the Smithsonian for

advanced processes and approaches. Overall this research reveals how successful cultural programs are affected by the implementation of anthropology in the research, planning, and preservation processes of museums, and can influence other museums to engage more actively in anthropology to improve their cultural processes.

Sebastian Lazarte

Faculty mentor: Erica Fradinger

The Effects of Carbohydrate Sources and Aerobic and Anaerobic Exercise on Blood Glucose Levels

The objective of this study was to understand how blood glucose levels fluctuate as a result of carbohydrate source and exercise activity. The effect on a carbohydrate source was observed by measuring blood glucose levels over one hour after consuming one serving of a glucose tablet, one serving of bread or one serving of chips. Glucolet test strips and a Glucometer were used to measure blood glucose levels. To determine the effect of exercise in blood glucose levels, the subjects consumed a glucose tablet and proceeded to exercise by either jogging a 400m lap (aerobic) or sprinting 4x100m laps (anaerobic). The effect of anaerobic and aerobic exercise on the subjects' glucose levels would increase initially and continue to drop. Each source of carbohydrate resulted in different peak times in which blood glucose reached its maximum after exercise. Aside from the control, the glucose tablet had a peak time of 30 minutes, the serving of bread had a peak time of 45 minutes, and the serving of chips had a peak time of about 45 minutes as well. The anaerobic exercise showed that after the initial peak of blood glucose, there was another gradual increase as opposed to the aerobic exercise, which gradually declined after the first peak. This study allows for further evaluation of the risk high blood glucose levels and how cardiac diseases develop.

Rachel Lazerson and Dr. David N. M. Mbora

Faculty mentor: David Mbora

Does the macronutrient given to ants affect the number of living individuals in a colony?

The control colony, which was given protein and carbohydrates, will tend to have more living individuals than the colonies only with carbohydrates and carbohydrates colonies will have more living individuals than the colonies with only protein. The ants with only protein will struggle to live and therefore have more individuals dead at the end of the experiment. The groups with proteins may produce more larvae than the carbohydrate groups, while control will produce the most larvae. The significance of this research is that it shows what happens to ant colonies when the nutritional needs cannot be met. We tested these hypotheses by exposing the control group to proteins and carbohydrates, the protein group to only protein and carbohydrate group to only carbohydrates. For the protein source, we used a half a cricket and for the carbohydrate source, we used approximately 0.16g of apple. The food was changed twice a week. We exposed the ants to these conditions for nine weeks. We compared the number of ants alive, the activity rate, number of dead ants and number of larvae present under all three treatments. There were significant results between all three groups. There was significant difference between ant colonies and activity rate, ant colonies and number of living ants, ant colonies and larvae produced, ant colonies and number of larvae divided by number of ants alive, and ant colonies and the sum of larvae produced and number of ants alive. These results show that when ant colonies' macronutrient needs cannot be met, it affects the entire colony.

Max Lepley

Faculty mentor: Roger White

Feasible Least Squares Regression and the Income/Happiness Relationship

This paper tests the relationship between an increase in real income and happiness levels of individuals from 90 different countries from the years of 1994 to 2014. The data for all of the variables: scale of income (incrank1), date (year2), dummy variable for importance of family (famimp3), dummy variable for importance of friends (friendimp4), dummy variable for importance of leisure time (leisimp5), dummy variable for importance of work in life (workimp6), dummy variable for importance of religion (relimp7), dummy variable for sex (male8), age (age9), dummy variable for marital status (married10), number of children (children11), and dummy variable for employment status (employed12) is taken from the World Value Survey. I used the original least squares regression technique multiple times for different variations in my original regression equation. Through a simple test for heteroscedasticity and multicollinearity, it is found that heteroscedasticity and serial correlation is present in the model and so the feasible least squares regression technique must be used to correct for these errors. Overall, my findings were as expected, the income variable was positively correlated, but had a very low coefficient value indicating that income will improve happiness only up to a certain point, but it is other aspects of life that spur true happiness. For example, the health and family importance variables had the highest coefficient variables which means these had the largest effect on happiness. The rest of the variables were all positively correlated but didn't do much to influence happiness. Employment status was the only negatively correlated variable.

Max Lepley

Faculty mentor: Roger White

The Emergence of China and India and their Effects on Global Trade

This paper will discuss the effect of the emergence of China and India as global trading powers on the global economy from the years 1960-2018. Data will be collected from the World Bank as well as various pertinent research articles and journals. Specific variables of interest that will be used as a comparative tool will be net exports, FDI, exchange rates, GDP per capita, and comparative advantages. China and India have a comparative advantage in labor intensive goods, and is likely from the years of 1960-1980, before their economic booms, China and India will have little effect on global trade. These countries will also specialize in exporting labor intensive goods. It is expected that as the 90s approach, the increase in industrial capabilities and economic development will lead to an increase in comparative advantage for capital intensive goods. It is expected that the traffic of global trade will increase and FDI into each country will also increase. The value of each country's currencies is likely to increase as well as GDP per capita relative to the rest of the world.

Tiffany Livoti

Faculty mentor: Alvin Alejandrino

Effects of Ammonia and Temperature on *Chlorella vulgaris* and their Environmental Implications for Freshwater Ecosystems

The world we live in today consists of countless pesticides and fertilizers, compensating for our depleted and dying land. Ammonia is a chemical that is commonly found in pesticides and other agricultural products, which all too often seeps into water systems worldwide. This causes a multitude of ecological problems, especially when combined with a highly fluctuating global climate. The study examines the varying effects of

different ammonia concentrations and temperatures on freshwater algae *Chlorella vulgaris*. The study then analyzed its findings with examples of real life ammonia waste in freshwater ecosystems, and the problems that result. Twelve different environments were used to study the algae, varying in temperature and ammonia concentration. This was set up using 12 50 mL beakers, each filled with about 20 mL of *Chlorella vulgaris*, with NH_3 concentrations of 0.0M, 0.01M, 0.05M, and 0.1M. The temperatures used were 18°C, 25°C, and 33°C. Each of those temperatures were separated into four 50 mL beakers, in which a different concentration of NH_3 was added to the algae and an additional 25 mL of water. The temperatures were based off of the average 25°C living environment that this species typically thrives in, and possible temperature fluctuations that could be found in real life scenarios. This would determine the threshold at which *Chlorella vulgaris* can no longer live, and provide insight for future environmental initiatives. Using a dissolved oxygen meter, it was determined that 25°C was in fact the optimal living condition for *Chlorella vulgaris*. Anything slightly above or below this temperature was found to be lethal for the algae, coinciding with the fact that this species is highly temperature-sensitive. Based on the NH_3 concentrations that were used, temperature generally had a greater effect in determining the mortality of the algae than NH_3 concentration did. The possible explanation for this result is that the NH_3 concentrations were too low to make any statistically significant conclusion, and the temperature fluctuations may have been relatively too high, leading to fatal conditions for the individuals. The findings from this experiment were then analyzed and compared with what is currently happening within the United States, seeking to emphasize the importance of limiting waste within freshwater ecosystems.

Gabrielle Lockwood

Faculty mentor: Jonathan Burton

Fictions of The Renegado, Fictions of the Self: The History of Sexuality and Early Modern Formations of Racial Identity

Michel Foucault's *The History of Sexuality* has been an important work to scholars of all disciplines for its work in identifying how sexuality functions as a system of power. To early modern scholars, however, his work, particularly his historical claims, have been the subject of critique. What they do by focusing primarily on the historical claims of his work is essentially refute many of his philosophical claims. However, it is essentially more productive to focus on the interdisciplinary power of his work, as it oscillates between historical and philosophical workings. I suggest including play analysis in order to increase the productive understanding of how Foucault's philosophical claims operate in a discourse of sexuality and within the frame of cultural understanding. This finds its validity in the understanding that literary works, particularly plays, offer a better understanding of the complex cultural perspective of the early modern period. This is especially true because plays are essentially performative, and either represent the cultural expectations of the audience they are performed for or challenge the permeating ideology. With this in mind, we see how Philip Massinger's *The Renegado* fits into the analysis of Foucault's theories. The play presents a multiplicity of characters, each who represent a new complication to Foucault's simplifications of race and sexuality and add insight to the multiplication of discourses that existed within the early modern period.

Yolanda Lopez and Agnes Cosico

Faculty mentor: Ralph Isovitsch

Relative Anti-Inflammatory Properties of Cayenne Pepper

Capsicum annum, commonly known as cayenne pepper, is a medical herb that is traditionally used in Chinese and Ayurvedic medicines, as well as for culinary purposes. C.annum is used to prevent pain messages, in addition to stopping muscle and joint pain. In this experiment, the purpose is to measure and compare the anti-inflammatory properties within organic cayenne pepper to that of aspirin. In order to be able to make this comparison, extractions of dried, ground cayenne pepper in both cyclohexane and ethanol were obtained to perform TLC, GC-MS, and a hen egg albumin denaturation assay. The solvents chosen for the extracts have different polarity and were selected in an attempt to isolate the beneficial compounds in cayenne peppers.

Tanya Lugo

Faculty mentor: Sylvia Vetrone

Exploring the Anti-Proliferative Effects of Dandelion and Vitamin D's on Breast Cancer and Chronic Myeloid Leukemia

With the number of cancer diagnoses increasing every year, there has been an expansion in efforts to find better treatments and a cure, as many patients require further medical care to address cancer treatment-induced side effects. Since methods such as radiation and chemotherapy target cells to kill them, the non-specificity of the treatment is dangerous towards many healthy untransformed cells. Consequently, research in alternative

medicine is on the rise to assist and advance current medicine in order to help prevent side effects and cytotoxicity. Previous studies have shown Dandelion root extract (DRE) to induce apoptosis in colorectal cancer and chronic myelomonocytic leukemia. Vitamin D has also been demonstrated to drive acute myeloid leukemia cells to differentiate and induce apoptosis in breast cancer cells, MCF-7. Highly differentiated cancer cells do not migrate as freely and are poorly malignant, when compared to an insufficiently differentiated cancer cell, slowing down the developmental process of cancer. Therefore, this study aims to investigate the ability of Vitamin D and DRE to induce anti-cancer properties on non-adherent cancer (CML) and adherent cancer (MCF-7). We hypothesize that these natural remedies drive differentiation and induce death in these cancer cell lines. Exposing cells at different concentrations of each agent (15%, 30%, 45%, and 60%) and using a Cell Viability Trypan-blue Exclusion assay and MTT Cell Proliferation assay, our results show that DRE was effective in decreasing cell viability in MCF-7 cells when compared to the control group. DRE had the same effect on the CML cells with a significant decrease in viability for the 30% concentration. Interestingly, we found that although Vitamin D efficiently killed the CML cells with a decrease in viability and proliferation, it drove MCF-7 cells to proliferate at concentrations of 15% and 30% without pushing them towards death. These results suggest that DRE can be very effective in treating both types of cancer, and Vitamin D can be useful in treating non-adherent cancers, but may not be entirely efficient in treating adherent cancers. Further research in these natural reagents could lead to an advancement in current contemporary cancer treatments.

Helen Macdonald

Faculty mentor: David Mbora

Arthropod Abundance in Organic and Inorganic Farms

Recently, there has been a major push for organic farming as a way to promote ecological sustainability, a major part of which is abundance of arthropods. The goal of this research was to determine if there were differences in the abundance of arthropods in organic and inorganic farms. I predicted that when taking pest quantity into account, the arthropod abundance in the organic farm would be lower, resulting in farm types having the same abundance, and possibly having a similar species richness, as excluding the pest would lower richness as well. The question of abundance had an emphasis on servicing guilds, specifically: bees, beetles, and lepidoptera. I sampled three plots with five pitfalls each, in an organic and inorganic farm, both located in the San Gabriel Valley. After three days I collected the samples, and identified the arthropods within. I determined that there was not a difference in abundance between farm types (ANOVA, $F= 5.04$, $P= 0.53$). I then looked at the difference in abundance between plots within the farm. There was a difference in abundance between the organic plots but not the inorganic (ANOVA, $F= 6.6806$, $P= 0.00$). Species richness in the organic and inorganic farms was different (ANOVA, $F= 5.2211$, $P= 0.011$). There was no difference in species richness between plots in the organic or inorganic farms (ANOVA, $F= 4.8731$, $P < 0.00$). As for beneficial guilds, there was a trend that the watermelon plot in the inorganic farm had a higher abundance of bees than the organic, due to the inorganic watermelon flowering, increasing bee activity. Beetles were found in large amount for both farms, though it was highest in the broccoli and spinach plots. Not enough lepidoptera were collected for interpretation.

