CHAPMAN UNIVERSITY

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Center for Undergraduate Excellence

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ABSTRACT VOLUME

CHAPMAN UNIVERSITY · **Center for Undergraduate Excellence**

Message from the Director

Greetings and welcome to the Fall 2021 Chapman University Virtual Student Scholar Symposium!

Student Scholar Symposium celebrates the remarkable scholarship and creativity conducted by Chapman students. Student Scholar Symposium is sponsored by the Center for Undergraduate Excellence, which is the first stop and the central hub for students to learn about and engage in undergraduate research and creativity activity; and to discover the wide range of prestigious external scholarships available. Our student presenters reflect the diversity of academic and creative disciplines thriving within the Chapman community.

The Fall 2021 Student Scholar Symposium is 100% virtual. On this platform you can attend a live Zoom meeting to connect with our students and discuss their research/creative activity. The virtual symposium allows our students to showcase their research and creative projects through a poster presentation, an oral presentation, or a creative performance.

Our virtual symposium would not have been possible without the extraordinary effort by the CUE staff, Lisa Kendrick, Operations Manager, and Ann Sadakane, Administrative Assistant, who designed and developed the event. A special thanks to both of them.

Thanks to all the student presenters and their faculty mentors!

Dr. Julye Bidmead

Director of the Center for Undergraduate Excellence at Chapman University

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Shinnyo Fellow – Shun Kato
Student Scholar Ambassadors

Oral Presentation Moderators:

Dr. Ahmed Sebbar
Dr. Sougata Poddar
Dr. Jan Osborn
Dr. Julye Bidmead
Christine Fugate
Dr. Cecilia Zurita Lopez
Dr. Vincent Berardi
Dr. Ryan Allen
Dr. Minju Kwon
Dr. Kelli Fuery

Schedule of Events

Poster Session 1	**9:00 - 10:30 am**
Oral Session 1	**11:00 - 12:00 pm**
Poster Session 2	**12:30 - 2:00 pm**
Oral Session 2	**2:30 - 3:30 pm**
Poster Session 3	**4:00 – 5:30 pm**

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Biological Sciences

1. **Development of Comprehensive Theoretical Morphospaces for Canine Cranial Morphology.**
   Presenter(s): Alexa Ortega
   Advisor(s): Dr. Lindsay Waldrop, Dr. Nicholas Hebdon

Throughout the evolution of the family Canidae, there is a continuous belief that canines have an exceptional olfactory system which allows them to have a heightened sense of smell. Because of this olfactory sophistication, canines have become prevalent as detection animals in the military, homeland security, law enforcement, forensics, and civilian applications. However, while the trait is highly regarded, the exact role of nasal morphology is understudied. We aim to investigate the influences of nasal cavity and internal structure morphology in odor detection. However, nasal structure is a sophisticated morphological target and requires innovative solutions to capture the key variables in the system and isolate the effects when single parameters are altered. To develop this method, we will employ three Computerized Tomography (CT) scans; a Golden Retriever (Mesocephalic), Chihuahua (Mesocephalic), and English Bulldog (Brachiocephalic). From these we create 3D models of these skulls within SlicerMorph to retrieve morphometric parameters for incorporation into a Principal Components Analysis (PCA). We then use the subsequent morphospace in tandem with Blender to build out theoretical morphotypes that can be used to measure how varying parameters individually influences functional outcomes. The value of this method's development study is the creation of a procedural workflow to populate a theoretical morphospace. Using canid skulls as a case study, the development of this workflow can lead to possible automation allowing for quick and efficient creation of large theoretical morphology data sets to examine structure-function interactions at high resolution. In the future, we will expand our data set with CT scans from the LA County Natural History Museum and integrate them into computational fluid dynamics analyses to assess shape-olfaction interactions.

2. **Hagfish Slime Mucous Vesicle Deployment in Seawater**
   Presenter(s): Anne Kenney
   Advisor(s): Dr. Douglas Fudge, Dr. Gaurav Jain

Hagfish produce a large quantity of defensive slime when attacked. This slime is a rapid forming dilute hydrogel comprised of two main components, thread filaments and membrane-bound mucin vesicles. Little is known about the behavior of the mucin vesicles immediately after secretion from the slime gland, as all studies on mucin vesicles have used vesicles stabilized with polyvalent anions. The slime is known to form rapidly after secretion, taking between 100-400ms, however the exact speed of the hydration of the mucus component has not been quantified. In this study we observed and captured the behavior of mucin vesicles with an inverted microscope when introduced to artificial sea water. A small dab of exudate was placed onto a slide and then

a drop of solution was introduced. The resulting behavior was the rapid swelling and expansion of vesicles seen at high magnification and captured using a high-speed camera. Focusing on the expansion of individual vesicles after contact with artificial sea water showed the rapid hydration of some vesicles. The expansion rate of the mucin vesicles, once started, was much faster than any observed slime formation. Preliminary analysis averages hydration times between 20 to 70ms, with a lower hydration time bracket of 15ms. Suggesting that when slime is naturally deployed the mucous gel may be the first component to deploy. However, the presence of vesicles seconds after ASW is added suggests a possible protection effect from an extremely fast gel formation we are currently unable to capture. These insights on the mucin vesicle hydration speed in fresh exudate will further contribute to research involving the mechanisms for hagfish slime formation.

Business

3. **Can Strong Business Networks Help or Hinder Survival?**
    Presenter(s): Shaan Parol, Khushi Patel
    Advisor(s): Dr. Cristina Nistor, Dr. Charu Sinha

Business relationships embed companies into a market network that ensures efficiency and superior returns: good partners can influence future profits and open doors for future partnerships. In this paper, we conceptualize just how important relationships are in a dense, close knit, and large industry network by considering examples from what happens when a business partner disappears in the Thoroughbred Horse Industry. We describe and analyze several types of node deletions due to bankruptcies, owner death, and owner retirement.

Communication Studies

4. **Head Coach Leadership Styles and how it Affects Team Cohesion**
    Presenter(s): Brayden Schlaf, Thomas Pierce
    Advisor(s): Dr. Austin Lee

This research is looking at how the leadership style of the head coach affects the cohesion of the team as a whole. We want to determine what leadership style is the best for team cohesion. Previous research has looked at how leadership style affects production, but never cohesion. We believe that team cohesion is an important part of team success and our research would help coaches determine what leadership style they should use. We believe our outcome will show what leadership style is the best as well as telling us what each coach at Chapman leadership style is. Our hypothesis is that democratic leadership style will have the highest level of team cohesion.

5. **Social Media, Social Comparison, and Romantic Relationship Satisfaction in Young Adults**
   Presenter(s): Sierra Detar, Chayla Phelps, Isabella Deangelo
   Advisor(s): Dr. Austin Lee

The purpose of this research project is to see how social comparison caused by social media affects the satisfaction within romantic relationships in young adults. We are conducting this research project because social media has become such a frequent aspect of everyday life. Our hypothesis is that as the frequency of social media use rises, it leads to an increase in social comparison, which decreases romantic relationship satisfaction. Based on previous research, we can see that there is a tie between social comparison caused by social media use, and conflict in romantic relationships. We know from the research, increased popularity and use of social media causes turbulence in romantic relationships. Our goal is to fill in the gaps between young adult romantic relationship dissatisfaction and the inevitable social comparison that comes with social media usage. In order to test the hypothesis, we will be conducting an online survey that allows young adults to participate and answer questions which are designed to see how often they use social media, fall into social comparison, as well as their current relationship satisfaction, using the Relationship Assessment Scale. The expected results will be that the participants who use social media more frequently, thus experiencing more social comparison, will have lower satisfaction in their romantic relationships.

Computational Science

6. **The Relationship Between Norepinephrine Neuromodulation and Stability of Global Brain States**
   Presenter(s): Emma Krivoshein
   Advisor(s): Dr. Aaron Schurger

Recent research investigating the neural dynamics of consciousness has emphasized that stability of brain states is important for revealing both the contents and overall level of consciousness (Wang, 2008). However, the underlying neural mechanisms that modulate stability are not well understood (Perl et al., 2020). Norepinephrine, a slow-acting neurotransmitter, modulates the excitability of neural networks and thus may play a role in controlling stability of specific brain states (O'Donnell et al., 2012). Norepinephrine levels can be reliably indexed by pupil diameter because the primary source of norepinephrine, the locus coeruleus, projects directly to the pupil dilator muscles (Joshi et al., 2016). Past studies in this topic have involved correlating neuromodulator activity with tasks, but not many studies have used perturbation of the brain to observe the effects of neuromodulation on stability. In this study, we perturbed the brain at resting state with transcranial magnetic stimulation and recorded the brain's response to

stimulation with electroencephalography. We also recorded pupil diameter to index norepinephrine levels directly before, during, and after stimulation. We aim to establish whether NE act as a stability modulator by assessing whether stability covaries with pupil size. Such a relation would suggest that norepinephrine plays a crucial role in influencing neural dynamics that are relevant to consciousness.

Health & Strategic Communication

7. **Implementing a Schedule with Health in Mind**
   Presenter(s): Jacob Dunkle, Jacklyn Yoon, Abby Bechtel, Miles Milosevich
   Advisor(s): Dr. LouAnne Boyd

Since COVID-19 has forced many students into quarantine and online schooling, these students have faced struggles organizing tasks, especially now in their return to in-person classes. With this return, students have expressed hardship in balancing academic needs with that of physical and mental health. How are we able to meet the fitness and nutrition goals of students who are busy with the school through an integrated scheduling app? Researchers have found that many students and teens are facing challenges with productivity and time management, especially when it comes to sleep, exercise, eating well, and academics. Using the user-centered design method, we have empathized with teenage students, defined the problem, ideated on a solution, created multiple low-fidelity paper prototypes, and conducted tests for our prototypes. Such an application would allow users to schedule goals for sleep, exercise, diet, and academics, and would provide other tools in line with these goals, such as an object classifier for use in identifying nutrients in meals from the camera. Implementing a calendar-like interface, users will be able to create their own schedule based on their schooling while setting health goals around it. Another such tool is a feedback feature, allowing users to quickly receive feedback on specific exercises as they develop them, by simply recording themself performing the action. This has tools in developing sports skills, learning how to create a workout plan, or improving/validating weightlifting form before increasing weight load. By combining these tools, hard-to-define goals can be computationally validated, providing users with a straightforward means of progress. Initial results showed that students expressed interest in using an integrated scheduling app. Further findings are discussed.