Helen Macdonald, Nick Bakken-French, Esmeralda Martinez, and Weston Dewitt

Faculty mentor: Cheryl Swift

An Accidental Environmental Ethic?

Underlying in the teachings of Buddhism it seems as though there is an Ecological Ethic, a moral principle that promotes biodiversity, a key component for the stable and health of ecosystems. This is demonstrated by the promotion of living a middle path, taking only as much as is needed. But although Buddhism idealistically seems to have an ecological ethic, is this actually practiced by Buddhists? An observational study was done over Jan-Term in Myanmar to determine if iconography of animal diversity within sacred spaces had a positive correlation with biodiversity of plants outside of them; showing that temples were promoting biodiversity. All animal depictions seen in the temples were recorded, as well as an average of different species, used to represent diversity, seen in transects sampled. Once graphed with two different y-axes, one with values for the iconography, and one for species richness of plants, for each sacred space visited on the x-axis, there was no correlation seen between the two factors. This information was then related to observations in regards to the neglect of locals, most of which are Buddhist, towards the environment. Citizens were seen leaving large trash piles on the side of the road, as well as burning trash almost everywhere visited. With consideration of these practices and the lack of correlation of the statistics calculated, although it seems that Buddhism unintentionally teaches an ecological ethic, it is not practiced by local Buddhists.

Aaron Machado

Faculty mentor: Kristin Smirnov

Our Feelings Toward Limited-Time Events

This study focuses on consumer feelings toward limited-time events. Specifically, this research aims to analyze the impact of limited-time events on the consumer, with analysis of Disney special events. How does Disney utilize limited-time events to attract guests? What are they doing? What are they changing? What are they offering? The goal is to analyze what Disney does to their parks; to find out if they offer seasonal entertainment, make physical alterations to their rides and attractions, add limited-time decorations, limited-time food offerings, and more. A subsequent question, in addition, is: How are people affected by their ability to attend these limited-time events? Along with Disney having these special events, how is it actually impacting the consumer behavior of individuals. Do consumers have a desire to attend? Do consumers feel a sense of urgency? Do consumers feel like they are missing out? The theoretical lens of this study focuses on marketing theories such as sales promotion, word-of-mouth advertising, and the fear of missing out (FOMO). This study analyzes Disney as a whole and their Southern California theme parks, as well as their local competition. With regards to the research process, qualitative and quantitative analysis was conducted in this study by the form of observation and a survey. Photos were taken and then coded by visiting the parks. The survey was created on Google Forms and disbursed to respondents on Facebook groups and Reddit pages. The survey was live for one week and received 453 complete responses. Through this study, significance was found in a sense of urgency, fear of missing out, and ability to attend events in Disney consumers. This research has ultimately shown that Disney special events create a sense of urgency and fear of missing out in consumers.

Mia Maglinte

Faculty mentor: Anne Sebanc

Children's Emotion Display Rules According to Gender

Research shows that parents have an active and influential role in the gender socialization of their children, by teaching them both directly and indirectly about what society believes to be appropriate emotion display rules. This paper will review 20 empirical studies that contain information about how and why emotional socialization happens, children are seen to be socialized in expressing their emotions in ways according to their gender. Most of the studies contain elements that show boys expressing their emotions more through anger than girls, or than sadness or fear. The research explores the fact that from young children to adulthood, females self-report showing feelings of sadness and fear far more than males do. Overall, the studies reviewed and explained, through data, the way in which children from a young age are encouraged to displaying their emotions according to how society expects them to act, and the point that this can lead to an unhealthy sense one's self and how to deal with what they are feeling inside. Parents should be encouraged to try to teach sons that it is sometimes healthy to be vulnerable and daughters that sometimes it is okay to be angry. Ways of reversing the norms that society has placed on the shoulders of its youth about what to feel and what not to will be examined.

Melanie Maldonado

Faculty mentor: Anne Sebanc

Effects of Bullying on the Social and Emotional Development of School Age Children and Adolescents

This paper discusses the effects that bullying can have on a children's social and emotional development. More attention needs to be brought to this issue that is currently impacting millions of school-aged children world-wide. Bullying can increase the chances of developing mental health and self-esteem problems. Victims of bullying are more likely to be at risk for suicidal ideation, with research showing that girls are more susceptible to these effects than boys. Overall research shows girls are more affected socially and emotionally by being victims of online and traditional bullying. In addition, boys are still, but less affected by traditional forms of bullying. Suicide, suicidal ideation, and depression are common repercussions that stem from children being victims of bullying whether it be traditional bullying or cyberbullying. Future research needs to be aimed at the prevention of bullying in order to make schools across the nation safe for all children.

Samantha Maldonado, Annalisa Ayers, and Annika Campbell

Faculty mentor: David Mbora

The species diversity of insects at Whittier College and Earthworks Community Organic farm

In this study we asked the question, how do the species richness and diversity of insects, and other arthropods, on the campus of Whittier College compare to an organic farm? The Whittier college campus grounds are akin to an inorganic farm, where pesticides and artificial fertilizers are routinely used. As such, we surmised that it would be informative to compare the community of insects found there to an organic farm. Most insects are primary consumers whose abundances and species richness are dependent on the amounts and variety of plants. Therefore, our hypothesis was that the organic farm would have a higher

abundance and wider variety of crop plants types which would support many species and individuals. In contrast, the greater density of people on the Whittier college campus acts as disturbance to the insects, which reduces their abundance and species richness, despite availability of plants year round. Thus, we predicted a higher species richness and diversity of insects on the organic farm. Within the farm, we predicted that the Orchard area, which has a greater abundance and variety of plants, would have the greatest abundance and species richness, but that the watermelon, broccoli and spinach fields would have the lowest because they are all simpler habitat types. We applied a stratified sampling framework and collected the insects at each location using standardized pitfalls. Plastic screw-cap specimen jars - low form size, 236 ml in capacity - were buried into the ground with the rim level with the soil surface and left in the field for four to six days. Upon recovery from the field, the accumulated arthropods were cleaned and sorted, then identified using taxonomic keys to level of order. On average, we caught 72 animals per pitfall in the organic farm but in the watermelon plot, we caught twice as many individuals. The organic farm had an average of 12 species of insects across all plots sampled, and an average Shannon diversity index of 1.5. Within the organic farm, the watermelon plot had the highest number of species at 11, and an average Shannon diversity index of about 1.75. Thus, our prediction of a greater diversity of insects in the Orchard was not supported.

Richard Manjarres

Faculty mentor: Roger White

Scandal and Mismanagement in the FHA's Section 235 Mortgage Insurance Program and the 1973 Nixon Housing Moratorium

Created in the 1968 Housing Act, the section 235 mortgage insurance program helped low income borrowers achieve home ownership by allowing them to take out government-insured mortgages with no money down and subsidized interest payments at rates as low as one percent. By January of 1974, ten percent of the nearly half a million mortgages insured under this program had been foreclosed or assigned to the Federal Housing Administration (FHA) for defaults, hundreds of indictments had been made including numerous indictments of FHA employees, and a luridly titled book had been published on the matter. Still a subject of debate today, this new research attempts to clarify the role of and reasoning behind the Nixon administration's 1973 housing moratorium that put a halt on section 235 and other federal subsidy programs for home ownership.

Richard Manjarres

Faculty mentor: Roger White

Effects of the Federal Reserve's unwinding of MBS assets on purchase rates for homebuyers

We examine the effects of the Federal Reserve's unwinding of agency-issued mortgage-backed securities (MBS) held on their balance sheet on the national conforming mortgage rate for homebuyers. Prior research has looked at the build-up and large-scale purchases of MBS by the Fed during the multiple quantitative easing programs from 2008 until the tapering of the purchase programs in October 2014. This new research attempts to analyze the effects of the Fed's unwinding from October 2017 to October

2018, including data from the time period where the balance sheet was kept level from October 2014 to October 2017. We find significant results using multiple multivariate time-series linear regression models which are in line with realistic changes in monthly agency MBS issuance and Fed MBS purchases. These results suggest that the Fed's monthly purchases of MBS and the level of the Fed's MBS balance sheet do affect the concurrent conforming mortgage rate for homebuyers when controlling for other factors affecting interest rates such as the Federal Funds rate.

Esmeralda Martinez

Faculty mentor: Rebecca Overmyer-Velázquez

Latino Religiosity: The shift from the Catholic religion to spirituality across Generations

Catholicism is deeply embedded in the roots of Latino culture as many people are born and raised Catholic and practice the Catholic faith. In previous studies, it has been found that in comparison to younger generations of Latinos, the older generations of parents and grandparents tend to stay closer to church doctrine and be more involved with the Catholic church. They were found to have better mental health and overall well-being because of their religious involvement. However, there is little to no literature regarding how this religiosity directly affects Latino youth. I believe that today's generation of Latino youth is very different and unique compared to the previous generations of their parents and grandparents. One of the ideas that has been found to be the most challenged by the youth is the concept of religiosity specifically involving Catholicism and its influence on Latino culture. What interested me is the shift of my generation's perception of Catholicism and how they have either conformed to it, completely strayed away from the Catholic religion in its entirety or if they are more spiritual, but not necessarily

religious. Latino youth are becoming more spiritual in the sense that they are increasingly adopting certain parts of Catholicism, but not everything in church doctrine. A growing percentage of the population are instead becoming more spiritual through the means of connecting to mind and body first without having a direct relationship with the Catholic religion. My study aims to find what causes those differences across generations and look at the ideology that may have caused that shift. The data I collected consists of four in-person interviews and 100 surveys with participants ages 18 and older. The questions asked in my survey and interviews cover certain aspects of this religiosity and whether or not Catholicism has had a significant impact on people's lives. Preliminary results of my study suggest that Latino youth are increasingly becoming more spiritual instead of religious in comparison to their older family members changing the narrative to one of the main parts of what it means to be Latino. My findings show that Latino youth are instead taking out certain aspects of Catholicism or leaving it behind entirely to adapt to and benefit their personal lifestyles.

Bryan Martinez

Faculty mentor: Roger White

Crime: An Economics Bottleneck

This paper examines the relationship between crime and the performance of an economy. Using a variation of the production function, we include the traditional variables that explain GDP growth (i.e., output of the previous year, labor, education, investments) while also integrating crime related variables to the model. By using data provided by the World Bank, the United Nations Office on Drugs and Crime, and the Penn World Table, we can analyze the effects that crime has on the growth and performance of an economy. Significant crimes such as homicides, weapon

trafficking, drug trafficking, corruption, and financing terrorism were chosen to be included in the model. Annual GDP growth per country will be analyzed compared to the independent variables of GDP growth from the prior year, labor, education, and investment. By also mapping crime statistics and metrics, it will determine the relationship between crime and change in output. In order to test the significance of each crime, each crime will be independently added to the production function. After running an analysis on the data, it is expected that crime will have a negative effect on GDP growth. By applying economic theory, we hypothesize is that homicide and corruption will have a more significant impact on GDP growth.

Lyla Matar

Faculty mentor: Joyce Kaufman

Change in EU Migration Policy Post Syrian Refugee Crisis

How can we better understand the shift in EU policy, so as to offer insight into practices that will deal with the situation at hand and prepare a framework for crises in the future? Prior to 2014, the European Union was regarded as progressive in its intake of migrants and asylum seekers, with policies that seemed to reflect fair and comprehensive practices. But with the Arab Spring (2010-2012) resulting in unprecedented violence and prosecution, particularly in Syria, the flow of refugees and asylum seeker to EU countries was unparalleled in number; the crisis was so expansive that some argue it is the worst in modern history (Berti 2015; Ela 2015). Due to this unexpected spike in migration and lack of preventative measures taken to abate it, many European countries found themselves financially and structurally unprepared. To a certain extent, even EU bloc policy was inadequate when dealing with the sheer numbers of asylum applicants. Now, five years later, an evident shift has taken place in EU

immigration policy. With borders closing, asylum applications being denied, and measures to prevent entry into the EU, the general tendencies of these shifts have been reactive. With the violation of national sovereignty in question when dealing with multinational policies, polarization of the ideals of immigration practices have led to discussion about what is adequate for the protection of refugees and sustainable for European host countries. While drawing from academic sources and literature published by NGOs, the EU, EU subsidiary migration bodies, and individual nations, this research will track major shifts in EU immigration policy through its various stages before and during the Syrian Refugee Crisis. The crisis exacerbated the tensions among countries with largely differing views of immigration; tracking the changes made to general EU immigration policies as a result of the topic of national sovereignty is key to understanding the shifts that have occurred over the past five years. The observation of these changes in policy allow the assessment and construction of an alternative framework that encourages the formulation of policies that can best handle the situations at present and prepare for crises in the future.

Lexie Meanor

Faculty mentor: Lana Nino

Student Loans: The Risk of Defaulting by School Type

With the student loan debt rising to \$1.5 trillion dollars in the United States, the student loan debt crisis has become very serious and gained a lot of attention socially and economically. This paper focuses on student loans and the default rates of schools participating in the Title IV student financial assistance programs throughout the United States. I explore connections between the type of schools and their default rates. Data from the Federal Student Aid, an Office of the U.S. Department of Education, is

used to examine trends by public schools, private schools, and for-profit schools. The data consists of information on borrowers who enter repayment on Federal Family Education Loans and Federal Direct Loans during the particular fiscal years of 2013, 2014, and 2015. I find that statistically significant higher cohort default rates are associated with for-profit colleges and universities over public colleges and universities. Similarly, I find the difference in mean cohort default rates between private institutions and public institutions to be significant given the rejection of the null hypothesis after performing a t test. I examine trends over the three fiscal years and conclude that public colleges and universities have consistently increasing mean cohort default rates. Further, I describe why students attending for-profit colleges and universities have a significantly higher risk of defaulting on federal loans than those at private and public colleges and universities through literature and past and present policies and theories. Lastly, I discuss what can be done on a personal level and public level to contain the growing student loan debt in the United States.

Lexie Meanor

Faculty mentor: Roger White

A Reflection of the Health of the United States Economy through Housing Prices

The United States puts a large focus on unemployment rates and Gross Domestic Product as measures of the health of the economy. Often, housing prices are overlooked as a reflection of the current strength of the economy but prove to be a useful tool. Data from realtor.com along with data from the Bureau of Labor Statistics is used to examine the correlation between housing prices and unemployment rates as well as data from the Bureau of Economic Analysis to analyze the relationship with Gross

County Product. I perform regression analysis with housing prices as my dependent variable and unemployment rates as my independent variable along with multiple control variables to understand the impact of unemployment rates on housing prices. I use t-tests to determine statistically significant differences between the different counties in the United States. I find a negative relationship between unemployment rates and housing prices. Also, a higher Gross County Product per capita indicates higher housing prices in that same county. I find demand for housing to decrease when there are higher unemployment rates and demand to increase when there are lower unemployment rates. Therefore, I find the supply for housing to increase when there are higher unemployment rates and supply to decrease when there are lower unemployment rates. Examining housing prices as a reflection of the United States economy gives us an easily understandable result that can ultimately be used to predict housing prices in the future.

Amanda Melodia

Faculty mentor: Roger White

Debt to GDP Ratio as Crisis Recovery Determinant

A measurement of the well-being of a country's economy can be determined by its debt to GDP ratio. In underdeveloped countries, the balance of economic stability is more easily lost at lower levels of debt to GDP ratios, and recovery is likely to be a greater struggle. When analyzing the relationship between this ratio and the severity of a sovereign debt crisis, we are then able to create a model to predict how long an underdeveloped country will remain in a sovereign debt crisis. To calculate the most accurate model, other variables that can help determine the length of a debt crisis will be considered, such as histories of previous debts and aid involvement of the International Monetary Fund, which is a

source that provides this data. Another variable that must be considered is the GPC, or the gross domestic product per capita, of the underdeveloped country at the beginning time of crisis, which is data that can be extracted from the World Bank. The independent variable of the debt to GDP ratio, as a percentage, and the dependent variable of the length, in years, of a sovereign debt crisis are information that also can be provided by the IMF. The time a country is in debt will be determined by how long it took for the country to achieve the same debt to GDP ratio the country was at before the debt crisis began. The relationship between an underdeveloped country's debt to GDP ratio and the years it takes for the country to recover from a sovereign debt crisis is positive, implying that the larger the debt is in a smaller economy, the longer the sovereign debt crisis will last.

Aaron Mendoza and Raymond Johnston

Faculty mentor: Ann Kakaliouras

The Overlooked Problem of Transitional Stress for Military Service Members

To the average eye, veterans are busy people. However, veterans know and understand the reason for needing to keep busy. While in service, the military always had something for their members to do, not by choice but because there was always something that needed to be done for mission accomplishment. Transitioning out of active duty, veterans still find the need to keep busy, especially in a slower school-paced or safe work environment. Students, teachers, managers, and coworkers always ask, “why can't veterans just slow down?” To them, and other non-military, it is simple to let things go and not worry. For veterans, however, it is difficult. They are trained to have discipline, to be and give it their best, to always have a plan for anything, and to never become complacent. As much as veterans would like to let everyone know and understand the

struggles they deal with on a daily basis, most people would not and could not fathom what it is to be a veteran transitioning back to a civilian life. There are those that, indeed, do try and want to understand, however they cannot. For these reasons, veterans are stuck with having to keep to themselves, and live their life and experiences in silence and hope that they will run into another veteran who will understand. There are many that would say and think that there are people and places that any veteran could go and talk with these transitional stresses that they have, however, they would be wrong. Post-Traumatic Stress Disorder is an extremely serious disorder that should never be taken lightly; much of the country believes that PTSD is the main fight. Many veterans that have the same transitional stresses that potentially come with anxiety, depression, and other behavioral difficulties. These same problems can affect those diagnosed with PTSD even more, as well as, causing mental harm with those that are not. Our aim is to find a way to include a mental transitional stress awareness and help smaller, private schools have a better understanding, a positive and effective manner to aide their student veterans.

Billie Mendoza

Faculty mentor: Erica Fradinger

The Effects of Domestication on *Anomura paguroidea*, the Domesticated Hermit Crab vs the Wild Hermit Crab

This experiment focuses on the adverse effects of domestication on *Anomura paguroidea*, working to specify how the change in environmental factors from the wild and in captive, such as Ph, salinity, and temperature, has changed their behavior, as judged by a comparison of recovery times and frequency of pinching. This was executed by observing two colonies of hermit crabs, one found at the tide pools of

Cabrillo beach and the other bought from Pet Smart. The crabs from Pet Smart being placed under constant conditions while the wild group faced a variable environment. Between the two environments, significant differences were found in pH (P-value = 0.026), salinity (P-value = 0.0000491), and temperature (P-value = 0.0401). After a span of three weeks it was found that a positive correlation existed between pH and the frequency of pinching ($R^2 = 0.0422$), as well as with salinity and the frequency of pinching ($R^2 = 0.0181$), while both recovery time ($R^2 = 0.0033$) and temperature ($R^2 = 0.0095$) proposed a negative correlation with the frequency of pinching. Suggesting that that both Ph and salinity caused more stress on the hermit crabs causing them to act out in aggression, by resorting to pinching in self-defense, while temperature and recovery time had little effect on determining the aggressiveness of the crabs. The results additionally demonstrated that hermit crabs, in captive, were more likely to attack, by pinching, while the wild group was less likely to do so, instead relying on their shells for protection as they were less likely to emerge from them. Demonstrating a significant divergence, with a p-value of 0.0226, in behavior between the two groups, as the domesticated group proved to be more aggressive and willing to cause confrontation, via pinching, while the wild group would attempt to avoid interaction altogether. Leading to the conclusion that domestication has not beneficial for *Anomura paguroidea*, as while it has removed most environmental stressors it has also introduced new ones that have shortened their lives significantly.

**Natalia Miller, Priscilla Orozco, Casandra Avila,
and Leah Sanchez**

Faculty mentor: Kathleen Barry

Improved Vaccine for 2019-20 Flu Season

Influenza, known colloquially as "the flu", is a viral infection with worldwide burden and importance. The virus is constantly changing; as a result, we need to develop a new vaccine every year due to its current configuration. The goal of this research was to develop a vaccine that is more effective and better engineered than last year's in order to protect human life and public safety. Through the extensive review of literature to date, the influenza virus was carefully analyzed in order to develop an idea of an improved vaccine for the 2019 - 20 flu year. The resultant vaccine used adjuvants and predictive modeling to enhance future success.

Morgan Molinaro

Faculty mentor: Alvin Alejandrino

The Toxicological Effects of Oxybenzone on *Chlorella vulgaris*

Oxybenzone is an active organic chemical commonly found in sunscreens. Oxybenzone is known in some instances to be harmful to marine organisms. There is currently little to no knowledge of the toxicological effects oxybenzone has on freshwater organisms. This study aims to understand the toxicological effects of oxybenzone on *Chlorella vulgaris*, a type of freshwater algae. Algae is the base of the food chain, therefore if oxybenzone is shown to be a contaminant to *Chlorella vulgaris* then the viability of other freshwater organisms are at risk. It is hypothesized that oxybenzone negatively affects the viability of *Chlorella vulgaris*. To test the effect of oxybenzone on *Chlorella vulgaris*, algae growth was monitored over a span of eight days. Three trials were run, each trial containing a control group (no sunscreen), 0.01% oxybenzone-based sunscreen, 0.10% oxybenzone-based sunscreen, 1.00% oxybenzone-based sunscreen, 0.01% oxybenzone-free sunscreen, 0.10% oxybenzone-free sunscreen, and 1.00% oxybenzone-free sunscreen. Due to *Chlorella vulgaris* being microscopic, they are difficult to count. Oxygen

concentrations were gathered as a proxy for determining the toxicity of oxybenzone. The obtained oxygen concentrations measured from *Chlorella vulgaris* indicated that the oxybenzone negatively affects viability. The ANOVA test showed that the critical value at 0.05 significance level was 2.85, which means that at null hypothesis was rejected. Meaning that at 1.00% oxybenzone, showed a detrimental effect on *Chlorella vulgaris*. These results indicate a potential detrimental effect of oxybenzone-based sunscreen to other freshwater organisms as well. Further research must be conducted to understand if the effects are similar to other freshwater organisms.

Hailey Mollno

Faculty mentor: Anne Sebanc

The Effects That the Media Has On Body Perceptions Throughout Adolescence

Media has an effect on the way adolescents view their body image in their everyday lives. The media perpetuates the ideal of thinness, which causes adolescents to have a desire to be thin. Adolescents who cannot reach the thin expectations of the media often become dissatisfied with their body. Body dissatisfaction is when people, including children and adolescents become unhappy with their body image; body image is a "multidimensional construct that includes cognitions, perceptions, and attitudes towards one's body" (Mulasi-Pakhriyal & Smith, 2010, p. 341). This model has been supported by research that adolescents who have a desire to be thin and are dissatisfied with their body; also having negative or lower self-esteem. The 20 articles that I have read concluded that adolescents are more susceptible to the media's portrayal of thinness than younger children and adults because media is everywhere around them and their self-esteem is just starting to develop in early adolescence. The idea of self-esteem and self-image starts in early adolescence and is crucial throughout it because this is the age where children are expected to

develop their own identities, which is difficult to do if their self-esteem is low. Prevention of negative body image is crucial at this age and can be done by the help of nurses in schools to promote a healthy body image as well as curriculums for students to learn about natural body size, shape, and health. Adolescents are looking at media every day and it is in their best interest for adults and the media to help lift their self-esteem and reduce body dissatisfaction.