Health Sciences and Kinesiology

8. **The Effect of Stay-at-Home and Mask Mandate Policies on COVID-19 Hospitalization Rates in New York City Among Minority Populations**
    Presenter(s): Jeremy Tang
    Advisor(s): Dr. Jason Douglas

The COVID-19 pandemic has highlighted persistent health disparities affecting disadvantaged populations. Mandatory mask mandates and stay-at-home orders were implemented to protect all individuals. However, underserved communities may not have equally benefited from these policies due to inequitable access to health-protective resources. This study examined New York City hospitalization rate associations with a range of social determinants of health following March 2020 stay-at-home and April 2020 mask mandate policy implementation using March - June 2020 COVID-19 hospitalization data aggregated to the ZIP Code Tabulation Area unit of analysis. Multiple regression was used to examine hospitalizations per 100,000 persons of the population regressed by percent noncitizens, percent poor English speakers, percent Black, percent Hispanic, percent Asian, and percent American Indian/Alaska Native. Results indicated that percent Black ($p < 0.05$) and Hispanic ($p < 0.05$) residents associated with higher rates of hospitalizations compared to other races and ethnicities. Percentage of poor English speakers also associated with higher hospitalization rates ($p < 0.05$). Despite a decrease in hospitalization rates towards the end of the four-month span, the trends remained and revealed the disproportionate impact that the pandemic has on underserved New York City residents.

Music

9. **Building Ruby: Making and a Custom Electric Guitar from Scratch**
    Presenter(s): Anthony Cevallos
    Advisor(s): Dr. Jessica Sternfeld

The Fender Stratocaster is a beloved electric guitar that introduced comfort with its contour cuts, ease of maintenance with its individually adjustable saddles and bolt-on neck, as well as a floating tremolo (vibrato). But does every electric guitar player need a professionally-built custom Strat? There comes a point in every serious musician's development where purchasing a professional instrument becomes a must and electric guitar is no exception to this. Modern Fender Stratocasters are nice instruments to play, but there's nothing special about them that justifies the price; a player is just paying for the Fender logo to be stamped on the headstock. The best thing a player can do for themselves is to build their own Stratocaster from scratch. There are plenty of affordable building kits available, and even companies such as Warmoth Guitars that will shape and paint the guitar bodies and necks for you, giving you plenty of customizability with

hardware and wood choices. These custom-built instruments are going to play better and feel better than any standard American-made Fender on the market, and are a lot more cost-effective than a Fender Custom Shop built model. On top of that, one will develop the skills of properly setting up and fine adjusting their instrument in the process of assembling it, in essence turning themselves in to a self-reliant musician and guitar technician. In this project, I will be building a custom Stratocaster from scratch with parts ordered from Warmoth Guitars and discussing the process from start to finish, from testing out a variety of guitars and electronic configurations, to final assembly, setting up and fine adjustment of the instrument.

Peace Studies

10. How New Constitutions and Conflict Can Support Gender Parity in National Legislatures
Presenter(s): Roksana Gorgolewski
Advisor(s): Dr. Lisa Leitz

In the past thirty years, a global trend of democratization and greater gender parity has influenced nations to rewrite their constitutions, putting more of an emphasis on equality among the sexes. The 1980's in particular is cited with hosting a newfound constitutionalism. Reading Amrita Basu's Women's Movements in the Global Era:The Power of Local Feminisms and M.E. Berry's War, Women, and Power: From violence to mobilization in Rwanda and Bosnia-Herzegovina highlights the unique opportunity time post-conflict offers to disrupt existing gender roles. This project explores determinants of gender parity in national legislatures among nations with newly ratified constitutions, adding a focus on the particular function conflict plays regarding gender quotas and constitutional re-working. Each nation analyzed either experienced significant conflict between 1989-2019 or ratified a new constitution between the same range. Other variables which aid this inquiry include the rate of gender inequality, political rights score, and the intensity of conflict. The methodology rests upon quantitative research. An original dataset was created, looking at fifty-six nations with newly ratified constitutions, taking variable data from Uppsala University, the World Bank, International IDEA, and the University of Michigan, among others. Expected results would conclude that in nations that rewrote their constitutions to include a gender quota and experienced conflict, which lead to the writing of the constitution, women hold a greater role in national legislatures by holding onto greater percentages of seats.

Political Science

11. The Implications of COVID-19 on the General Perception of Financial Collapse
Presenter(s): Alexis Reekie
Advisor(s): Dr. Ann Gordon

By disrupting the general value paradigm, the typical hierarchy of values, individuals directly affected by the COVID-19 virus have realized an overall shift in perspective, indicating a need to understand the effects of the COVID-19 virus on one's outlook regarding economic anxiety and fear of financial collapse. The possibility of a global health crisis reaching levels of devastation are certainly great and worth investigating. Throughout this research paper I worked to determine the correlation between fear of financial crises and individuals who have been affected by the COVID-19 virus. Utilizing the Chapman FEAR Survey questions pertaining to the economy and the existing implications of the virus, I have been able to observe an increasing trend of fear surrounding financial downfall in those who have contracted the virus. Social and cultural norms prior to the virus have exacerbated existing disparity in employment, education, and ability to maintain their lives, all factors that directly pertain to finances and ability to maintain financial stability. Following global crises and the observance of attitude change towards personal and national finances, one can see that the values of individuals are greatly affected by health crises and their potential impacts on the economy. Gaining insight into the relationship between fear of financial collapse and health crises are crucial in order to understand what is truly valued in our society.

12. People Believe the Government is Concealing Information About the New World Order and Illuminati Conspiracies: How is This Harmful to Democracy?
Presenter(s): Annabella Simmons
Advisor(s): Dr. Ann Gordon

This paper investigates the public's trust and distrust in what the government is concealing regarding New World Order and Illuminati conspiracy theories, and variables that influence those conspiratorial beliefs. Variables investigated include social media use, political affiliation, and religion. Conspiracy theories and the understanding of how these beliefs develop is crucial, as they are harmful to our interpersonal interactions, public trust in our government, and politics. Belief in conspiracy leads people to develop paranoid, internally cogent perspectives on reality that can produce harm towards other groups of people. These paranoid perceptions of reality can lead to intergroup conflict and increased lack of trust in our government. It is important to understand that as this lack of trust in the government grows and these paranoid realities solidify, democracy erodes: the "us and them" mentality that is created through a group's conspiratorial narrative can act as a trigger for radicalism and conflict. This paper uses the questions: Why do some people believe the government concealing information about a New World Order? How is

This Harmful to Democracy? To examine whether or not the use and engagement with social media, among the previously mentioned variables, impacts the likelihood the public will believe in conspiracy theories. Previous archival research has identified correlations in religion and conspiracy belief, as a result of Biblical interpretations. This paper uses data analysis derived from public surveys. The findings in this paper present correlations between belief in the Illuminati and New World Order conspiracies and increased use of social media as a news source.

13. American Crime Fear Levels
Presenter(s): Ari Hodoyan
Advisor(s): Dr. Ann Gordon

Over the years, crime has had a significant decrease in the United States, yet, fear is still the main circumstance in American society today. Fear of crime is rooted in many different causes, such as gender, ethnicity, age, political party, and geographical location. Relying on the Chapman Survey of American Fear, a representative national sample of U.S. adults, I will explore the correlation between gender and media consumption with the fear of victimization. A person's level of fear can increase from the amount of media intake they have. Social media is relatively new but has become impossible to live without and seems to increase people's fear of the world. The media is obsessed with vicious and prevalent crimes leading to the creation of multiple crime television shows. That is because the positive side of the news is rarely shown since it does not lead or sell as much as one would hope. I will also incorporate the vulnerability and crime paradox theory to examine why women are more fearful than men. In this article, I expect to find that political affiliation can impact fear of crime, women are more afraid of being sexually assaulted, and Caucasians are more fearful of being victimized than people of color. With these findings, new measures can be taken to decrease the level of fear in the United States by representing accurate statistics of crime to make people more comfortable in their communities.

14. Perceptions Surrounding White Supremacy and Violent Extremism in a Post-9/11 World
Presenter(s): Brendan Falk
Advisor(s): Dr. Ann Gordon

Since the attacks on September 11, 2001, American foreign policy has revolved around how to limit the effects of radical extremism and prevent future attacks. But, in the aftermath of the 2020 Presidential Election, it became apparent that strategies for countering future violent extremism should focus on domestic threats to the nation. In my project I will examine the fears of U.S. adults regarding the rise of white supremacy and violent extremism in the United States. Relying on the 2021 Chapman Survey of American Fears, a representative national sample of U.S. adults, I have found that race plays a critical role in the fear of U.S. adults when it comes to white supremacy, with those who identify themselves as "White, non-Hispanic" less fearful of white supremacy than those who identify themselves differently. Also among the interesting findings

was the relationship that religiosity has on fear of white supremacy, with those more religious less likely to fear white supremacy. Furthermore, I found that those who voted for Donald Trump in the 2020 Presidential Election are less likely to fear white supremacy than those who voted for other candidates. Finally, I found that media consumption plays a role in fear of white supremacy, as those who consume more traditional media less fearful of white supremacy. Although the U.S. government has spent trillions of dollars in the past two decades preventing violent extremism from threatening its interests around the world, the greatest perceived threat to those who funded the 20-year conquest may have been at home all along.

15. How Level of Education Effects Fear and Belief in Climate Change
Presenter(s): Cole Barlow
Advisor(s): Dr. Ann Gordon

Climate change is a pressing issue that our generation is facing and will have to find solutions to in the coming years. It is extremely hampering to progress in legislation and projects to combat climate change when a large percentage of Americans possess a strong disbelief of this phenomenon. In this paper, I attempt to find a relationship between participants' level of fear about climate change and their level of education. The Chapman Survey of American Fears 2020/21, a survey in which Americans are asked a variety of questions involving background, values, and beliefs will be utilized in this research. I expect to see a strong correlation between people's beliefs and climate change and the highest level of education they have received. I believe that the people who have received less schooling will believe less in climate change compared to people who have received more schooling strongly believing in climate change. It is imperative that people's minds on this topic change in the next few years or it may be too late. With this information we may be able to start solving the problem of disbelief in climate change due to misinformation in our country.

16. The Rise and Fall of the American Fear of Climate Change
Presenter(s): Hannah Waldorf
Advisor(s): Dr. Ann Gordon

The climate crisis is a situation that can be characterized by the threat of dangerous and irreparable changes to the planet. These alterations include an increase in global temperatures, food and water insecurities, extreme weather patterns, social unrest, and political conflict. Fear of the climate crisis has decreased within the past two years (2020 and 2021)—this paper will examine factors that influence the change in American climate change fear. Using data from The Chapman University Survey on American Fears (CSAF)—which includes 1,035 participants—it is expected that the current downward trend in climate crisis fear is rooted in changes of media consumption, partisanship, and administration policies. Trend changes in the factors listed prior will be examined in context to the COVID-19 pandemic. The two administrations that will be

examined include the Obama-Biden administration and the Trump-Pence administration. The 2016 through 2019 Fear Surveys will be compared to the 2020 and 2021 Fear Survey to gain a better understanding of the recent decrease as well. Identifying the factors that influence climate change fear will allow for future research on how to communicate the magnitude and importance of taking action against the climate crisis. Further research should also include the current Biden-Harris administration to better understand the change in climate fear over the past decade.