Joshua Morales and Dr. Hector Valenzuela

Faculty mentor: Hector Valenzuela

The Effects of Combining Resveratrol with Cisplatin to Treat Leukemia

Leukemia is ranked as the sixth most common cause of cancer death. Currently, one of the most common treatments for this kind of cancer is a drug called cisplatin, which unfortunately causes many damaging side effects to the patient receiving it. Since natural-based chemicals such as resveratrol have been shown to be promising cancer inhibitors in studies involving mice, this compound will be used in tandem with the cisplatin to see if the combination of these compounds is more effective in killing cancer cells. Our objective is to reduce the concentration of 10 uM cisplatin to 5 uM when combined with 10 uM of resveratrol but to maintain the same level of cell death. To achieve our goal, Jurkat cells were treated with the compounds and cell death and apoptosis were measured using fluorescent antibody markers and flow cytometry. Our preliminary results thus far indicated that there was a significantly greater amount of cellular death in cells that have been treated with cisplatin than there is in cells treated with resveratrol. Likewise, these same results in a second trial indicated a statistically insignificant difference in the level of cellular death when the concentration of cisplatin that was combined with 10 uM of resveratrol was reduced from 10 uM to 5uM, which was

consistent with our objective. However, the results from the second trial were revealed to be faulty because the cisplatin control parameter failed to achieve the high levels of cellular death it was supposed to have obtained as it was only able to kill 3% of the exposed cells. A possible explanation for the failure of cisplatin to achieve its high cellular death could have been because the cisplatin used for the second trial likely exceeded its shelf life, which made it no longer effective as a drug. I have thus since ordered a new cisplatin treatment and have been working on repeating the second trial of this experiment with the objective focused on obtaining more scientifically accurate results. The overall objective of this experiment is still focused on reducing the levels of cisplatin and combining it with beneficial natural based compounds such as resveratrol in order to determine the optimal range of cell death and avoid the harmful side effects of cisplatin and necrosis.

Destinee Moya

Faculty mentor: Joyce Kaufman

A comparison of the gender dynamics between the Irish Republican Army and Baader-Meinhof Gang

How do acts of violence, and the roles of women differ within different informal militant groups?

"Violent women, on the other hand, represent raw, unadulterated emotion. They tremble with rage, shake with anger, get carried away in emotion. There is no control, no standing back a little to savour the power of violence." -B. Rolston, "Mothers, whores, and villains: images of women in novels of the Northern Ireland Conflict"

This research addresses the various roles that women take on during times of conflict. Women's capacity during times of war extends beyond their roles as mothers and victims, but as active participants in activist groups.

When looking at the influential women who participated in political activism during the time of The Troubles of Northern Ireland through 1968 to 1998 (Allison, 2014; 447-463), and 1970's rebellions in Germany (1970-1979) (Rolston, 1989; 41-57), specifically in the Baader-Meinhof Gang, we see that such behavior defies traditional assumptions of women's roles. Through the comparative analysis of these examples, we are able to gain a better understanding of the gender dynamics within military organizations. In looking at the roles women played in each group, the acts of violence committed by such women, and the challenges they faced while engaging in such political violence, there are many areas for analysis and comparison thereby creating better comprehension of women as agents of political violence. In addition, this analysis also takes into account the perceptions of such women by their male counterparts, and media. In his article, Mothers, whores, and villains..., Rolston acknowledges that women indeed are quite dynamic during times of war, embracing violence as forms of nationalism and activism (Rolston, 1989; 41-57). Such behavior contradicts the assumption that women always seek to protect their communities through peaceful acts or are limited to being victims of such tension (Allison, 2014; 447-463). This paper challenges such assumptions, and provides for overall greater comprehension of gender conceptualizations.

Keywords: gender, women, international relations, infantry, armies, WPS theory

Brittany Nakamura

Faculty mentor: Cinzia Fissore

Assessing Student Interest in Sustainability Studies at Whittier College

Colleges and universities are the gateway to spreading new knowledge while preparing future generations for drastic environmental changes

taking place within the surrounding world. Colleges and universities provide opportunities for disseminating sustainable education and knowledge for future generations. With growing interest in the field of sustainability, an increasing number of institutions of higher education have established sustainable efforts within the curriculum. Whittier College has also provided these efforts through the varying majors offered in different disciplines which overlap with topics related to environmental science and studies. The environmental science and environmental studies programs are the most engaging in topics of sustainability however, other departments such as Business, Economics, Religion, Biology, Philosophy, Political Science, Social Work, Spanish and Sociology touch on sustainable topics. The goal of this study was to investigate Whittier College's students level of understanding and interest in the field of sustainability and in potentially having a sustainability program at the college. To achieve this goal, I relied on a student survey which looked into prior student knowledge regarding sustainability in addition to student interest in implementing a Sustainability Program at Whittier College. A 12 percent response rate was obtained. Of the responses, first year students: 40.6 percent, seniors: 24.8 percent, junior: 23.3 percent, and sophomore 11.3 percent. Where 44.7 percent of students possessed a high level of interest in the field of sustainability and 45.8 percent of students declared a high to very knowledgeable understanding of sustainability. Sustainability as an interdisciplinary topic was agreed upon 89.5 percent of responses. 84.5 percent of responses agreed a Sustainability Program/track would be a good fit for Whittier College. The top three areas of student interested included human health effects of environmental damage, environmental protection and conservation practices, and investigation of the effects of climate change. These results identify both the high level of interest regarding sustainability among students in addition to implementing a sustainability program/track within Whittier College's curriculum would be beneficial. Therefore,

further efforts and research should be made to implement a sustainability program/track within Whittier College's curriculum.

Brianna Nowicki

Faculty mentor: Kristin Smirnov

Fitness Advertisements and Consumer Motivation

This project examines two marketing aspects of fitness advertisements, such as photo and message, in order to answer the research question of what indicators are most significant in terms of motivating Americans to change their life style, both through media and messages. This has been done primarily through empirical research which was then examined and reinforced through marketing theories in the theoretical data section. This paper focuses on American adults over the age of 18, and shows how motivation actually is not a factor when it comes to advertisement, but how it is all about how the consumer feels about themselves. Since I have always had a passion for fitness and living a healthy lifestyle, I started to get involved heavily in going to my gym and focusing on cardio and lifting, maintaining the health status I had while I was a collegiate athlete. Combined with my personal interest in marketing and advertisements, I have always been fascinated with the different methods gym use to grab consumers' attention and get them to sign up for their gym and help them reach their goals. This is how I stumbled into this area of research. Looking back to my story of when I was four and challenged to swim across a hotel pool the question wasn't could I swim. Of course I could swim, I had been raised around rivers, lakes, ponds, and oceans my whole life. The deciding motivating factor was that I could have \$20 in my hand. Everyone has a different form of motivation and my goal of this research is to determine what variables Americans are most motivated by in advertisements found in the gym, combining both visual media and

textual message components. For my research from this project I wanted to focus on and see how visual components of fitness advertisement motivate or demotivate consumers. This included working both with visual images such as models who fell into the categories of idealized bodies or average bodies. Then, in addition to media, I wanted to focus on message which included a positive message and a negative message. By utilizing my graphic design skills from my visual art class I took last Spring in 2018, I was able to generate four advertisements. By randomization of users seeing these images, and asking questions related to both media and message, I was able to answer this question.

Martin Olmos

Faculty mentor: Sylvia Vetrone

Investigating the effects of Cannabidiol (CBD) on cancer cells

Cannabis, although commonly associated with its use as a psychoactive drug, also has been shown to alleviate pain and disease symptoms. In particular, Cannabidiol (CBD), a constituent of Cannabis, has demonstrated numerous benefits such as acting as an anti-inflammatory, anticonvulsant, and antioxidant. Studies exploring the benefits of CBD in cancer have shown its ability to trigger the induction of ER stress and inhibition of AKT and mTOR signaling in breast cancer cells, and the upregulation of Beclin 1 triggering apoptosis in melanoma. Taken together, these studies suggest that CBD's cytotoxic and anti-proliferative properties may be suitable as a treatment for cancer, and we hypothesize that CBD can also

induce apoptosis of other cancer models in a dose-response manner. Therefore, in this study we investigated the effect of CBD on viability and cytotoxicity in two tumor forming cell lines, prostate cancer (LNCap) and breast cancer (MCF-7). Briefly, we exposed LNCap and MCF7 cell lines to various concentrations of cannabidiol (5 ug, 10 ug, 15 ug, and 20 ug) over three days, and assessed its effects using three viability and cytotoxicity assays. Our results show the CBD was successful in statistically reducing viability and increasing cytotoxicity in both cell lines at all concentrations tested when exposed to the CBD as early as 48 hours. As these findings lend to the increasing evidence of CBD as a potential viable, alternative, and less harmful treatment option against prostate and breast cancer, our current efforts are focusing on determining the cellular pathways that are triggered by CBD exposure.

Andrew Ortiz, Damyen Davis, Jesus Delgado, Yitong Hua, Maya Choy, Christian Renteria, Thomas Davis, Amanda Gutierrez, Michael Ash, Kaamil Khan, and Shisha Abouhashish

Faculty mentor: Dan Duran

The Walkers

Wang Luyan, a noted Chinese avant-garde artist, reached out to Professor Robert Marks and Randall Davidson to donate one of his latest artworks, The Walker, to Whittier College. Mr. Wang shared an important connection with Whittier College through his brother who was enrolled in the 1980's as part of a student exchange program. In addition, the reason for the donation was that Mr. Wang could commemorate his

brother who tragically passed away in 2004. Mr. Marks and Mr. Davidson arranged the donation and immediately got to work in making this a reality. With the help of Professor Daniel Duran, they recruited a group of students to aid in arranging the logistic actions needed to ship the artwork from Dandong, China to Whittier College, the installation of these at pieces on our campus, and the marketing plan to promote this amazing artwork. The students were split in to five teams; Customs, Budget Management, Logistics, Promotions, and Site Planning-Installation. Each team was assigned specific sets of responsibilities needed in order to successfully carry out this task as a whole. Some highlights of our progress include our Logistic team, who worked alongside Randall Davidson, to acquire three potential quotes from Freight Forwarders in which they then presented the information to the President of the College, Linda Oubre, and the Vice President of Advancement, Timothy Anderson to approve of. Next, our Siting Team worked with WC facilities and our art faculty to select the sites and finalize the best one where the artwork will find their long lasting home here on our beloved campus. As part of the siting process the student team helped situate crafted maquettes to model the exact position each art statue would be installed. Our Promotions Team is currently executing their marketing strategy to create publicity for the artwork's grand inauguration by reaching out to multiple sources of ethnic Medias, influences, and communities, including promotional materials in English and Mandarin. The sculptures have arrived (March 5, 2019) and the student team is now working on the final promotions and installation aspects of the project. This has been an incredible hands-on learning project that will culminate in a cross-cultural demonstration of art, friendship, and legacy. We are the China Sculpture Project Team, a diverse group of enthusiastic, business driven leaders tasked in applying our individual specializations in order to enrich our campus.

Leanne Parada and Melissa Tobias

Faculty mentor: Lisa Ibanez

4GIRLS Resilience Examination: Comprehension and Identification

Resilience is recognized as an important characteristic for middle school girls' who go through a life transition. The researchers will conduct a mixed methods study consisting of qualitative and quantitative surveys, that will measure self-reporting changes in their resilience. Approximately 100 participants will be assessed at the 4GIRLS two-day conference. The study aims to analyze whether the 4GIRLS conference empowers participants to identify as resilient. The researchers hope to prove that the participants will understand and recognize resilience characteristics traits they possess through the workshops activities by the end of the conference.

Sydney Perkins

Faculty mentor: Joyce Kaufman

An Exploration of the Lives of Western ISIS Brides

The recent cases of, American, Hoda Muthana, and Britain, Shamima Begum, who left the west to join the Islamic State (IS), but now wish to return home, raise questions about women who travel to foreign regions to become IS brides. While there is substantial scholarship on the role of women as combatants, and even as suicide bombers, for insurgent and terrorist organizations around the world, less is known about the lives of women who join IS as wives for male soldiers. This paper will the place

the experiences of current western jihadi brides in the context of scholarship, Jones (2016), Sjoberg & Gentry (2016), Bakker & de Leede (2015), and Ingram (2017) about women as bush wives or in similar roles in conflict. It also attempts to understand what motivates these women, their lives as jihadi brides, and how their expectations differed from the reality of their roles.