17. Mental Health and Pandemics: Does Mental Health Influence Attitudes and Behaviors Towards the COVID-19 Pandemic?
Presenter(s): Kate Syverson
Advisor(s): Dr. Ann Gordon

The Covid-19 Pandemic during 2020-2021 has initiated a time of unprecedented confusion, anxiety, and uncertainty. The mandated isolation has had a significant negative impact on the mental health of individuals around the world as reported symptoms of anxiety and depression have increased substantially. In this paper I will explore the potential factors— such as age, gender, and race—which may have influence over an individual's mental health and how it reflects in their reported behaviors and attitudes towards the Covid-19 Pandemic. Relying on a representative national sample of U.S. adults through the 2020/2021 Chapman Survey of American Fears, I expect to find that individuals who identify as female, people of color, and individuals between the ages of 18-30, will be more likely to report more days of bad mental health than those who identify as male, white, or above the age of 30. I then expect to find a relationship between the number of days of bad mental health and the individual's behaviors and attitudes during the Covid-19 Pandemic by exploring the previously aforementioned factors in relation to feelings towards the mandated lockdowns, mask wearing, and recommended vaccinations. By better understanding the relationship between what influences an individual's mental health as well as precautionary behaviors during a pandemic, better procedures can be formulated and implemented in an effort to save more lives, from both a virus as well as from mental illness, if a pandemic of this magnitude were to happen again.

18. Government Conspiracy Theories. Does Political Party Affiliation Affect Belief in Government Conspiracies?
Presenter(s): Kiana Favela
Advisor(s): Dr. Ann Gordon

Government-related conspiracy theories date back to at least the 1828 Presidential Campaign, where people believed that Jackson's supporters were plotting a coup d'état if they were to lose the election. Since then, government-related conspiracy theories have soared in popularity, ranging from 9/11 being planned by the U.S. to the government knowing about aliens. Belief in conspiracy theories is crucial because it can damage one's trust in government, and thus, be

damaging to democracy. The present research examines the effects of political party association on the belief that the government is concealing what it knows about being involved in popular conspiracy theories. QAnon's relation to belief in conspiracy theories is an under-researched field which this paper studies. Relying on the Chapman Survey of American Fears, a representative national sample of U.S. adults, I examined questions related to government conspiracies, and I compared it to political party association. I expected that affiliating with a particular political party would affect a person's view on the government concealing information. The research found that political party association did not significantly impact about half of the questions studied. For the other half of the questions studied, Republicans believed in government conspiracies more often than Democrats.

19. Media Influences on Fear of Immigrants
   Presenter(s): Mira Eissa
   Advisor(s): Dr. Ann Gordon

The 2016 election and President Donald Trump's administration, tapped into U.S. citizens' polarization regarding the topic of immigration. There was and is a clear negative depiction of immigrants in many different local and national outlets including social media. Using the data collected from Chapman's survey of American fears in 2021, I analyze how fear of immigrants is related to media consumption. Social media and news outlets' coverage of immigrants directly influences the public's attitudes. Agenda setting, priming, and framing help us understand that news and media construct a perception for people that might not be accurate. Citizens have formed their opinions from the rhetoric and depictions seen through media coverage. My expected findings are most influential variable from the different media outlets on fear of immigrants is local news. The second most influential is Fox News. Media consumption is not the only variable that has a relationship with people's fear of immigrants, political affiliation, and age are found to relate. I will examine a person's fear of immigrants and media consumption while testing other variables such as political affiliation and age. The media's focus on graphic and violent depictions for views has formed an altered reality for media consumers around the U.S. It is essential to bring awareness to the media's constructed perception that immigrants must be feared in the U.S. to start breaking down barriers for marginalized people/communities.

20. Friend or Foe? Explaining the Growing Antagonism Towards Immigrants in the United States
   Presenter(s): Skyelar Andrews
   Advisor(s): Dr. Ann Gordon

Following the 2016 election in which immigration became a leading political issue, fear of immigrants has fueled greater divides amongst the American citizenry. Building off group threat theory, I examine the extent that party affiliation, age, income, and geography impact one's fear

of immigrants. Utilizing the Chapman Survey of Fears from 2016, 2018, and 2021, an online nationwide survey conducted with a representative national sample of US adults, I expect to find an increase in fear of immigrants in all independent variables as time passes from 2016 to 2021, paralleling immigration's rise to the national stage during the 2016 election. Specifically analyzing each variable, I expect to find older, lower-income Republicans in the Southwest to be particularly afraid of immigrants as this group of people may perceive they have the most to "lose" with the arrival of immigrants, fearing job, political party, or racial competition. The expected growth in fear of immigration speaks to the sharp divide between the idealistic American "melting pot" and the realistic xenophobic attitudes amongst Americans. Additionally, understanding American attitudes towards immigrants serves as an important tool for predicting voters' support of candidates and policies and better understanding the growing divide amongst voters. By analyzing the relationship between demographic factors and immigration attitudes, this research highlights the polarization amongst voters which threatens American democracy as this divisiveness stalls legislative action and promotes violent antagonism.

21. Islamophobia and Fear of Terrorism at the Conclusion of the War on Terror
Presenter(s): Whitney Gassmann Mennes
Advisor(s): Dr. Ann Gordon

The September 11 terrorist attacks and Islamic extremist violence in the years following contributed to a huge spike in anti-Islamic sentiment in the United States. These fears of Muslims were again made salient by former president Donald Trump as he campaigned and executed a travel ban in 2017 on those from majority Muslim countries, citing national security concerns. In this paper, I examine the impacts of Islamophobia on fear of terrorism. Using the Chapman Survey of American Fears, a nationally representative sample, from 2015-2020, I expect to find that Islamophobia and fears of terrorism will be higher in 2016 around the rhetoric of the presidential election and in 2017 in the wake of the travel ban based on issue salience. I also expect to find less support for accepting immigrants and refugees from predominantly Muslim countries around the same time periods due to social identity theory, which creates an "us versus them" mentality where Muslims would be a defintive "other" in a historically white Christian majority state. This research contributes new data and a time series analysis to examine the impact of more recent events on Islamophobia and perceptions of terrorism. These attitudes, especially those held in 2020, will impact public opinion regarding the humanitarian crisis following the evacuation of US troops from Afghanistan in 2021, in turn affecting potential for domestic conflict in response to religion- and immigration-related biases and future US foreign policy in the Middle East.

Sociology

22. The Effects of Today's Media on Fears of Crime
Presenter(s): Griselda Mendoza
Advisor(s): Dr. Ann Gordon

Having the fear of being the victim of a crime has never been anything new, especially nowadays when we hear about it on social media or news broadcasts. The Chapman Survey of American Fears (CSAF) touches base on the fears of Americans falling victim to a crime whether it be murder or stalking, etc. In my paper I will discuss the relationship between how afraid someone is of being stalked or murdered and the amount of time they spend watching crime tv shows. In CSAF, a major part of the participants' responses leaned more towards being slightly afraid to very afraid compared to those who stated that they were not afraid.

Along with analyzing the data collected from fears of crime, I will also include the data regarding the amount of time a participant spent watching crime content such as shows/movies. I will also include the amount of time someone spends on social media and watching the news. It's important to include social media and the news because with the new digital age, we now have easier access to finding out about crimes happening now or ones that happened decades ago. This paper will allow me to analyze how fears of crime affects both males and females and how their demographics contribute to these fears and what type of media is influencing them the most. It will provide an insight into what type of media coverage is promoting fear driven content as well as who it is affecting the most.

Strategic & Corporate Communication

23. College Students' Friendships and Communication during the COVID-19 Pandemic
Presenter(s): Nikki Trippler
Advisor(s): Dr. Sara LaBelle

The purpose of this research is to uncover the ways in which the COVID-19 pandemic affected college students' experiences in developing and maintaining friendships. Specifically, the modes of communication used to maintain friendships (e.g., virtual, face-to-face) were analyzed for their association with college students' relational and personal outcomes. To understand this phenomenon, one-on-one online in-depth qualitative interviews were conducted with individuals who had taken at least one college course in the past year. Participants were recruited using network and convenience sampling methods. Participation was voluntary and confidential, and participants were given the opportunity to enter a raffle to win one of five $20 Amazon gift cards. The majority of participants identified as female (66.7%) and White (33.3%) and represented a range of academic years and majors. A total of twelve one-hour interviews were

conducted, producing 260 pages of interview transcripts. Throughout the data collection process, data was analyzed using the phronetic iterative approach (Tracy, 2018), which emphasizes both emic (from the data) and etic (informed by existing theory and research) understandings. Results indicate that two themes existed among college student experiences: Proximity and Self Concept. These ideas explain whether participants maintained existing friendships or sought new connections during the pandemic. Participants also shared the impact of the pandemic on their mental health and academic outcomes. A future direction for this research is to analyze the effects of the pandemic on first-year students in particular, as many of the participants in this study were upper-level students. Potential limitations of this research include social desirability bias, sampling bias, and a small sample size. This study provides initial insight into the ways in which the COVID-19 pandemic affected college students' communication and relationships.

Theatre

24. **Utilizing Live Motion Capture and Virtual Reality for an Immersive Digital Concert Experience**
    Presenter(s): Brian Russell
    Advisor(s): Dr. Andrew Chappell

The COVID-19 pandemic has shown that many humans dislike isolation. During quarantine, many entertainment companies created virtual, at-home experiences for their patrons to keep the business alive and maintain a sense of normalcy. Theatres created Zoom productions; bands created recordings of concerts. Some artists had pre-recorded concerts via video games, such as Lil Nas X's and Ariana Grande's Fortnite concerts. There was even a theatre company that created a virtual reality production of The Tempest. Creativity flourished during the pandemic as venues found new ways to engage patrons. We live in a world of the unexpected, where another isolating event may strike at any moment. We live in a world of connection, where one can instantly contact friends across the globe. Concerts are an excellent way to connect individuals, yet as of now, this can only be accomplished effectively in person.

This project is the next step in virtual concert technology and provides a more realistic experience remotely. Bands will perform in a venue called the DEN, as their bodies and faces are motion captured using various sensors and cameras. This data will be sent to Unreal Engine, and patrons can join the venue from their homes via virtual reality. The performers can see and hear their remote audience. I hope to create a connection between others, even when they are in other homes.

25. Theatre Education in High Schools
   Presenter(s): Elizabeth Gimple
   Advisor(s): Dr. Andrew Chappell

Theatre Education can create a safe space for students to craft their artistry and explore themselves. Students should be challenged with the material being taught in their theatre classes and in the pieces chosen for their productions. In this paper, I explore the importance theatre education has on emerging adults, showing how it can help kids from various backgrounds in their adult lives. I research the benefits of a strong theatre education amongst high school students as well as conduct interviews of experiences from both college students (reflecting on their high school experiences in theatre) and from the perspective of theatre educators aiming to maintain an enriching program. I also write detailed lesson plans for different theatre classes during regular school hours, ranging from intro to theatre, advanced theatre, and technical theatre. Each class focuses on challenging students to engage in the material and think critically about the subject matter. The material I will choose for mainstage shows and other performances will ensure that students can further their knowledge learned in their classes in the context of live shows. My theatre program will provide students with experience in technical work, acting curriculum, stage management, directing, and watching and critiquing professional theatre to provide students with as diverse of an education as possible. Students will be able to comment on theatrical phenomena and identify holes and issues within the community. Theatre education is continually growing in a high school setting, allowing students to develop interpersonal skills, critical thinking skills, and collaboration skills, helping them throughout their careers. High School theatre isn't just a group of students putting on some small play; it is about the development of each student professionally and personally. Expanding theatre education is about allowing students to grow into their full potential and into their unique selves.

26. Theatrical Intimacy as a Process
   Presenter(s): James Tran
   Advisor(s): Dr. Drew Chappell

Intimacy as a concept has existed in theatre for as long as the medium has expressed physical passion. However, the work toward creating a safe and meaningful process for intimacy in the theatrical workplace remains in its infancy and continues to evolve as more research is done in the social, emotional, and psychological interactions amongst actors and other artists. Official training and certifications are available for actors, directors, and stage managers but are far from widespread in the theatrical community in the 21st century. My research aims to understand how intimacy in theatre is handled in both rehearsal spaces and performance spaces because intimacy training and knowledge affects our artistic processes before, during, and after we find ourselves on stage. I aim to research journals and other works from experts who have worked in a setting with intimacy or created forms of intimacy training that are applied in their associated

works. As more is discovered about how different people, context, and spaces can affect intimacy, the technical skills that come from this will enhance the overall artistic work and community of intimate theatrical work. Theatre is meant to be a safe space for all physically and emotionally so the intimate work must be able to reflect the process and comfort of the artists involved.

27. Using Theatre to Confront the Climate Crisis
   Presenter(s): Jessica Almos
   Advisor(s): Dr. Andrew Chappell

For people to understand and personalize the climate crisis, it is imperative to appeal to their personal interests and humanize the problem. To combine the arts and the science of climate change, I have collected responses from an anonymous survey and used conversations from interviews to write an ethnography about the intersectional relationship of climate change and the individual. The IPCC report from 2021 is utilized to ask interviewees big questions about climate change and how it does (or doesn't) affect them. Through this study, the disproportionate effect of climate change on marginalized communities is highlighted through the text of the play.

28. Universal Studios Hollywood Halloween Horror Nights: Successfully Transforming Media into Live Entertainment
   Presenter(s): Megan Chuah
   Advisor(s): Dr. Drew Chappell

The success of Universal Studios' Halloween Horror Nights is no secret to avid theme park lovers and the theme park industry. How do they do it? How do they continuously draw in a crowd to sell out their nearly two-month event? In order to answer these questions, I will be creating and designing a theoretical maze akin to those at Universal Studios. Following in the footsteps of the original mazes, I will be basing my maze on a recently popular horror media- the movie Parasite by director Bong Joon Ho.

This topic is significant because it delves into various entertainment mediums and how they connect and can relate to each other in the twenty-first century. How can my knowledge as a student studying both theatre and film translate into the world of theme parks and it's live entertainment? Is there importance to having a working knowledge of these varied mediums when it comes to reworking them into another?

I anticipate discovering more about my skills as a designer as well as a broader understanding of what it takes to run a full production that is derived from an existing body of work. Also, the general process of what it takes to design an existing world into a practical attraction that successfully immerses its audience. On the industry side of this project, I anticipate finding a sort of common formula to what makes theme park events successful year after year. I also anticipate finding out more about how the different areas within the entertainment industry work together

when it comes to projects such as these and what similarities they may have. I also hope to gain a better understanding of the lure and thrill of themed events and what exactly their audiences hope to experience and take away from their visit.

29. Standing Proud: A Collection of Our Asian Voices
   Presenter(s): Christina Campbell
   Advisor(s): Dr. Jenny Jacobs, Dr. Andrew Chappell

My project is a devised ethnodrama piece centering the Asian voices within the Chapman theatre department. Representations of Asian individuals and culture throughout the history of entertainment have been either sparse, inaccurate or insignificant. The purpose of this project is to provide a space where Asian creatives can authentically and effectively claim their stories through doing what we love to do: creatively collaborate and perform. These stories are important to share now more than ever because of the disturbing rise of anti-Asian hate on top of the pain that our community has endured for centuries.

The process began through conducting interviews with each participant and asking them specific questions about their experiences as Asian individuals. I then formed three separate groups and assigned them each a topic in the realm of Asian social issues that are based off of the preferences from a google form I have previously sent out that had an array of topics for participants to choose from. The topics that I have chosen are portrayals of Asians in entertainment, Asian history and how history repeats itself, and the fetishization of Asian individuals and how that has impacted the Asian community. I formulated questions based on what group I have put them in, and from there wrote foundational scripts for each topic. A foundational script entails a loose plot and dialogue that will allow room for the cast to further devise the piece into the final product. From there, I have worked with each group to create final scripts from these foundational scripts and will be performing the pieces live in December. This project is an ode to what I originally applied to Chapman theatre for: to amplify voices that have historically been unheard. My hope for this piece is that it will contribute to providing a place where Asian individuals can claim space while healing during a time where we have endured pain beyond belief.

Room A
Moderator: Dr. Cecilia Zurita Lopez

Biochemistry/Molecular Biology

11:00-11:20 am

Functional Analysis of CowN and Its Effects on Nitrogenase Proteins
Presenter(s): Dustin Willard
Advisor(s): Dr. Cedric Owens

Nitrogenase is the only enzyme that can catalyze ATP-dependent nitrogen fixation in bacteria, an important biological process that reduces atmospheric nitrogen gas into ammonia. The bacterium Gluconacetobacter diazotrophicus expresses nitrogenase, a two-component enzyme consisting of a catalytic Molybdenum-Iron protein (MoFeP), and its reductase, Iron protein (FeP). However, in the presence of the environmental gas Carbon Monoxide, Nitrogenase is tightly inhibited. In an effort to prevent inhibition, diazotrophs have evolved a small protein, CowN, which interacts with MoFeP directly. This interaction protects the nitrogenase from CO inhibition. Limited research has been conducted on CowN; therefore, CowN's mechanisms and structure remain undetermined at this time. The C-terminus of CowN contains a conserved sequence across several diazotrophs, and we hypothesize that these amino acids are crucial to the function of CowN. In this work we present our structural and functional analysis of CowN's C-terminus. We have made a series of C-terminal mutants and determined how these mutations affect CowN's structure and ability to protect nitrogenase from CO. We have determined that the C-terminus is critical for CowN activity as some mutants are unable to fully protect nitrogenase from CO.

Chemistry

11:20 – 11:40 am

Catalytic Reduction Mechanisms Mediated by Half-Sandwich Iridium(III)- and Rhodium(III)- Sulfur Complexes
Presenter(s): Ka'Naysha Scott
Advisor(s): Dr. Maduka Ogba

Transition metal complexes have been widely employed as homogenous catalysts for hydrogenation and related reduction chemistry, many of which require harsh conditions. Despite the inspiration from nature optimized metal-sulfur complexes (i.e., nickel-iron hydrogenases) for

hydrogen gas activation under mild conditions, a relatively small number of synthetic metal-sulfur variants have been reported. Experimental reports show that a series of so-called half-sandwich metal-sulfur complexes have been successful at facilitating hydrogenation and reduction. However, closer observation of the data reveals varied reactivity across the reported complexes, and little is known about the factors that control such deviations in catalyst effectiveness, limiting our ability to develop more optimal bioreminiscent catalysts. Density functional theory calculations have been performed to investigate the likely mechanisms for the reduction (hydrogenation and hydrosilylation) of ketones mediated by half-sandwich iridium(III)-sulfur and rhodium(III)-sulfur complexes. In this presentation, insights from the computational work will be presented.

11:40 – 12:00 pm

Mechanistic Insights into the use of Carbodiphosphoranes as Lewis-base Catalysts
Presenter(s): Gabriela Nerhood
Advisor(s): Dr. Maduka Ogba

Carbodiphosphoranes (CDPs) are divalent carbon[0] compounds with unusual electronic properties that make them highly reactive and unstable. CDPs have historically been used as strong sigma donors in organometallic complexes. Recent experimental work, however, have shown for the first time the use of CDPs as effective catalysts in the hydroboration of ketones and imines, rivaling other common Lewis base catalysts. Mechanistic details into the activation modes and consequent catalytic reduction afforded by CDPs are unknown. In this work, we use density functional theory methods to investigate several plausible mechanisms stemming from the CDP-substrate adducts formed in the reaction and reveal which catalytic pathway is energetically likely. Detailed analyses of developing charges and frontier molecular orbitals reveal why carbodiphosphoranes are effective Lewis-base catalysts, even when challenging substrates are employed.

Room B

Moderator: Dr. Vincent Berardi

<u>Biochemistry and Molecular Biology</u>

11:00 – 11:20 am

Investigating Arginine Methylation of PGC-1alpha, a Master Metabolic Regulator
Presenter(s): Tiffany Lubrino, Sidney Briski
Advisor(s): Dr. Cecilia Lopez

Peroxisome proliferator-activated receptor gamma coactivator 1 alpha (PGC-1alpha, UniProt Q9UBK2), acts as a transcriptional coactivator capable of regulating metabolic pathways. It has regulatory functions in lipid metabolism, mitochondrial biogenesis, and remodeling of muscle tissue. Thus, PGC-1alpha has been implicated in diseases such as type 2 diabetes and obesity, cancer, and neurodegenerative diseases such as Parkinson's disease. We set out to investigate the control points of PGC-1alpha by focusing on one posttranslational modification (PTM) called arginine methylation. Arginine methylation increases the structural diversity of proteins and often plays a role in protein-protein interactions. Studies show that PGC-1alpha contains arginine residues that are methylated by protein arginine methyltransferase 1 (PRMT1). Since there are other members of the PRMT family, we hypothesize that the methylation of PGC-1alpha is critical for its role as a master regulator by PRMT7. PRMT7 was used because it is a unique member of the methyltransferase family. Not only is it larger than the rest of the family members, but it is also the only known member of the PRMT family capable of producing only omega-monomethylated arginine (omega-MMA) residues. In addition, it prefers to methylate arginine residues found in RXR motifs (where R represents arginine, X represents any amino acid) surrounded by basic amino acids. PGC-1alpha contains four RXR, three RXRXR, and one RXRXRXR arginine-rich regions and like PRMT7 functions at temperatures outside of 37˚C. In vitro methylation reactions using purified recombinant mammalian PRMT7 and PGC-1alpha were performed. Methylation reactions by PRMT7 show that PGC-1alpha arginine residues R568 and R570 become monomethylated and are temperature-dependent. These results elucidate novel posttranslational modifications that may act as control points for the regulation of PGC-1alpha. We next aim to continue this work by focusing on the significance of monomethylating PGC-1alpha at arginine residues R568 and R570.