Meghan Pistolesi

Faculty mentor: Cinzia Fissore

Carbon Sequestration on Trees on the Whittier College Campus

Rising greenhouse gas emissions due to human activity are a well-known driver of climate change, leading to concentrated global and regional efforts to alleviate emissions or capture CO₂ from the atmosphere. At the local level especially, individuals and institutions are able to engage in an array of mitigation practices in order to lower the rate of greenhouse gas, especially carbon (C) emissions. One notable practice involves utilizing the natural C sinks represented by trees thanks to their ability to sequester and store C in their aboveground and belowground biomass. Thus, the present investigation was conducted to estimate C sequestration potential in trees at Whittier College and their potential for carbon emissions offset. Whittier College sits on 74 acres of land, of which 14 acres are considered green space (e.g., trees, landscapes, gardens, forests). Sequestering C in these trees can help to offset Whittier's greenhouse gas footprint. I identified and assessed each tree on campus by measuring height and diameter at breast height. Then, I used available allometric equations specific for each genus to calculate the amount of C stored by each tree and obtained total C sequestration across campus. In total I assessed 552 trees across campus. The average tree diameter was 27.11 centimeters with an average height of 35.28 meters. Three of the most common genus of

trees were Eucalyptus, Pinus, and Liquidambar. My case study further demonstrates that C emissions offset by trees on campus amounts to less than one percent, demonstrating that, while biomass C sequestration is a potential useful tool to offset emissions, it cannot achieve substantial results and emission reduction efforts should be advocated.

Mai Quesada, Erika Velasquez, Felicia Delgadillo, and Rachel Lazerson

Faculty mentor: David Mborra

Insect community Composition at the Whittier College Campus and Earthworks Community Organic Farm

We investigated the community composition of insects, and other arthropods, on the Whittier College campus and compared it to the Earthworks Community Organic Farm nearby. We defined community composition as the ecological guilds of insects evident at each of the two locations. The Whittier College campus grounds are akin to an inorganic farm, because pesticides and artificial fertilizers are routinely used there. As such, we surmised that it would be informative to compare the community of insects found there to an organic farm. Most insects are primary consumers and their abundances are always strongly dependent on the amounts and variety of plants. Our hypothesis was that the organic farm would have a higher abundance and variety of crop plants types to support insects. In contrast, the Whittier College campus has largely ornamental plants offering a simplified habitat structure. Thus, we predicted that there would be a high abundance of insects with chewing and sucking mouthparts - orders Coleoptera and Orthoptera- on the Whittier College campus due to an abundance of plants year round. In contrast, we expected a high abundance of pollinator insects such as bees, wasps and butterflies at the organic farm due to an abundance and variety

of flowering crops. We applied a stratified sampling framework and collected the insects at each location using standardized pitfalls. Plastic screw-cap specimen jars - low form size, 236 ml in capacity - were buried into the ground with the rim level with the soil surface and left in the field for four to six days. Upon recovery from the field, the accumulated animals were cleaned and sorted, then identified using taxonomic keys to level of order. The pollinator insects, bees, moths and butterflies, were generally rare across all plots. In contrast, beetles were relatively common and abundant in the organic farm, where we caught six beetles per cup.

Jasmine Rangel

Faculty mentor: Rebecca Overmyer-Velázquez

Alzheimer's and the Underpaid Workers

Alzheimer's is a progressive mental deterioration that can occur in middle or old age; this is due to the degeneration of the brain. The rates of Alzheimer's will increase by 178 percent between the years of 2014 to 2060. Based on the increasing rates, those who care for Alzheimer's patients are extremely important. There will continue to be a need for these people in the future as the rates increase. The issue that I am addressing in this research is the fact that the workers in Alzheimer's day care centers are not being paid the proper amount for the work they do. I am aiming to look at the question of what are the working conditions and the quality of care at Alzheimer's day care centers? These people should be getting paid more for the work they are doing as their job can be very stressful and emotionally draining. Many healthcare workers are struggling with the wages they are making to meet ends. Despite the physical and social skills required, direct care workers are some of the lowest-paid workers in the nation right next to fast food workers. My data collection for this study consisted of five interviews with employees who

are currently working there, one being the current director of the program, a retired program director and a caregiver who no longer uses this facility. I also conducted surveys on the caregivers who take the patients to the daycare. Out of the 30 caregivers who take clients to the facility I was able to collect 15 responses. This research was conducted at the Community Assistance program for Seniors (CAPS) in Pasadena. Based on these interviews, I was able to find that the job of employees who take care of Alzheimer's clients is extremely stressful in caring for these patients, yet they only are paid minimum wage. This research will help Alzheimer's day care centers in improving the conditions for these employees, considering there will be a need for these employees in the future.

Zayne Repp

Faculty mentor: Wendy Furman-Adams

Sacred Justice: Milton's Theodicy and the Unnecessary Fall

In the invocation to the first book of *Paradise Lost*, Milton states his aim to "assert eternal providence, / and justify the ways of God to men" (I. 25-6), yet God the Father tyrannically condemns man to fall in the third book, seeming to evade any notion of justification. This paper examines how the Father's disposition functions as a clever narrative device used in the implementation of Milton's theodicy, by which he intends to create the conditions for a fall that is justifiable, but not necessary. We examine the function of Augustinian free will as it relates to man's state of existence before and after the fall through the lens of Danielson's reading in Milton's *Good God*. We conclude that Milton's God is not solely the chiding father or compassionate son. Rather, the infinite goodness of Milton's God is exhibited through the twofold-yet-consistent actions of God, Father, and Son.

Zayne Repp

Faculty mentor: Roger White

Determinants of Public Opinion on Foreign Direct Investment

Using data from the Pew Research Center's 2014 Global Attitudes Survey, we identify the determinants of public opinion on both greenfield and brownfield foreign direct investment (FDI). Specifically, we measure the extent to which the perception of corruption in developing economies is correlated with a negative perception of FDI inflows by employing ordered logit estimation techniques. Data on corruption is gathered from the Corruption Perceptions Index by Transparency International (2018) as well as the Heritage Foundation's Index of Economic Freedom (2019). We expect countries with higher rankings in stability and regulatory quality to have a generally higher public opinion on both greenfield and brownfield investment. Further, we expect the likelihood of an individual to have a positive view on FDI to be positively correlated with their level of education in greenfield investment situations, while we expect the opposite to be true in brownfield scenarios.

Keanu Reus

Faculty mentor: Roger White

Big Profit in Little China: Effects of Appealing to Chinese Audiences on Box Office Revenue

Using a sample of 215 U.S.-produced films released in China, we determine if efforts to appeal to Chinese audiences lead to significant

increases in box office revenue. With our research, we examine how U.S. film companies gain an advantage over one another through the choices they make in the production process of a film, using the Chinese movie market as an example. In our econometric method, we employ multiple linear regression on our data, using characteristics of a given film as explanatory variables. We define efforts to appeal to China as three explanatory variables in our model: (1) filmed in China, (2) co-produced with a Chinese film company, and (3) contains a Chinese-born actor/actress. To account for remaining control variables, we use a film's genre, star power, content rating, critic score and domestic box office revenue. We then determine if China has proven to be a reliable source of box office revenue for U.S. film companies, by creating a graph comparing aggregated box office revenue between the U.S., China and other countries. From our results, we find that these efforts are significant in its impact on box office revenue, as expected, though the effect varies throughout our variables.

Steven Rivera

Faculty mentor: Hector Valenzuela

Thrombosis Aspiration in ST-segment Elevation Myocardial Infarction Patients

Thrombus aspiration is the use of a suction catheter tip to remove plaque at the site of an occluded blood vessel. The role of thrombus aspiration

(TA) has been controversial in the treatment for myocardial infarction. The objective of this meta-analysis was to determine the effectiveness of TA in patients with ST-segment elevation myocardial infarction (STEMI). Using the electronic databases provided by Whittier College, the methods of this meta-analysis included the use of multiple research articles that emphasized the use of TA with percutaneous coronary intervention (PCI) as treatment for STEMI patients. The results show that there is no statistical significance between groups of patients who received PCI alone and a group of patients who received PCI with TA. The results of this meta-analysis have significant implications for the treatment of STEMI patients. More importantly the paper shows that STEMI patients who received PCI with TA show similarities with STEMI patients who received PCI alone regarding the occurrence of clinical events. Effectively this paper may propose a change in the approach for management of treatment in STEMI patients.

Arnulfo Robles

Faculty mentor: Joyce Kaufman

Structural Violence in the International Community

The subject of my research will be structural violence in the international community. My research will be a case study of the civil war in Liberia and how structural violence ultimately lead to the armed conflict. My research will also use articles, theories by various authors along with quantitative data. My research will also tell how structural violence creates circumstances in a community through disparities that ultimately lead to conflict.

Yvonne Rodriguez and Haily McCord

Faculty mentor: Lisa Ibanez

4 Girls Workshop: Formation of Meaningful Friendships

The researchers focus on the friendship building concepts of the 4 Girls workshop. Their goal is to investigate the ways in which the 4 Girls workshop helps contribute to forming meaningful friendships.

Approximately one hundred middle school girls will make up the sample that they will be surveying. They will be distributing a pre and post survey where participants will reflect on what friendship means to them as well as how they felt those friendships were fostered during the various activities throughout the workshop. The surveys contain self-response questions in which participants can write in their own answers as well as Likert scales which they will use to rate their level of engagement during specific activities.

Julia Roegiers

Faculty mentor: Anne Sebanc

That is so RAD. The Implications and Future Research on Reactive Attachment Disorder.

Reactive attachment disorder (RAD) is a clinically diagnosed disorder that most often is found in institutionalized children. After reading many articles on the subject, the disorder does have research on how it is created and how to effectively help treat RAD. However, there is still more research that needs to be done in order to help families of adoptees with RAD. When children are deprived of connections with caregivers it can lead to them not being able to give appropriate emotional responses or gain the neural systems that help to develop positive relationships later in

life. While we see that some children in studies done have been able to develop secure attachments after being in a safe, caregiving environment after a few years, some children still do qualify for RAD criteria under the DSM-IV definition. This literature review will conclude in why we need to think about the disorder as a more clinical based disorder rather than a problem in attachment. The literature review will also discuss how vulnerable populations such as children with RAD need careful examination of what treatments are both ethical and effective and how we need to strive towards finding more treatments for this population.

Alexandra Roggero

Faculty mentor: Andrea Rehn

Weaving Postcolonial Identity: Stories and Manifestations of Amazigh Carpet Weavers in the Moroccan Village of Tarmilat

It is in the small villages of Morocco, scattered across the North in the Rif, to the South in the Anti-Atlas Mountains, and in between, where the majority of Morocco's beloved Amazigh carpets are made. Their power and popularity can be attributed to the indigenous female artists who have been crafting these physical tokens of indigenous memory, protection, and Amazigh identity, for millennia. In an attempt to connect the trade of carpet weaving in Morocco back to these women and their families, this research project will explore not only their narratives, and the social and spatial implications of their craft-a space so commonly marked by patriarchy-but in addition, the following questions: In what ways can/do we interpret the identity of the Amazigh through their carpets in the Western imagination? Is my attempt to understand and interpret this both physical and metaphysical expression of indigenous identity justified or ethical, when we consider the power dynamic that I bring to that space, as a student in the American university system, let alone as a Westerner? To

answer these questions, I will examine traditional Islamic sources, specifically Surah 9 in the Qur'an, hadith (the sayings and teachings of Prophet Muhammad) on protection and symbols of evil in Islam, and previous scholarship on the topic of Amazigh art. In reflecting on the research I conducted in the Amazigh village of Tarmilat and the photos I took there and throughout Morocco, I will continue to challenge the hegemonic and (a)historical values embedded in the disciplines of anthropology and cultural studies that are the basis of this project, and further decolonize my American study abroad experience.

Emma Louise Romero and Dr. David N. M. Mbora

Faculty mentor: David Mbora

The Effects of Pollution on Insect Species Richness and Abundance

The effects of pollution on insect species richness and abundance urbanization has caused habitat fragmentation to occur at an increasing rate. The division of habitats into smaller, less functional sections is to blame for the reduced abundance and disappearance of certain insect species. Urban areas negatively affect insect species through noise and air pollution. These factors create a non-stable environment that evolves quickly, making it difficult for the insect species to adapt. The purpose of this study was to explore how pollution influences species richness and abundance in urban area insect populations. In addition, this study explored which type of pollution, air or noise, had the greatest influence on species richness and abundance. The areas studied ranged between highly polluted and pristine urban areas, in terms of both air and noise pollution. I predicted that areas with high levels of both types of pollution would be home to lesser amounts of insect species, because they are affected constantly by pollution. I also predicted that the more pristine area with lesser levels of air and noise pollution would be home to the

largest quantity of species, in both the abundance and species richness. To collect insect samples, the pitfall method was used in each location. Pitfall traps were filled with a water and detergent solution and then placed flush with ground level at each location. Three plots were set in each area of research and each plot contained five traps, resulting in fifteen samples per location. The traps were left for four days before being collected, cleaned, and stored in the lab. The samples were then identified using a dissecting microscope and dichotomous key to the level of order and species. An online air quality calculator, AirNow, and a decibel meter were used to record levels of air and noise pollution.