Health Sciences and Kinesiology

11:20 – 11:40 am

ThinkMED: Inspiring The Future of STEM, One Project At A Time
Presenter(s): Steven Trinh
Advisor(s): Lauren Dudley

ThinkMED is a nonprofit initiative offering a four-week curriculum specifically designed to develop critical thinking and encourage evidence-based decision making. Each week's content material revolves around the use of a ThinkBOX Science Kit containing four (4) wet lab experiments designed to supplement the curriculum. Each experiment is formulated to be inclusive of all California Next Generation Science Standards (NGSS) K through 5. At the end of each week, students get the opportunity to speak with university professors & scientists from a multitude of subject areas including chemistry, anatomy, computer science, physiology, and bioengineering. These kits are donated to children and families who do not have an environment that is conducive to entering the fields of science, technology, engineering, and math (STEM). ThinkMED and all of our STEAM Team members seek to create an environment where all learners can explore the wonders that STEM has to offer on a level playing field without any barriers to learning. Some groups that ThinkMED have had the opportunity to work with are children from low-income families and under-resourced communities in Orange, Tustin, Westminster, Garden Grove, and Santa Ana, children with developmental disabilities, and children affected by a parent's cancer. Ultimately, the goal of ThinkMED is to inspire the future of STEM, one project at a time.

11:40 – 12:00 pm

Mindfulness Meditation as a Preventative Measure Against Alzheimer's Disease: A Literature Review
Presenter(s): Jenna McKee, Rabia Asif, Asif, Amanda Hamilton
Advisor(s): Dr. Manjari Murali

Alzheimer's disease (AD) is a degenerative brain disease affecting aging populations that is characterized by deteriorating memory and cognitive function. There is increasing evidence that the neuropathologic processes associated with the disease manifest as early as two decades before the first clinical signs of memory loss appear (Pletnikova et al., 2015); and several lifestyle factors might be linked to the risk of AD. Specifically, lifestyle factors that cause chronic stress are thought to increase the risk of AD (Justice, 2018; Khalsa, 2015). In contrast, research indicates

that Mindfulness Meditation practice reduces stress and improves cognitive function (Innes & Selfe, 2014; Russel-Williams, 2018). Therefore, we hypothesize that the practice of Mindfulness Meditation can be used as a preventative measure against AD. The present study includes an extensive literature review analyzing previous research that links Mindfulness and AD or cognitive decline. We will also analyze open-source and research data sets regarding overall health (stress, depression, chronic disease, etc.), cognitive, and lifestyle factors as they relate to the prevalence and potential mitigation of AD. Additionally, we will compare neuroimaging data of AD patients to those of healthy individuals who practice Mindfulness Meditation because we hypothesize that there is a correlation between the parts of the brain impacted by Mindfulness Meditation and AD. Finally, we propose that Mindfulness Meditation practice will decrease stress and depression, which will result in a decreased risk of developing AD. Together, findings from our literature review and data set analyses will help us design a future study to investigate the impact of the Fish Interfaith Center's 6-week Mindfulness course on stress, memory, and attention as they relate to the development of AD.

Room C

Moderator: Dr. Ryan Allen

English

11:00 – 11:20 am

By Any Other Name: A Rhetoric of Violence and Reclamation in the Philippine Drug War
Presenter(s): Bernadine Cortina
Advisor(s): Dr. Jan Osborn

In 2016, President Rodrigo Duterte launched an anti-drug campaign, cracking down on illegal drug use and illicit drug trade in the Philippines. Under his administration, the giyera kontra-droga has gained national and international scrutiny. Police admitted to killing more than 4000 drug suspects, and as of May 2018, more than 22,000 deaths were under investigation as unsolved killings possibly connected to the campaign (The Drug War Archive). While the Philippine government claims success in lowering crime rates and creating a safer environment for Filipinos, accusations of extrajudicial killings and human rights violations abound. Today, the full extent of the drug war's impacts remains unclear. What is discernible, however, is language's role. To understand how the promise of a drug crackdown, a former beacon of hope, came to the disproportionate murder of the urban poor, examining the interaction of language and power within the nation is imperative. Using Lyons' theory of rhetorical imperialism and rhetorical sovereignty as a framework, this presentation explores the rhetoric of violence culpable in the orchestration of thousands of deaths while also presenting spaces of resistance in how the Filipino people push back and reclaim the administration's deadly narratives.

Political Science

11:20 – 11:40 am

Environmental Concern v. Perception on Reformative Measures
Presenter(s): Josie Sheridan
Advisor(s): Dr. John Compton

This paper will examine how demographic factors that may correspond with fear of environmental threats correlate with support for decisive action, stances, or legislation that would address aspects of environmental concern. Variables I will look at include income level,

race, partisanship, and education status. This paper relies upon the 2020-2021 Chapman Survey of American Fears, featuring nationally representative data of American adults, to evaluate perception of environmental hazards, along with the 2020 Time Series Study from the American National Election Study, that includes questions on attitudes of measures that may mediate differential environmental impact. I expect the greater the fear of environmental threats such as air and water pollution, the greater the belief in more governmental action that could contribute to environmental equity. Since research shows that environmentally hazardous facilities and practices tend to be designated near areas concentrated with low-income households and people of color, I propose that these demographics will correlate with stronger fear and more positive stances on action due to a greater immediate threat they may face. Furthermore, I suggest that higher education and greater Democratic party affiliation will correspond with greater concern of environmental risk and support on action due to typically having more engagement on the issues. These findings would suggest those who supposedly have the greatest environmental concern are supportive of action to address aspects of them. This is important because otherwise it would indicate that public concern does not correspond with strong attitudes on measures to address them, suggesting that there is an issue which facilitates inaction and threatens our very democracy.

11:40 – 12:00 pm

Political Parties on Campus: College Republicans and College Democrats' Conceptions of Partisanship
Presenter(s): Philip Goodrich
Advisor(s): Dr. John Compton

This project seeks to examine College Republicans and College Democrats' conceptions of partisanship. Specifically, I will test a theory set forth by Matt Grossmann and David A. Hopkins that claims the "Republican Party is best viewed as the agent of an ideological movement whose members are united by a common devotion to the principle of limited government" and the "Democratic Party is properly understood as a coalition of social groups whose interests are served by various forms of government activity" (2015). By performing a content analysis of College Republicans and College Democrats' social media posts, I hypothesize that College Democrats will align more with Grossmann and Hopkins' theory, while College Republicans will not. I suspect that College Republicans will be less focused on the principle of limited government and more focused on promoting the Republican Party, criticizing the Democratic Party, and commenting on specific issues and topics. Thus, I expect the two groups will remain asymmetrical, albeit for slightly different reasons than those put forth by the theory in question.

Room D

Moderator: Dr. Minju Kwon

Political Science

11:00 – 11:20 am

The Effects of the COVID-19 Pandemic on Mental Health
Presenter(s): Zoe Bell
Advisor(s): Dr. Ann Gordon

With the continuance of the COVID-19 pandemic into its second year of cultural domination, everyone around the world has begun to readjust both physically and psychologically to this 'new normal.' Not only are many finding their own mental health beginning to deteriorate, but others are also finding that their preexisting psychological traits and conditions have been exacerbated as the stress from the pandemic continues. The purpose of this project is to draw from numerous academic sources studying the effects of the coronavirus pandemic on people's psychological health and vice versa while determining what demographics of people are of the highest mental health risk and potentially finding solutions to the growing crisis. From both academic research and data sourced from the Chapman Survey of American Fears, I expect to find that the COVID-19 pandemic has intensified the existing mental health conditions of subjects interviewed across multiple studies, placing them at greater risk as the pandemic continues to rage on. Additionally, I believe that the research will also uncover many subjects who, prior to the pandemic, had no prominent mental health 'conditions' to speak of, but soon found themselves with growing anxiety, depression, or other adversities due to the spread of the virus. This paper hopes to serve as both a summary of the current scientific consensus regarding the relationship between psychological traits and the COVID-19 pandemic, as well as a means of combining the most relevant and useful information on the subject in this crucial time where every step to fighting the virus helps, physically, emotionally and intellectually.

11:20 – 11:40 am

COVID-19 Vaccination Beliefs: The Influence of Wealth and Media
Presenter(s): Coury Hawks
Advisor(s): Dr. Ann Gordon

How does class determine what news outlets we are exposed to and does this impact perceptions and opinions regarding the COVID-19 vaccine? Previous research has examined how wealth disparities impact citizens' access to news and media in a regressive manner such that lower

income individuals face greater difficulty accessing accurate information. Additionally, research has also shown that lower income individuals are less likely to be vaccinated and more likely to be hesitant about the COVID-19 vaccine in general. My project studies these two variables in conjunction with each other, analyzing how wealth disparities impact where individuals receive their information from and whether or not this influences their likelihood to get vaccinated. My hypothesis is that lower income individuals consume media that negatively impacts their opinions on the vaccine and creates skepticism and hesitancy towards it, whereas wealthier individuals are more likely to consume media that encourages vaccination. My project will use the 2021 Chapman American Fears Survey to examine my independent variable (wealth) and its impact on my dependent variables (media and vaccination beliefs). This project varies greatly from previous research as it identifies a possible factor that can influence opinions and perceptions of the largest unvaccinated population. Likewise, it opens the door for further research, possible intervention, education, and systematic changes to media consumed by the most vulnerable population.

Room E

Moderator: Dr. Kelli Fuery

Music

11:00 – 11:20 am

Belting in Musical Theater: Why It Is Typically an Unhealthy Vocal Style and How to Utilize It Correctly
Presenter(s): Ella Nelson
Advisor(s): Dr. Andrew Chappell, Patty Gee

Belting, or when a singer uses their chest voice above their vocal break, is a very popular singing style on Broadway in the past couple decades. Almost all new musicals include at least one character, if not all of the characters, that sings in a belting style. But if you do not learn how to belt in a healthy way or do not understand when to use your belt, it can be very dangerous, both for your vocal cords and for the overall mood of the song and/or show. Because this style is so popular, younger people, especially people with female voices, are trying to emulate the dangerous timbre and often end up damaging their voices for life. Even adult voices can ruin their vocal cords by trying to belt without the proper technique, inadvertently getting nodes or destroying their vocal cords so that they cannot even talk. By working with my vocal teacher as well as researching the anatomy of the vocal cords, how the voice is affected by belting, and diving into why people feel like they have to misuse their voices, this thesis will attempt to describe how people misuse their belt, explain how to belt properly/healthily, dive into how to use belting effectively, and will include a recital-style performance of five Broadway songs that are typically belted incorrectly, instead sung in a healthy manner.

History

11:20 – 11:40 am

The Doctor Is In: An Interactive Exhibit
Presenter(s): Nat Pendergraft
Advisor(s): Dr. Alexander Bay

To create an interactive experience for the audience member, actors will portray doctors from different time periods and places to showcase all the varied ways we have tried to treat different ailments. Specific diagnoses and treatment plans will be given to participants based on

symptoms and the dominant medical theory of the era. By learning about the ways humans have used medicine in the past, modern individuals can recognize damaging patterns and logical fallacies that often influence medicine to this day. The first step to solving present day issues in the medical field is understanding their origin. Both educational and entertaining, this exhibit is meant to interest people in the world of history and share interesting facts with the lay public.

Research focused on 6 specific time periods and the dominate medical theories and methods, with the purpose of applying it towards an interactive exhibit on campus, taking place in Argyros Forum 201, on December 4th and 5th from 1pm to 6pm.

Theatre

11:40 – 12:00 pm

When Will "Funny for a Girl" Just Be "Funny"?
Presenter(s): Zoë Tanton
Advisor(s): Dr. Andrew Chappell

The world of comedy has been male-dominated since it began. Female comedians have to work harder than their male peers due to a rigid hierarchy embedded in the industry. Women are not as easily considered funny, are constantly attacked in male comedians' work, and fear harassment (whether they are just starting out or already gaining success). However, due to the evolution of social media and TV as well as unapologetically trailblazing women, comedy writing has begun to change. Through research and a study of successful female comedians on social media and TV, I will assess how women have had to navigate careers in comedy writing differently and what this means for the future of the industry. I will find commonalities between successful female comedians, analyze the past and future of women working in comedy writing, and discuss how the world has and will evolve. As an aspiring comedian myself, I want to know how to claim my space in this challenging industry, as well as know how I can make space for others, too. Using this research as both foundation and inspiration, I put together an all-female comedy group to write and perform a sketch comedy show called "Girls Gone Funny" in mid-November. I am doing this in hopes of creating a positive, safe, and welcoming environment for women that have already been facing challenges breaking into comedy in college and to instill confidence in us as we prepare ourselves to enter the industry.

Biochemistry and Molecular Biology

1. **Functional Analysis of CowN and Its Effects on Nitrogenase Proteins**
   Presenter(s): Dustin Willard
   Advisor(s): Dr. Cedric Owens

Nitrogenase is the only enzyme that can catalyze ATP-dependent nitrogen fixation in bacteria, an important biological process that reduces atmospheric nitrogen gas into ammonia. The bacterium Gluconacetobacter diazotrophicus expresses nitrogenase, a two-component enzyme consisting of a catalytic Molybdenum-Iron protein (MoFeP), and its reductase, Iron protein (FeP). However, in the presence of the environmental gas Carbon Monoxide, Nitrogenase is tightly inhibited. In an effort to prevent inhibition, diazotrophs have evolved a small protein, CowN, which interacts with MoFeP directly. This interaction protects the nitrogenase from CO inhibition. Limited research has been conducted on CowN; therefore, CowN's mechanisms and structure remain undetermined at this time. The C-terminus of CowN contains a conserved sequence across several diazotrophs, and we hypothesize that these amino acids are crucial to the function of CowN. In this work we present our structural and functional analysis of CowN's C-terminus. We have made a series of C-terminal mutants and determined how these mutations affect CowN's structure and ability to protect nitrogenase from CO. We have determined that the C-terminus is critical for CowN activity as some mutants are unable to fully protect nitrogenase from CO.

2. **Evaluation of the TruNarc Handheld Narcotics Analyzer as a Pre-Screening Device for the Orange County Crime Lab**
   Presenter(s): Sarah Yang
   Advisor(s): Dr. Michael Ibba

Forensic analysis of suspected narcotics is often dangerous as the substances' composition is unknown. Many techniques for drug identification require handling of the substance outside of its packaging, which can expose the analyst to potentially harmful chemicals. One technique that does not require removal of the packaging is Raman spectroscopy, a non-destructive technique that utilizes molecules' unique light scattering patterns. The TruNarc Handheld Narcotics Analyzer is a portable Raman spectroscopy device that can be used to screen drugs through simple packaging to minimize the risk of exposure. The Orange County Crime Lab (OCCL) is testing the limits of this device to determine if it can be used to screen new evidence within the Seized Drugs Lab. The lab has used this device to screen 50 pieces of casework, which were then confirmed using gas chromatography and mass spectrometry (GC/MS). Methamphetamine, cocaine, and fentanyl in various forms such as powders, crystalline substances, and tablets, are all drugs we are optimistic that the TruNarc will be able to accurately identify in casework. After verification using GC/MS and the OCCL drug database, the TruNarc had a 73% accuracy rate for

methamphetamine, 71% for fentanyl, and 100% for cocaine HCl. Though cocaine had a high accuracy rate, only three items were screened that contained cocaine. The misidentifications in the methamphetamine and fentanyl categories mainly consisted of colored powders and tablets, which we expected. Overall, the TruNarc has shown to be able to identify substances that are powder or crystalline and light in color. Many of the substances the OCCL receives are methamphetamine in white powder or crystalline form, thus, the TruNarc is likely a useful tool for pre-screening. Further testing will be done to confirm the TruNarc's effectiveness in identifying fentanyl and cocaine, however, this is dependent on what evidence reaches the OCCL.

3. **Biochemical Characterization of Chlorogenic Acid Esterase, Lactobacillus helveticus**
   Presenter(s): Tracie Okumura
   Advisor(s): Dr. Cedric Owens, Dr. Lilian Were

Chlorogenic acid (CGA) is an antioxidant that is present in many different foods. CGA has a plethora of therapeutic effects that range from anti-inflammation to anti-cancer. CGA can be broken down into caffeic acid and quinic acid by CGA esterases, a type of enzyme that can be produced by different bacteria and fungi, including those found in the human digestive tract. Lactobacillus helveticus (Lh) is one such bacterium that produces a highly efficient CGA esterase. Lh CGA esterase may contribute to CGA breakdown in the human gut, preventing its absorption. The goal of this experiment is to characterize the structure and activity Lh esterase. Biophysical experiments, including circular dichroism (CD) and dynamic light scattering (DLS) showed that the protein is a mix of alpha helices and beta sheets, the melting point is 67°C, and that the protein exists in a concentration dependent equilibrium between a dimeric and tetrameric state. Michaelis-Menten kinetics assays demonstrated that the enzyme is most active at neutral pH, and that there is a temperature dependence of the activity. At room temperature, Km is 0.1443 mM and Vmax is 0.05730 mM/min. The Km displays no pH and temperature dependence. These assays helped characterize the previously unknown biochemical and biophysical properties of the Lh CGA esterase. We are now working on using our biochemical knowledge of Lh CGA esterase for biotechnological applications.

Biological Sciences

4. **Biomechanics of Atlantic Hagfish Burrowing**
   Presenter(s): Joshua Lee, Larissa Atkins
   Advisor(s): Dr. Douglas Fudge, Kennedy Guillen

Atlantic Hagfish are eel-shaped animals that dwell in areas of the ocean floor that have a muddy bottom. These creatures are known to burrow into sediment, but little is known about the mechanisms by which they burrow. They have been described burrowing into sand and

aggressively thrashing their entire body, but only until about one third was submerged below the sediment. At this point, they are observed being able to fully burrow their entire body into the sand, with little to no movement of the exposed part of the body. A specialized acrylic burrowing chamber was created to observe hagfish burrowing in mud-like substrates. We used gelatin as a substrate, because it approximates the properties of mud and because it is transparent. We also conducted trials in which two sheets of linear polarizing film were placed in front and behind the chamber. This allowed us to observe deformation of the gelatin, which showed up as a bright spot on the video. This allowed us to infer where the hagfish was pushing against the gel and the magnitude of pushing force. Preliminary observations of hagfish moving in gelatin suggests an internal concertina burrowing strategy similar to that seen in the limbless amphibians known as caecilians. An internal concertina mechanism requires independence between the vertebral column and the skin, which hagfishes possess.

5. **Exploring the Ecological Dynamics of Simple Rhizobial Artificial Populations Using qPCR**
   Presenter(s): Teresa Hur
   Advisor(s): Dr. Hagop Atamian, Dr. Kenjiro Quides

The microbiome of a host can change within a single generation, and repeated exposure to the same species of host can eventually shape a microbiome to be beneficial. In our study, we used the Lotus japonicus-Mesorhizobium loti symbiosis to explore the dynamics of simple artificial rhizobial populations using qPCR. To explore these population dynamics, we conducted a rhizobial passaging experiment wherein rhizobial populations were serially transferred to rhizobia–free plants. According to the sanctions hypothesis, we expect M. loti genotypes that fix more nitrogen to attain greater population sizes over time. We tested the sanctions hypothesis in populations that started with two different combinations of M. loti genotypes. The first combination consisted of a mediocre strain and a non–beneficial strain. The second combination of M. loti genotypes included the wildtype, a mediocre, and a non–beneficial strain. For our mediocre and non–beneficial combination of M. loti genotypes, we did not find support for the sanctions hypothesis. However, we did find support for the sanctions hypothesis in our wildtype, mediocre, and non–beneficial strain combination. The experimental approach used here could only be accomplished using molecular methods, such as qPCR, because the mediocre and non-beneficial strains are indistinguishable through culture-based methods. By utilizing a rapid, relatively cheap, and powerful technique, such as qPCR, future studies will be able to investigate the ecological dynamics of dozens of other M. loti mutants.

6. **Comparing qPCR and CFU to Verify Rhizobia Genotype Proportions**
    Presenter(s): Yoobeen Lee
    Advisor(s): Dr. Hagop Atamian, Dr. Kenjiro Quides

Legumes and rhizobia engage in a symbiotic relationship that is a model for studying microbial mutualisms. This interaction revolves around the nutrient exchange of rhizobia derived nitrogen for legume synthesized carbon that increases the growth of both partners. Therefore, measuring rhizobial population size can indicate the amount of beneficial nitrogen legumes receive. However, legumes interact with genotypes of rhizobia that provide varying levels of nitrogen, and it is unclear how rhizobial populations shift over time. Here, we use quantitative polymerase chain reaction (qPCR) to rapidly track simple, two-genotype, populations of rhizobia, and compare our results to a traditional colony forming unit (CFU) method for analyzing rhizobial abundance in more complex populations. First, we confirmed that qPCR yielded similar results to CFU estimation for rhizobial populations within individual nodules. Next, we passaged and tracked our rhizobial population proportions across multiple plant generations and found that genotypes that fix more nitrogen increased in population proportion over time. Taken together, data collected for individual nodules and the passaging experiment validated the qPCR method. These experiments demonstrate the utility of qPCR for future experiments interested in analyzing rhizobia genotype proportions and how they relate to the level of benefits legumes receive.

7. **Hagfish Egg Biomechanics**
    Presenter(s): Zachary Baker
    Advisor(s): Dr. Douglas Fudge, Andrew Lowe

Hagfish are deep-sea cyclostomes known for their slime secreted in self-defence. Hagfish eggs contain a peculiar morphology on their tips, clusters of hooked filaments covered in thick mucus. The structure and function of the hooks on hagfish eggs are the focus of this study. Experiments using an Instron universal testing machine tested for tensile forces. Cyclic tensile tests were conducted where one egg was held in place, and a connected egg was pulled away until the attachment separated. These tests were run in the air and submerged in seawater. Single filament tensile forces were also measured to understand better the forces applied to an egg during detachment. Images and videos of hooks and attachments were taken to analyze the hooked filaments' structural design to determine potential function. Mucus covers the hooked filaments of fresh eggs and prevents hooks from attaching to other eggs. The tensile force of a hooked attachment between two hagfish eggs was experimentally determined to be around 0.7+/- 0.1 N on average in air but 0.15+/-0.05 N on average in seawater. The forces of subsequent hook attachments with the same eggs after the initial attachment was broken average around 0.1 N of force in the air, a much smaller force than the initial tensile force. Water trials determined little to no drop in tensile force between cycles. The tensile force involved in hooked attachments of hagfish eggs was determined to be relatively small in water as compared to in air,

meaning that the function of the attachment is to protect against a relatively small force. We currently do not know the intended function of the eggs linking into a chain or the intention of the mucus caps found on fresh eggs. Future research is necessary to uncover the answers to these questions.