Natasha Rubalcava and Ngozzi Eke

Faculty mentor: Lisa Ibanez

Resilience workshops with 4girls foundation

The researchers will conduct a pre and post survey to measure whether middle school girls' level of resilience increases. Approximately 100 girls will participate in the Anti-Bulling and Keynote Speaker work shop. Researchers will be using a Likert scale to conduct the surveys. Surveys will be administered at the two-day 4girls conference. The study will conclude if these specific workshops are effective in promoting resilience in the participants.

Henry Ruiz

Faculty mentor: Hector Valenzuela

Examining SIRTUIN 6 and the Sirt Family in its Role in the Survivability of Jurkat cells

The question of what mechanisms are responsible for the ageing process has been one that has plagued biologist since it was first postulated. A possible agent at play here is that of the enzyme SIRTUIN 6 (SIRT6) a member of the sirtuin family, who until recently had its catalytic activity and substrates unclear. Recent papers have shown that SIRT6 upregulation may be in part responsible for extending the lifespan of male mice by a significant margin through chromatin regulation of genome maintenance. In addition, Sirtuin protein family members have been shown to be upregulated in cells that have been treated with Resveratrol and/or Curcumin. However, the positive effects of sirtuin enzymes in human cell's longevity, remains controversial. The goal of this experiment was to examine primarily SIRT6 and other sirtuin family members for their ability to increase the survival of Jurkat cells, a transformed human T cell line cell, as would be predicted from the effects of this enzyme in the increased longevity of rodent's lifespan. Ultimately, by measuring the level of SIRT 6 gene expression in Jurkat cells, we aimed to determine if these genes could play a role in the longevity and ability to avoid senescence in normal human cells. Our initial RT-PCR results with Jurkat cells showed that SIRT 6 gene expression is not detectable in these transformed cells lines when compared to GAPDH housekeeping genes (CT values of 38 compared to CT values of 15, respectively). However, we show that the cells treated with Resveratrol and/or Curcumin viability is detrimentally affected. Implying, that the reduced expression of Sirtuin is not because of lower cellular viability. This is of interest because it would seem that at least for humans SIRT6 is not upregulated like it is in mice. Alternatively, it may be that another Sirtuin family member may be more

critical or that at least for these human cells lines the SIRT6 is not needed. To test this possibility, we are conducting further tests on Nor20 cells (an EBV transformed B cell line) and other transformed cell lines to verify what role SIRT 6 plays in these cell's life cycles.

Henry Ruiz

Faculty mentor: Paul Kjellberg

Environmental Cynicism

The environmental crisis that we face in our modern day lives is in part a result of our consumerist, comfort-obsessed living. Through the violent subjugation of minority groups including animals and plants, "developed" nations have turned the environment into a factory farm for oils and plastic that consumes animals (including people) inside of it. This system has prevented those in the position of "power" from ever being able to achieve happiness or peace within their own creation. Environmental cynicism is an attempt to break down and expose the cogs of this system and ourselves in order to laugh at it and ourselves. It combines environmentalism with classical cynicism in order to create a method of action that is immediate, effective, and intersectional.

Breanna Salas

Faculty mentor: Joyce Kaufman

Women in Times of Conflict

In times of conflict, war has had profound and heinous effects on women due to their gender. Although women have faced inequality since the

beginning of time, there are many instances in which women have been the solution to conflict and been able to successfully birth peace. Specifically, the Women of Liberia Mass action for Peace made up of thousands of women who used nonviolent protests in order to arrive at peace talks in a country who has suffered a 14-year civil war. In instances of conflict, what aspects of women lead them to be successful in reaching peace where men in power failed? What conditions during wartime give women the strength and courage in order to stand up and create change? In this case, the conditions that lead the women of Liberia to fight for peace was the suffering they faced from a civil war including gender inequality, displacement, murder, the use child and women soldiers, extreme sexual violence including rape and mutilation. I will be drawing from a first-hand source, the book written by the one of the organization's leaders, Leyman Gbowee, titled *Might Be Our Powers* in which Gbowee shares her inspirational story. The Women of Liberia Mass Action was not only successful in establishing peace, but were also responsible for negotiations, policies and even the election of the first female president. In conclusion, the characteristics of the civil war in Liberia lead the women to take control of their lives and decide to be the change that the country so desperately needed.

Fabiana Sanchez

Faculty mentor: Joyce Kaufman

Forcing Human Trafficking out of Commission

Human Trafficking is an international issue that requires every country to collaborate to ensure the safety of their citizens. According the UNODC, there are many forms of human trafficking and the number of victims continues to steadily rise. Data from the 2018 Global Report on Trafficking Persons from the UN will be used to discuss the gender and

location of victims, emphasizing that human trafficking disproportionately affects women and areas of conflict (UNODC). This study will focus on the steps the international community has taken to prevent human trafficking and analyze the punishments used to deter traffickers. Data will be drawn from the Palermo Protocol and also from the Department of State which classifies countries into four tiers depending on their efforts to prevent human trafficking (DOS 40). There will be further studies for countries in each tier, and also literature review regarding the implementation of policies used to prevent human trafficking.

Kaitlyn Santos

Faculty mentor: Lisa Ibanez

4Girl'S Mentor Training

The researcher will conduct a quantitative research study to present the correlation between the four-hour mentor training with the preparedness it provides for the 4Girls two-day conference. Approximately 40 mentors will compose the sample size. The data will be collected online using the Four Girls Mentor Training Questionnaire disseminated through Google Forms. As an observational participant, the research should result in a high correlation between the training and the preparedness felt in the pre-test whereas the post-test will show a lower correlation.

Mayeli Sarmiento and Alondra Solis

Faculty mentor: Ralph Isovitsch

Relative Anti-Inflammatory Properties of Ginger

Zingiber Officinale, known as ginger, is a medical herb that's been used for centuries since Ancient China for its medical and culinary uses. It is used to treat arthritis, rheumatism, sprains, muscular aches, sore throats, and cramps. Thus, the purpose of this experiment is to compare the anti-inflammatory strengths of organic ginger with aspirin. In order to be able to make this comparison, extractions of ginger in both cyclohexane and ethanol were obtained to perform TLC, GC-MS, and a hen egg denaturation assay. The solvents chosen for the extractions have different polarity and was done so in an attempt to isolate the beneficial compounds in ginger.

Ashly Sato

Faculty mentor: Anne Seban

Early Intervention in the Treatment of Autism Spectrum Disorder

Research has found the benefits of early intervention for many disabilities, one of them being Autism Spectrum Disorder (ASD). Research has shown various forms of intervention, such as applied behavior analysis, discrete trial training, and early intensive behavioral intervention are beneficial to the cognitive, behavioral, and social development of a child with ASD. This paper will analyze 20 articles that have found the benefits of early diagnosis and intervention types for children with ASD. Studies have found that children with ASD who receive early intervention have an increase in IQ and improved adaptive behavior as well as having greater possibilities of being mainstreamed at school age. Current research has analyzed the importance of early diagnosis by means of the neuroplasticity theory where children's brains are in a critical period during the first two years. Some limitations of early interventions include incorrect diagnosis, money or time commitments of interventions, time-lapses between the diagnosis of ASD and the start of intervention, as well as the lack of

transferring the skills into the home environment. Overall, research has found that early intervention has been favorable in the treatment of ASD in improving problem behaviors and language skills, as well as raising IQ scores.

Sylvie Saxena

Faculty mentor: Wendy Furman-Adams

Good and Evil in Milton's Satan

Satan is the most complex and controversial character of Milton's Paradise Lost. He is a villain obsessed with getting revenge on God for exiling him from heaven. Although Satan is evil, he still loves God, and is all the more bitter for it. His love for God gets mixed up with hatred. He attempts to position himself as superior to God, but this constantly backfires and reveals him to be nothing more than a lesser imitation of God. He never had a chance of defeating God, and it's in part because he both loves and resents God too much to think rationally about his actions.

Taylor Scriber

Faculty mentor: Jose Ortega

"Watching While Black": Understanding Black Viewership from a Critical Lens

Film is a product of historical and sociological positions, my research is an exploration of these positions as they relate to Black people and their audience participation in film. When Black people watch films they bring their personal and communal experiences into the theater which gives them a unique perspective on societal blackness and blackness as it is

portrayed in a film. In both the realms of entertainment and society, there is a theoretical gap in fully identifying the structures that create negative film images of blackness and the marginalization of Black bodies. My research objective is to interrogate the relationship between film discourse and blackness to shed light on the societal structures that allow for Black disenfranchisement in film. In the first section of my paper, I will look at how the formation of racial identity between Black and White people differs based on the conditions of American society. I will be utilizing theoretical terms like Coloniality, Transparency Phenomenon, and Double Consciousness to explain this racial division on a micro-level. To understand race at a macro-level, I will use Pem Buck's two-prong system of appointing whiteness to explain how the inclusion of Black people in film is nominal and unable to create effective discourse. The second section is an explanation of my poetics of watching, an instructional guide for black audience members that will give them the agency to critique films that have themes of blackness. I have broken this poetics of watching into three theoretical concepts Moment of Rupture (Diawara 1993), Relations of Power (Foucault 1976), and the Oppositional Gaze (Bell Hooks 1992). The function of this guide is to help the Black audience member gain agency and weaponize their gaze so that they can foster change in film through substantive critiques.

Gabrielle Simpson

Faculty mentor: Rosemary Carbine

Is Our God Given Right Worth It? An Examination of Gun Rights and Evangelical Protestants"

U.S. pro-gun ideology versus gun reform is a very relevant contemporary topic within the United States. The Centers for Disease Control and Prevention stated that at least 572,537 people have died from gun

infringements between 1999-2016. Pro-gun ideology predominates within the U.S., especially among Evangelical Protestants. This paper explores how Evangelical Protestants, the largest branch of U.S. Christianity and a major Republican voting base, may lobby Congress to not pass gun reform due to its pro-gun agendas, despite its often pro-life agendas on many other issues in U.S. culture wars (e.g. abortion). This paper examines this topic under two categories; gun laws and reform, and religious influence on U.S. government, by drawing on popular and scholarly resources from the interdisciplinary field of religious studies about Evangelical Protestants, statistical databases on evangelicals and pro-gun and anti-gun demographics, and NRA lobbying strategies that use religious justifications. This paper concludes that Evangelical Protestants will not always take a negative stance towards gun-control. Some Evangelicals do take a more conservative stance towards the Second Amendment, because they believe that gun-reform infringes on their liberties and rights as American citizens. Nevertheless, contrary to contemporary stereotypes, many Evangelicals support stricter individual gun laws, and even resist gun use altogether because guns contradict their religion. Rather than focus on legislation reform, some Evangelicals prefer implementing faith-based community initiatives that teach the biblical mandate to do no harm. In sum, this paper undermines any generalized perceptions about Evangelical Protestants being anti-gun reform, due to the diversity of Evangelical groups' attitudes and advocacy about gun ideology and reform.

Gabrielle Simpson

Faculty mentor: Rebecca Overmyer-Velázquez

Confronting Gender Discrepancies in Teenage Pregnancy

Teenage pregnancy in the U.S is declining, but is still a dilemma with its highest contributors being people of color, specifically Latinx and those of

low socioeconomic status. Pregnant teens bear higher chances of low educational attainment, low paying jobs, single parent families, low-income communities, and low-quality healthcare. Previous research shows a gap in literature by focusing on women and their roles and not the men and fathers. As a result of putting the focus of pregnancy and prevention on women, this eliminates the responsibility and ownership of men and creates an absence of the father's roles. The importance of this study is to focus on challenges men face during pregnancy and how not taking them into account creates a gender divide. My research focuses on four variables: gender, race, socioeconomic status, and pregnancy prevention. Through interviews with various socioeconomic and racial backgrounds, this study's purpose is to shed light on why there is an emphasis on women's roles in pregnancy and prevention discourse, as opposed to the lack of male's, and how that affects the lives of both men and women. By using Facebook and Instagram as platforms to reach out to 11 participants, in-person interviews and online questions were then conducted. The participants consisted of six women and five men ages 20 to 25, who do and do not have children. The interview questions touched on participant's experiences with pregnancy and their own families, what their healthcare providers discuss and focus on, their overall exposure and knowledge of contraceptives, and their opinions and perceptions of teenage pregnancy. Findings from this research brings to light a multitude of information that proves everyone's reasons for teenage pregnancy is fundamentally situational depending on their religion, culture, race, location or financial status. However, there is a tragedy of gender and a bifurcation with pregnancy. Men are assumed the responsibility of the financial burden while a woman's duty is to take care of the child physically because she was the one to give birth. This study pointed out that the structures of our society are limited and not set up properly to support an egalitarian lifestyle or world. Those living with lower socioeconomic status, who have limited opportunities, will struggle more than people with higher socioeconomic status because there are structural

problems within our world that confine them into making decisions and sacrifices.