Chemistry

8. **Catalytic Activity of Bis(pentamethylcyclopentadienyl)germanium (Cp*2Ge)**
   Presenter(s): Haley Robertson
   Advisor(s): Dr. Allegra Liberman-Martin

Catalytic reactions are used in various applications and industries in order to make chemical processes quicker and more efficient. Nowadays, it is crucial that these catalytic reactions are inexpensive, safe to work with, and in abundance on Earth. Traditionally, catalytic reactions have used precious metals, but the goal of this project is to use the main group element Germanium as an alternative. While Germanium has been recognized by many chemists, it has not been used as a catalyst before. The Cp*2Ge catalyst has been synthesized and tested in numerous Aldehyde Hydroboration reactions.

9. **Mechanisms and Chemoselectivity for Hypochlorous Acid (HOCl) Oxidation at a 2-histidine/2-cysteine Zinc-Sulfur Complex Implicated In Biological Redox-Signaling**
   Presenter(s): Hannah Sandoval
   Advisor(s): Dr. Maduka Ogba

Bacteria that harness zinc-cysteine complexes to sense and respond to strong biological oxidants, such as hypochlorous acid (HOCl), generated by animal host systems during inflammation. A recent report from our lab shows that in the 3 histidine/1 cysteine family of zinc complexes found in chemoreceptor zinc-binding domains, HOCl oxidation at the zinc-bound cysteine proceeds through the direct transfer of the OH group to the bound cysteine (i.e., without the formation of sulfenyl chloride), contrary to the mechanism reported for unbound cysteines. Furthermore, this mechanistic preference and chemoselectivity for HOCl is governed primarily by minimizing the geometric strain around the zinc center during the redox reaction. The purpose for my project is to use computational chemistry techniques to examine the mechanism of HOCl oxidation at another family of zinc complexes with a 2 histidine/2 cysteine architecture. The overall goal is to determine whether the reported zinc geometric strain model more broadly explains HOCl-sensing across a broader scope of biological zinc-bound cysteines. First, the ground and transitions states for the plausible HOCl oxidation mechanisms will be computed in order to determine whether the mechanistic preference for direct OH transfer is still operable. Then, the degree to which the zinc-complex is geometrically strained during the redox process will be

revealed through a technique called distortion-interaction analysis. In this poster, literature precedent for this project, the research methodology, preliminary data, and hypotheses for redox reactivity differences at both zinc-cysteine complexes will be presented.

10. **Ketone Hydrosilylation Studies Using a Carbodiphosphorane Catalyst**
    Presenter(s): Liam Sullivan
    Advisor(s): Dr. Allegra Liberman-Martin

The objective of this research is to discover a safe, effective, and low cost catalyst for the hydrosilylation of ketones, which involves the addition of a silicon–hydrogen bond across a C=O double bond. Finding an efficient catalyst would benefit the organic synthesis industry, as carbonyl hydrosilylation is useful industrially for the synthesis of alcohol products. Use of the carbodiphosphorane catalyst as a replacement for toxic heavy-metal-containing catalysts would reduce waste and emissions harmful to the environment, while also providing an alternative means for accomplishing ketone reduction. Using a cyclic carbodiphosphorane catalyst, we have compared catalytic activity toward acetophenone hydrosilylation for a range of 18 silanes, the most effective of which was diphenylsilane. A range of ketones have also been investigated, including alkyl and aryl ketones. The carbodiphosphorane catalyst was more active in ketone hydrosilylation reactions compared to other nucleophilic organic catalysts tested.

11. **Computational Design of β-Fluorinated Morphine Derivatives for pH-Specific Binding**
    Presenter(s): Nayiri Alexander, Makena Augenstein
    Advisor(s): Dr. Matthew Gartner

Molecular extension and dissection techniques are used to design a morphine derivative that promotes selective binding in inflamed tissue due to its lower pH while avoiding dangerous activation in the brain. Morphine, a benzylisoquinoline alkaloid, is a member of the opioid class of drugs and is used to treat pain associated with inflammation. While being effective analgesics, opioids carry the risk of central side effects, including addiction, respiratory depression, and sedation. Opioids are agonists that bind to the μ-opioid peptide receptor (MOR) within central and peripheral nerves and act via a G-protein coupled receptor pathway. Deprotonation of the tertiary amine induces a negative charge on the nitrogen, discouraging binding at physiological pH (pH=7.4). The addition of a fluorine atom on a carbon beta to the amine allows fluorine's inductive effects to decrease the pKa. Decreasing the pKa of the biochemically active amine group promotes selective binding in peripheral opioid receptors within inflamed tissue (pH=6-6.5). Protonation remains possible in lower pH environments of inflamed tissue. Activation of peripheral receptors provides analgesia, and central receptors within the brain remain inactive. A cyclohexane (C) and pyridine ring (D) are removed to increase conformational flexibility when binding to the MOR and maintaining biological function. Electronic structure calculations were performed with Gaussian 16 using the Keck Computational Research Cluster at Chapman

University. Theoretical pKa values are determined at the M06-2X/aug-cc-pVDZ//SMD level of theory to calculate the $\Delta G°aq$ values for the amine deprotonation reactions. The pKa of morphine is determined as 8.0 via computational analysis and used as a benchmark value to compare the beta-fluorinated derivatives. Beta-fluorination decreased the overall pKa values of the morphine derivatives (pKa: 6.1-7.83) relative to morphine. The beta-fluorinated derivatives have lower pKa values with respect to the C and D dissected derivatives.

Communication Studies

12. Tik Tok Behavior Assessment
Presenter(s): Camille Toomey, Gabriela Jimenez, Ashley Alvarez, Bella Shegoleff
Advisor(s): Dr. Austin Lee

The purpose of this research is to explore the effects of Tik Tok usage on contentment and impulse buying. Specifically, Tik Tok's algorithm target's users' interest in any given topic they are interested in. This targeting, compiled with social media's effects on anxiety and comparison, produces the need to compare lives and feel less content with what individuals already have. We hypothesize that by watching Tik Tok videos, viewers will feel both less content in their life as well as the increased impulse to purchase a product. 100 self-identifying female participants and current social media platform users of TikTok will be recruited through the online surveys offered at Chapman University during the 2021 academic year. Participation in the online experiment will be entirely voluntary and anonymous. We will utilize an experimental one-group pretest-posttest design that focuses on the participant's current mood, contentedness, uses and gratification of TikTok usage, and intent to participate in impulse buying behaviors. The dependent variables of mood, contentedness, and impulse buying behavior will be measured once before the visual stimuli is implemented and once after it is presented. To facilitate the most reliable and valid comparison of measurements, we will be utilizing random assignment of one of three sets of TikTok videos. The TikToks shown will be targeted to female college students between 18 and 23 years of age, which will allow them to be specific to the generalized interests and products presented. Each set of TikTok videos will be slightly different and unbiased, lasting approximately five minutes. These videos will serve as our independent variable, and our posttest will determine if a change has occurred in the participant's attitudes and behavior.

13. **Intercultural Communication and Acculturation: How International Students at Chapman University Adapt to American Culture**
Presenter(s): Christine Kelly Salvador, Eric Zavala
Advisor(s): Dr. Austin Lee

There are thousands of international students that come to the United States every year, and within Chapman University, there are hundreds of international students from around 80 countries represented. Although there are studies regarding intercultural communication, we mainly focus on the adaptation of international students to American nonverbal and verbal communication techniques. This research study examines how cultural intelligence plays a role in Chapman University international students' willingness to adapt to the nonverbal and verbal communication styles of American culture to determine how the difference in a culture's nonverbal and verbal communication techniques affect intercultural relationships. We plan on asking Chapman University international students to complete an anonymous, online survey on their integration to American culture in terms of nonverbal and verbal communication. Participants will be asked questions that are followed with images of American nonverbal and verbal California slang to examine their knowledge and ability to understand American nonverbal and verbal communication. Our study explores the motivational, behavioral, and cognitive aspects of Chapman University international students to identify their willingness to adapt to American communication culture in order to assess how willing the Chapman University international students are to interact and engage with a person of American culture as well as understanding the Americans' communication styles.

14. **The Impact of Intercultural Sensitivity on Friendships Between Chapman Students**
Presenter(s): Macy Mena, Abby O'Connor, Kiara Jackson
Advisor(s): Dr. Austin Lee

The purpose of our research project is to assess and measure the level of intercultural sensitivity among friendships between Chapman students. Chapman is a predominantly white institution (PWI), which has led to our desire to measure the overall cultural awareness. Our objective is to discover whether intercultural sensitivity heightens or decreases within college students due to the demographics at the university. In a related study that measured the intercultural sensitivity of college students in two distinctive institutions in the U.S., researchers' findings revealed that nationality and having international friends were the predictive factors of intercultural sensitivity for the study sample. We want to find a connection to whether intercultural sensitivity is affected by friendships formed while attending the university. We aim to discover whether these types of friendships impact whether the participants score high, low, or average on the intercultural sensitivity scale. To conduct this survey, we would like to test our hypothesis consisting of a 24-item Intercultural Sensitivity Scale (ISS) that uses five factors: "interaction engagement, respect for cultural differences, interaction confidence, interaction confidence, interaction enjoyment,

and interaction attentiveness." We will quantify this data by coding and reverse coding the survey questions to get numerical data. We will manipulate numerical data with statistics to see if our data is statistically significant within our sample. This research aims to provide a conceptualization of intercultural sensitivity, specify the role intercultural sensitivity plays in intercultural friendships, delineate the components of intercultural sensitivity, and critique and suggest directions for future study in this line of research.

15. The Effect of Disgust and Fear Appeals in Anti-Vaping Campaigns
     Presenter(s): Nicole Yoo, Margaux Byass, Ariana Romo
     Advisor(s): Dr. Austin Lee

The use of e-cigarettes, commonly known as vaping, has recently seen a large increase among teenagers and young adults. Although there are many public safety campaigns attempting to address this issue, few were observed to use fear appeals as a strategy to change the viewer's behavior. This study focuses on how this persuasion strategy can be applied in relation to the Extended Parallel Process Model. According to the EPPM, the initial message must be seen as a real threat to the receiver but cannot be seen as unavoidable. Thus, the message should provide a specific self-efficacious recommendation that is feasible to the viewer to change their attitudes and/or behaviors regarding the perceived threat. It is expected that anti-vaping campaigns that utilize fear appeals through visuals that arouse disgust and show high self-efficacy will be more effective in changing the attitudes of the viewer. The experiment used a post-test only 2x2 factorial design. The independent variables were fear-inducing imagery and self-efficacious message design. Participants will be randomly assigned to one of the four conditions. The dependent variables are the participant's level of fear, perceived self-efficacy, and attitudes towards vaping after being exposed to the stimulus. The study will help determine whether fear appeals in anti-vaping campaigns are effective and should be more widely integrated.