Dylan Stolte

Faculty mentor: Marie-Magdeleine Chirol

Perspective in Holy Motors

In the film Holy Motors (2012), there is an unpredictability and uniqueness that is rare in film regardless of country of origin. The film centers around a man who takes on multiple personalities and roles throughout the film, none of which seem to be connected at first glance. The purpose of this presentation is to show, through the use of perspective in the film and an analysis of the film from different perspectives, that the film does not have one definitive meaning and is in fact meant to be a commentary on both the world of show-business and the world itself as a whole. First, through the use of entertainment, one gains a perspective on the world that can be analyzed by studying mise-en-scène. A second perspective can be gained by the use of opposition in the movie. The prior perspectives contribute to the socio-cultural understanding of this film; since the filmmaker is not trying to sell one point but instead a story reflecting the culture of the world we live in, the use of entertainment and opposition come together to form a stage on which the director's perspective on society is shown. A PowerPoint, as well as images and videos taken from the film, will be used in addition to an essay as a means to support said points.

Taylor Telles

Faculty mentor: Hector Valenzuela

Inducing Apoptosis and Decreasing Proliferation in MCF7 and Jurkat Cell Lines by Ellagic Acid and Vanillic Acid

Recent studies are now focusing on plant derived phenolic compounds that have shown promising results in anti-cancer and anti-inflammatory activity. These compounds inhibit the initiation and progression of cancer by regulating specific pathways that lead to cell transformation, uncontrolled cell proliferation, angiogenesis, and the formation of metastases. Ellagic acid and vanillic acid are both phenolic compounds that are known to have antioxidants and anticancer properties, but there is little investigation on how these compounds affect the cancer cells overall or if it instead affects a specific signaling pathway, or the overall structure of a cell. The objective of this study is to inhibit cell proliferation and induce apoptosis in acute T cell leukemia (Jurkats) cells and MCF7s by exposing both cell lines to various concentrations of ellagic acid and vanillin acid over a 48-hour period. The results indicate that ellagic acid significantly decreased the viability in both cell lines from a 10 μ M concentration to a 40 μ M concentration. The average viability for Jurkats was from 86.3% to 23%, and 82.9% to 38.2% for MCF7 with a p-value less than 0.05 indication statistical significance. Vanillic acid had little to no effect in viability from an average of 83.4% to 75.3% for MCF7 with no statistical significance. However, for Jurkats, there was only statistical significance in the viability at the concentration of 800 μ g. The percentage dropped from an 87% to 67.03% with a p-value less than 0.05. All MTT assays showed no significant data of cytostatic activity with a p-value of 0.05. Currently, testing is being done with PARP testing to determine if the cause of death is either apoptosis or necrosis.

Clarissa Terris

Faculty mentor: Joyce Kaufman

Men The Heroes, Women The Outcasts

In this research, I will explore the emotional impact war has on men compared to women. I will also examine the programs in place for men compared to the programs in place for women in the post-war period. I will address the backlash women may face for coming forward about their emotional trauma due to an involvement in the war in order to understand why there is so much emphasis on the emotional damage war has on men, but so little on the impact it has on women. My working thesis is that men do not suffer more emotional trauma as a result of war rather that women suffer just as much or more. However, the trauma differs significantly due to the differences in violence they face. Gender stereotypes have made it acceptable for men to come forward about their emotional trauma, especially as combatants, and have made it unacceptable for women to come forward without facing backlash from society. I will use qualitative research for this study, as this will allow me to explore the different types of violence men face compared to women. I will be drawing on Cynthia Cockburn's *The Continuum of Violence, A Gender Perspective on War and Peace*, as well as Johan Galtung's *Violence, Peace, and Peace Research*. For this research, I will also be drawing on Chris Corrin's *Post Conflict Reconstruction and Gender Analysis in Kosovo*, and Fionnuala Ní Aoláin's *On The Frontlines, Gender, War, and the Post-Conflict Process*, all of which will provide historical and theoretical background for the exploration of this topic.

Stella Thermos

Faculty mentor: Roger White

Understanding the Magnitude of Correlations between International Trade and Currency Exchange Rates

Within the FOREX markets, currency exchange rates are constantly traded by commercial banks, central banks, large brokerage firms, individuals, etc. The trading volumes within these markets are large, happen daily, and greatly impact international trade; often, exchange rate fluctuations complicate trade practices. This unpredictability "make[s] international trade and investment decisions more difficult because volatility increases exchange rate risk." To effectively understand the relationship between international trade and currency exchange rates, it is important to identify how international trade flows are impacted by currencies. For example, if Japan imports more than their proportion amount of import/export trade, then there is a decreased amount of demand for the Japanese Yen and which leads to a decreased value of this currency; this relationship holds true for all currencies. As a result, regardless of the magnitude of the change, any fluctuation within foreign exchange rates has a negative impact upon a nation's international trade flows. Throughout this paper, the general relationship between exchange rates and international trade are to be examined while determining if there is a positive or negative relationship between exchange rate volatility and the global frequency of international trade. This analysis will further explain the equilibrium between foreign exchange and international trade.

Mikayla Tomczak

Faculty mentor: Anne Sebanc

Maternal Breastfeeding in the U.S. and Children's Cognitive and Physical Development

This literature review will examine maternal breastfeeding rates, patterns, and barriers in the United States. In addition, I will explain the impact that breastfeeding has on children's cognitive and physical development. Lack of government support in terms of short maternity leave, lack of private places for mothers to pump or breastfeed, and maternal inability to breastfeed are reasons our national breastfeeding percentage is so low. The literature reveals that in addition to the unique immunities and health benefits for both the mother and baby that breastfeeding provides, there is a lowered risk of obesity as well as links to positive gains in cognitive development for children who are breastfed. Even when evaluating breastfeeding outcomes of at risk populations, there has not been any documented adverse effects of breastfeeding on a child's development. Therefore, in order to normalize breastfeeding or at the very least increase our national rates overall, uniform nation-wide policies need to be implemented and enforced for women to effectively breastfeed for a minimum of six months after their child is born.

Key terms: breastfeeding, cognitive development, physical development, obesity

Madison Topping

Faculty mentor: Joyce Kaufman

The Symbolism of Women in War

When one thinks of war, what would typically come to mind is men in battle. Men in bunkers, men with guns, men, men, men. What doesn't come to mind is women. Stereotypically we think of women as peacemakers. However, there is significant evidence that war relies on women's participation (Turpin, 1998, p.3). While these women are supposed to be "keeping the peace in their communities" they are experiencing torture, rape, losing loved ones, losing their communities, and trying to maintain their home. Women have become a stereotypical

symbol of peace when in reality their lives in these areas that are experiencing war are so much worse than maintaining peace. [War has profound and unique effects on women (Turpin, 1998, Pg. 3)]. In this paper I will be exploring how women's participation is necessary for the conduct of war. I will be using a poster to convey my thoughts. For women it is not all about keeping the peace, it is also about keeping themselves alive and battling the different conventions they are facing.

Elena Troche

Faculty mentor: Rosemary Carbine

Black Versus White Religion from the 19th to 21st Century U.S.

From the interdisciplinary perspectives of religious studies, this paper argues that religion plays a significant role in understanding how the United States implemented slavery. More specifically, this paper addresses the question of how Christianity was used to justify the enslavement of African Americans for nearly three centuries, and yet was also practiced by Blacks in different empowering ways. Based on research from historical text, political analyses, and religion experts, such as Albert Raboteau, it is shown that Whites used the Bible and its particular passages to prove why God wanted them to enslave Blacks, whereas Blacks used other biblical stories, such as the Exodus, to find hope through this terrible time. Black religion had its formal services, but also a secret "Invisible Institution" that changed the way they lived during slavery. Backwoods rituals developed, which became a safe space for them to practice their form of religion. This

religion included music, chants, and a sense of spirituality unique to this time period. By analyzing the racialized interpretations of biblical texts and Christian practices, this paper illustrates how Blacks and Whites used religion differently relative to slavery, and concludes that religion is a major contributing factor to the justification of slavery in our nation's history.

Kyriaki Tsigkounis

Faculty mentor: Anne Sebanc

Parenting Styles and Culture: Comparing the United States with European Countries

Parenting styles are influenced by many different factors, including culture. Culture is an important factor that plays into people's everyday lives. This paper will review 20 different research articles that are about parenting styles and culture in the United States and multiple European countries. All cultures seemed to have different parenting styles depending on the gender of their child, but there were greater gender differences in U.S. parenting styles. In the United States, parents are more warm toward daughters than they are towards sons. The parenting styles that were evident across different cultures were authoritative, authoritarian, permissive, and strict. Permissive parenting styles were seen mostly in American parents and shown by some European parents. In

Greece, Italy, and Sweden, the authoritative parenting style was most common for both mothers and fathers. Also, in all three European countries, mothers represented more different parenting styles than fathers. Even though there are similarities throughout the European continent, there are also many differences that makes each country unique relative to both cultural practices and national policies.

Nicholas Tsougarakis and Nancy Leon

Faculty mentor: Erica Fradinger

Olfaction: Battle of the Sexes with Respect to Episodic Memory

The significance of this study was to analyze episodic memory through olfactory stimulation, test for potential differences among genders, and discover what memory model was best represented by our data. For our procedure, we had our subjects blindfolded to eradicate other senses such as touch and sight. Each subject smelled 15 universal scents that were numerically labeled to trigger their recollection of events from their past experiences, that correlated to their explicit memory. Three questions were then asked to help the subjects remember a specific memory associated with each scent. Our results collectively indicated no statistical difference between male and female averages with respect to smell. Also, the memory model, Levels of Processing, best represented our results considering olfaction requires deep semantic processing. The data showed a positive correlation between positive scent feedbacks and scent induced memory recollection. A negative correlation was shown between negative scent feedback and scent induced memory recollection. These correlations indicated that if a subject favors a scent, he/she is more likely to not have an induced memory recollection versus a subject who dislike a scent is more likely to not have a scent-induced memory formation.

Simone Ureta

Faculty mentor: Rosemary Carbine

The Influence of Religion on Gay Marriage in the United States

The landmark approval of same-sex marriage in the United States on June 26th, 2015 involved a long and difficult path led by activists and allies but hindered by those who disapprove of same-sex relations. Drawing on the interdisciplinary perspectives of religious studies, this essay addresses the problem of the ways in which the United States government has negatively impacted the LGBTQ community, as well as the ways in which traditional religious views, of both Catholic and Protestant, have intertwined with the government's decisions. Using evidence drawn from Johnson (2012), I examine the ways in which Protestants and Catholics view same-sex marriage as a disruption to family values and how their beliefs have influenced laws such as the Defense of Marriage Act. With evidence from Maccio (2010), I assess ways parents utilize conversion therapy in an attempt to resolve their children's sexual orientation despite the negative consequences this has for the child. This paper also attends to same-sex oriented individuals who are religious and the ways in which they struggle for self-acceptance amid these traditional perspectives (Bayne, 2016). Overall, this paper concludes that traditional religious beliefs about same-sex marriage negatively impact LGBTQ children, correlating to higher rates of suicide. Although same-sex marriage has been legalized, traditional religious views continue to impact this group today and make them a target for harassment and other forms of violence.

Regina Loren Valencia

Faculty mentor: Rebecca Overmyer-Velázquez

Exploitation of Vulnerability: Representation of Human Trafficking Survivors

The motivation behind others' perspective in human connection is one of the most vulnerable mysteries in modern context. The power of emotional bond beyond cultural bounds, however, has brought many down paths of mislead exploitation and manipulation. An interdisciplinary, social issue across countries that's being discovered highly is human trafficking. Countries range on a global spectrum on methods of recruitment, threat, and profit. In examining the challenges faced by human trafficking victims in academic texts alongside primary first and second-hand accounts of human trafficking survivors, this project entails a content analysis of primary representations of survivors of human trafficking. The study will be analyzing content of popular media, news and social representations of human trafficking through web-search, resulting in 23 text articles to be analyzed. While many texts possess consistent themes within the survivors' stories, the study expands on research by examining the relationship of human trafficking victims and their representation in public image through publication. In texts of human trafficking, these articles seem to follow an algorithm of establishing factors such as vulnerability, investment, abuse, leverage, and escape. There is a formulaic structure to these human trafficking accounts, and the approach of methodology that their purpose is a common conclusion to the article that can be told through the perspective in forms of analysis, accomplishment, or advocacy/awareness. The objective place it has taken as a transnational and complex issue in society has showcased the yearning for kinship that we each have, and through these survivors' account, they are able to not only discuss the dynamic relationship between the challenges they face through the process of human trafficking, but also beyond. The analyzed data and first-hand records showcase the contrast of human trafficking being both public issue and personal trouble. It also

showcases the redeeming power of cultural kinship and human connection.

McKayla Wandell

Faculty mentor: Roger White

Data Breach Announcements Effects on Company Stock Prices

This research tests the theoretical relationship between data breaches and stock prices, as well as how consumer preferences impact share holder decisions to buy and sell shares of a company. In an age of increasing scrutiny over cyber security, it is important to know to the value a stronger cyber security system will have on maintaining company wealth. Currently, intangible risk models do not specify specially for data breaches, seeing as no economic research exists on this relationship as to date. This new research aims to understand what, if any, relationship is present and how those models can be adjusted to better understand risk premiums on companies with high accumulation of stored data. By understanding consumer attitudes towards the event, we are better able to understand how companies can maximize their risk aversion. From previous research on that topic, we see that delays to announcements and credit monitoring are noted as the top reactions for consumers. In our model, we test if these factor into share holder decisions to keep company stock. We employed several different empirical models in order to best understand the relationship between the dependent and independent variables. By collecting stock prices three months prior and three months after the breach for companies such as, Facebook, Target, Equifax, Etrade, CFG, Adobe, JP Morgan and Chase, and T-Mobile we were able to run our regressions functions. We found that there does exist a statistically significant relationship between the difference in stock price, a delay and credit monitoring upon the stock price. Confirming that both data

breaches and consumer attitudes towards the breach can negatively impact the stock prices.

Eryn Wells

Faculty mentor: Joyce Kaufman

Layering Oppression: An Examination of how the Israeli-Palestinian Conflict Impacts Their Women

This paper analyzes how the Israeli-Palestinian conflict impacts women on both sides of the conflict. To answer this question, I will be exploring case studies of Israeli and Palestinian women in Israel and analyzing the affect the conflict has had on them. On the Palestinian side, this conflict has left thousands of women and children dead and thousands of homes destroyed or uninhabitable. (Norwegian Refugee Council, 2015) On the Israeli side, women are trapped in Israel's macho and militaristic society. (Samuel Thrope, 2015) Though women from different communities are affected by this conflict differently, the problems that all women face are compounded because of how these communities interact. From a peacekeeping perspective, this study emphasizes the need to take into account the ramifications of a society that is in or has been in conflict and explore the options available to women on both sides of the conflict. For this research I will be drawing from Joyce D. Kaufman and Kristen P. William's books, *Women, The State and War* (2007) and *Women at War, Women Building Peace: Challenging Gender Norms* (2013), Simona Sharoni's book, *Gender and the Israeli-Palestinian Conflict* (1995), and Tami Amanda Jacoby's book, *Women in Zones of Conflict: Power and Resistance in Israel* (2005).

Eryn Wells

Faculty mentor: Joyce Kaufman

Unequal Pay for Equal Work in the United Arab Emirates: Insidious Discrimination or Real Socioeconomic Theory?

A common wage practice used in the educational sector of the United Arab Emirates (UAE) is establishing wage differentials based on an educator's nation of origin. This paper explores the contours of the issues arising from this socioeconomic phenomenon. Is this practice a form of wrongful discrimination or is this model based on sound economic theory consistent with the supply and demand for labor? Is it unreasonable for prospective workers to expect that their wages should be based on the host country's cost of living rather than determined on the basis of their individual nation of origin? This study emphasizes the need to take into account how immigration has the potential to promote disharmony in the education sectors labor market. I will be approaching this research by exploring the United Arab Emirates' affirmative action program, Emiratization, which will be studied to show whether the preferential hiring of UAE Nationals in targeted private sector industries, including the use of fixed hiring quotas, exacerbates the perceptions of wage inequality. The methods I will be using to investigate this thesis are both quantitative and qualitative research. Quantitative data will give me a better understanding of the wage disparity. For this research I will be drawing from Vazquez-Alvarez R Elbadawi article Migration Policies and the Role of Labor Markets in the Long-Term Development Strategy in the UAE (2010), Forrest's article Labor Recruitment Firms in the UAE: A Profile of the Industry and Analysis of the Major Competencies of Recruiters (2004) and Milanovic's research article for The World Bank, Global Inequality: From Class to Location, From Proletarians to Migrants (2011).

BryAnna Wertz

Faculty mentor: Cheryl Swift

Inputs of 3 Different Plant Species to Aquatic and Terrestrial Food Webs

The Mai Po Nature Reserve in Hong Kong supports the largest expanse of mangrove forest in the Pearl River delta and is an important wintering area and stopover for migratory waterfowl. In addition to providing habitat, mangroves play an important role as primary producers, and are a significant source of input into the food web of Mai Po. We compared inputs of *Phragmites australis*, *Aegiceras corniculatum*, and *Kandelia obovata* in three different areas of the reserve—reedbed which is dominated by *P. australis*, *gei wai* and intertidal which are dominated by *A. corniculatum* and *K. obovata*. We quantified aquatic inputs, by placing known amounts of leaf material into boxes with different size mesh netting; this allowed water and insects to move in and out. We sunk the boxes in each of the three areas for six weeks. Boxes were collected, the remaining leaf material dried, and the dry weight recorded to calculate a mean percent leaf tissue loss. We quantified terrestrial inputs by marking 10 leaves on five individuals of each species in each area. We returned every three days for six weeks to record the percentage of leaf eaten. At the end of six weeks, leaves were removed, and the leaf and eaten areas were traced and measured to calculate percent leaf tissue loss. We also compared herbivory type across areas by randomly selecting three leaves from 10 individuals in each area and recording the type of herbivory occurring on each leaf. We classified herbivory as holes, chlorophyll removal, marginal eating, mining, or no damage at all. Our results showed that marginal tissue loss was the highest type of herbivory occurring in both the *gei wai* and intertidal areas while leaves in the reed bed tended to show no herbivory. We also saw that, *Kandelia obovata* had greater tissue loss than *P. australis* and *A. coniculatum* for both terrestrial and aquatic areas. We hypothesize that *Phragmites australis* and *Aegiceras*

coniculation have lower nutritional value, and this is significant because Mai Po management are converting mangrove forest into reed bed to provide more open water habitat. This may have a detrimental impact on food web inputs in reed bed since *P. australis* exhibited the lowest amount of aquatic and terrestrial tissue loss in reed bed habitats.

Madison White

Faculty mentor: Joyce Kaufman

A seat at the table: Women and U.S. Foreign Policy

In this paper, I will evaluate women in U.S. politics as foreign policy agents. Historically, foreign policy, war, and national security have been coded as masculine areas of legislation that women are left out of. I plan on performing both quantitative and qualitative analysis; for the quantitative data I will look on the webpages of female members of Congress, to see if they list foreign policy or defense on their list of public concerns. From there, I plan to categorize how the language is featured on the web-page in categories such as: "emphasis on peace," or "emphasis on defense." Credit claiming is an important component of understanding what our elected officials value and prioritize. My hope in doing this is to gain a better understanding on how frequently women in Congress actively claim issues of foreign policy as a part of their platform, and furthermore how they choose to present their policy positions to their constituents. Much research has been done on gendered areas of policy, like Ruth H. Howes, Michael R. Stevenson scholarship, *One of the Boys?: Women, Military, and Foreign Policy Decision Making*. However, most of the scholarship has been done on women as foreign policy agents in the aggregate or in pieces of legislation, not specifically how they talk about policy to their constituents. My research aims to reconcile foreign policy being an area that voters are historically more confident in males, and

how women within Congress instill confidence in their voters through their foreign policy agenda.

Sam Whitehill

Faculty mentor: Roger White

The Gender Pay Gap in Performance Based Industries

This project's purpose is to investigate the gender pay gap in performance-based industries. Aiming to find as to whether such a gap exists because of gender or racial discrimination, consumer preferences, skill or other factors. By using Men's and Women's Tennis, the project is able to make predictions for the wider market itself. Using regression analysis of key variables that affected a player's total prize money earned in 2018, it can be observed what factors have a greater effect and give a better idea of the gap that exists. In this project we found that there is not only gender discrimination but also racial discrimination. Observed differences in pay are results of a combination of all variables relating to consumer preferences, skill/performance, gender and race. All performance industries mirror each other pretty closely, in terms of how they can be affected by fans and their individual skill sets. It is reasonable to then say, based off of these findings in tennis, that throughout the wider realm of the performance industry (sports, music, television, film etc.), performers face the common hardship of gender and racial discrimination, though it is not as impactful as the way that they perform and carry themselves in the public eye.

Kacey Whitney

Faculty mentor: Anne Sebanc

The Emotional Outcomes of Foster Children: The Impact of Sibling Relationships, Maltreatment and Attachment

In the United States today, there are about 400,000 children in foster care ranging from early childhood to late adolescents. Children who are placed in the system have mostly been exposed to some sort of maltreatment or lack of attachment with the primary caregiver, which can result in negative emotional outcomes on a child's development. Attachment plays a significant role in a foster child's life beginning with their biological families and transitioning into their foster caregivers this affecting the way a child internalizes and externalizes their emotions. Research has shown that siblings placed together provide a source of secure base and comfort for one another during placement transitions. I conclude from my 20 articles that everything a foster child has endured and experienced has helped them develop resilience. Not all foster children gain resilience through their life experiences but with the support from a secure attachment, children are able withstand adversity and have a better outlook on their future.

Astra Yatroussis

Faculty mentor: Laura McEnaney

Spurs, Steers, and Stereotypes: The Gay Rodeo as Social Movement

Internally, the gay rodeo serves as a space of acceptance and reclamation of tradition & identity for members of the broader LGBTQ community with a shared background in rural American culture. Externally, its organizers and participants have sought to contribute to the breaking of stereotypes for gay men. This paper reframes the practice of the gay rodeo, centered on the International Gay Rodeo Association and its predecessor

organizations. Additionally, it explores the reinforcement of traditional masculine/feminine roles resultant therein, identifies race as a further dividing factor within the movement and seeks to identify its place within the latter days of the broader gay liberation movement.

Miranda Yzabal

Faculty mentor: Anne Sebanc

How Speech Impairments Affect Socio-Emotional Development and Peer Relationships in Early Childhood

Speech impairments are commonly diagnosed in children in the years of their early childhood. This impairment can create many opportunities for complications in normative functions such as attending to one's emotions and interacting with others. More specifically, research has shown because children have a speech impairment, it is more likely for them to have less confidence in themselves and to have more difficulties with peer relationships. Different observations of children have shown that children with speech impairments have lower self-esteem and confidence levels than those without a speech disorder. Because of these emotional issues, students' social skills are affected and are gained at a slower rate as well. With the help of such internalizing problems and other factors, peer interactions could be altered. While many studies show how positive peer relationships derive from quality friendships and positive peer acceptance, others show how negative peer relationships develop from poor acceptance, including bullying. With the use of 20 empirical studies, the current literature review will examine literature on how speech impairments affect socio-emotional development and peer relationships. After reviewing this research, it will be discussed how students with speech impairments may be seeking services for their speech but may not seek services for emotional and social intervention. This is necessary

considering that such implications can affect how these children overall cope and live with their impairment.