Computer Science

16. Interaction Design for Mental Health and Developing Healthy Habits
     Presenter(s): Ben van Zyll
     Advisor(s): Dr. LouAnne Boyd

Mental health problems have been plaguing adolescents and teenagers in recent decades, made even worse more recently with the COVID-19 pandemic and social isolation during crucial years in one's socially developmental years. As a firm believer that habits set the foundation for one's mental health —healthy habits set an individual up for better physical and subsequently mental health while bad, unhealthy habits do the opposite. My objective is to find out what kind of design features will make it easier, more convenient, and overall incentivize teens to input their

daily habits — including but not limited to things like how many hours they slept the night before and how much water they drank that day — in order to track their habits and generate recommendations that they can then implement into their lives to improve their habits and physical and mental health. I created two different types of user experience designs, one where all habits are laid out on the screen at the same time and users input habits one at a time by selecting that habit, opening a drop-down menu, and selecting applicable options. At the bottom of that screen, the user can generate recommendations after all habits are filled. The other option has multiple pages, it starts off with one habit, the user can then use a slider or click different buttons representing options (for things like food groups eaten), then click "NEXT" at the bottom of the page before it takes them to the next page, where the next habit is shown, until finally the last habit's page then takes the user to the recommendations. I believe the seamlessness and time efficiency of the second option will incentivize users to input their habits each day.

17. **Machine Learning Enhanced COVID-19 Detection for Classifying Chest X- Ray Images**
    Presenter(s): Liora Mayats Alpay
    Advisor(s): Dr. Yuxin Wen

The coronavirus disease (COVID-19) has been presenting a severe threat to the healthcare systems all over the world. Due to its highly contagious nature, AI early detection of COVID-19 becomes increasingly important to prevent further spreading and to flatten the curve. Deep learning methods offer great promise for fast and accurate COVID-19 screening and detection from chest X-ray images (CXR).

In this talk, we will present a deep learning method acting on chest X-ray (CXR) scans for COVID-19, pneumonia, and normal cases classification. To improve the detection accuracy, first, histogram-oriented gradient (HOG) is used for lung region of interest (ROI) extraction and followed by data preprocessing and augmentation. Then a pretrained RepVGG model is used for deep feature extraction and classification, which is a VGG-like convolutional neural network for which the training-time and inference-time architecture is decoupled by a structural re-parameterization technique. For the work, a dataset containing 1200 COVID-19 positive images, 1341 normal images, and 1345 pneumonia images is used.

The study shows the great potential of deep learning methods for COVID-19 detection utilizing chest X-ray images. Through the comparison with popular deep learning models, i.e., VGG, ResNet50, inceptionV3, DenseNet and InceptionResnetV2, the proposed framework shows the better diagnostic accuracy.

Environmental Science and Policy

18. **Preliminary Results: Effects of Tree Encroachment and Altered Hydrology on Potential Greenhouse Gas Production in Peatland Soils**
    Presenter(s): Claire Johnson, Camila Loyola
    Advisor(s): Dr. Jason Keller

Peatland ecosystems are among the most important ecosystems in the global carbon cycle, storing at least one-third of the terrestrial soil carbon. The fate of this vast store of carbon in the face of ongoing global change has important implications for the global climate. In particular, understanding if carbon will remain in peatland soils or be released to the atmosphere as the greenhouse gases carbon dioxide and methane is crucial for understanding peatland-climate feedbacks. Using experimental mesocosms, the "TreePeat" experiment explores the effects of tree encroachment and altered hydrology on peatland carbon cycling. In the current project, we investigate potential greenhouse gas (carbon dioxide and methane) production in soils collected from the TreePeat experiment. Soils from 0-10, 20-30, 40-50, and 60-70 cm depths were incubated anaerobically at 15°C, and carbon dioxide and methane production were measured after 2 and 8 weeks using gas chromatography. Preliminary results suggest that long-term drainage of peatlands leads to a reduction in potential greenhouse gas production, particularly in surface soils. Ongoing work is exploring the effects of tree encroachment and short-term changes in water-table levels in these soils. In addition, we are measuring greenhouse gas dynamics at other depth increments as well as the potential for the microbial reduction of organic matter (where microbes use organic terminal electron acceptors in place of oxygen) in these soils. Collectively this work will provide important information on the controls of greenhouse gas production in peatland soils and how these dynamics will respond to ongoing global change.

19. **Climate Change and Our Future**
    Presenter(s): Damian Ochoa
    Advisor(s): Dr. Ann Gordon

Fear of climate change and global warming has been a topic of discussion for many years now. Certain countries and individuals believe in climate change and global warming. It is also very established that other individuals tend to ignore the topic because of political identity and due to the fact that they may have to change their way of living. After doing research I have been able to link political identity with climate change and global warming, specifically within the United States of America. My paper contributes to the existing information between political identity, climate change, and global warming. Chapmans Survey of American Fears, a representative national sample of U.S. adults, is where I have gathered some useful data that has allowed me to tie the two together. An individual's political identity and the topic of climate change and global warming correlate, due to the fact that an individual's party preference has them either believing

or being in disbelief of the dangers we are causing to earth. I have also found that individuals in the United States believe in what their party says about ongoing issues, such as climate change and global warming. Individuals should further educate themselves and look into detail about the dangers that climate change and global warming bring to the world and how it can affect them, and not just accept what is fed to them. Climate change and global warming are very serious issues that we will face for the years to come, and it is every individual's duty to do their part and accept the fact of these ongoing issues.

20. Impacts of Wetting/Drying Cycles on Arsenic Bioaccessibility in Mine Wastes
Presenter(s): Daniel Choi
Advisor(s): Dr. Christopher Kim

Heavy metal(loid) contamination remains a global concern as it continues to pollute the environment and impose negative consequences on a myriad of ecosystems and human residents. For example, arsenic (As) is a prevalent metalloid naturally found in Southern California mine wastes with toxic, carcinogenic qualities that pose a potential human health risk. While As concentrations and bioaccessibility can be readily measured from samples, the long-term effect of weathering in these materials is not well understood. Thus, it is equally important to understand natural factors that impact As bioaccessibility, which include rainfall, temperature, humidity, and aging.

Samples were obtained from the Red Hill Mercury Mine in Tustin and sieved to ≤250 μm particle diameter. Selected samples underwent a simulated rain event to rinse off external soluble As from the particle surfaces. Through the use of an environmental chamber, samples were then exposed to simulated diurnal temperature and humidity cycles based on real weather data from that location at a 12x accelerated rate, such that 2 hours of real-time equated to 1 day of simulated time.

After sample exposure, samples underwent SGF extraction followed by ICP-OES analysis to determine final As bioaccessibility levels. Arsenic bioaccessibility was observed to decline in the early stages of exposure, but eventually increase back up to and beyond its initial levels after a few simulated months. This initial decline could be explained by the interactions between the samples and the humidity and temperature fluctuations in the chamber, causing the secondary formation of more stable As phases followed by the drawing of internally-bound As towards particle surfaces. While several samples did show this behavior, other samples with lower initial As bioaccessibility displayed a more consistent trend over time. These results suggest that initial As bioaccessibility levels can be utilized to predict changes in bioaccessibility over time, with lower levels inducing less change and higher levels producing more exaggerated trends.

21. **Use of a Common Substrate to Explore Microbial Organic Matter Reduction in Peatland Soils**
    Presenter(s): Kainani Tacazon, Jocelyn Valdivia
    Advisor(s): Dr. Jason Keller

Peatland ecosystems are responsible for a significant fraction of the potent greenhouse gas methane released to the atmosphere each year, and future peatland-climate feedbacks will depend largely on peatland methane emissions. Despite their importance, there are still fundamental questions about the mechanistic controls of methane dynamics within peatland ecosystems. Recent work has demonstrated that the microbial reduction of organic matter – a process where microbes utilize organic electron acceptors in place of oxygen – is a key control of methane production in many peatland ecosystems. In the current project, we use two experiments to explore the use of a commercially available peat substrate to track microbial organic matter reduction in peatland ecosystems. In the first experiment, we tracked greenhouse gas production and the reduction of organic matter using an electron shuttling assay over a multi-week laboratory incubation. Our results suggest that under both chemically and biologically reducing conditions, the electron shuttling capacity of solid-phase organic matter quickly rises to a maximum value, suggesting that it has been fully reduced. The organic matter reduction is coincident with decreases in carbon dioxide production by peatland microbes and, to date, methane production has yet to be observed. In the second experiment, the substrate was deployed at different depths in the Alaska Peatland Experiment (APEX) as part of a long-term water-table manipulation. Electron shuttling assays revealed that the peat was more reduced below the water-table level and that experimental manipulation of the water table changed the degree of organic matter reduction. Taken together, these results show that a common peat substrate can be used to track organic matter reduction, opening intriguing possibilities for utilizing this approach to explore peatland methane and organic matter dynamics in the context of global changes, including changes in precipitation and warming-induced drying.

Film

22. **She-Ra and the Princesses of Power: An Intersectional Analysis of a Modern Reboot**
    Presenter(s): Laine Marshall
    Advisor(s): Dr. Nam Lee

Children's animation offers the viewer a unique window into the nuances of current societal norms. Because children's animation is made for the young, sensitive, and impressionable, it is carefully controlled and often heavily censored. Any statements made regarding the protagonist's heroism or the villain's malignity are meant to be accepted as universal truths for the growing minds of our youth. The recent 2018 Netflix and DreamWorks Animation animated

reboot of the classic 1980's series "She-Ra: Princess of Power," now titled "She-Ra and the Princesses of Power," shook the animation industry with its groundbreaking representation and astounding visuals. Following its predecessor's legacy, the program makes the effort to root itself in feminist ideals. However, while the 1980's series was based in second-wave feminism, the 2018 series updates its ideals to fit a modern third-wave feminist audience. An integral element of third-wave feminism is its focus on intersectionality. While the new She-Ra's feminist messages are inspirational, it struggles to consistently hit the mark at the intersection between feminism and post-colonial theory, queer theory, and disability studies. The social implications that arise from these pitfalls are demonstrative of the Hollywood Studio system's inclination to use outdated constructs in order to secure profits. Studios, like DreamWorks Animation, that rely on the viewership of children are bound to rely on the opinions of their parents. Therefore, the ethics of their creative decisions is representative of what modern audiences believe is beneficial, educational, and moral for their children.

Food Science

23. **Use of DNA Barcoding to Identify Species of Raw Ready-To-Eat Seafood Products Sold in Orange County, CA**
    Presenter(s): Amanda Tabb, Courtney Kitch, Grace Marquis
    Advisor(s): Dr. Rosalee Hellberg

DNA barcoding is widely used to identify commercial fish species sold in the U.S and internationally. This method is based on DNA sequencing of a standardized region of DNA from a sample. Sequences can then be analyzed against the Barcode of Life Data system (BOLD) for species identification. Additional analysis of samples by a method called DNA mini-barcoding can be used for samples that cannot be correctly identified to the species level by the traditional DNA barcoding method. While relatively high levels of seafood mislabeling have been reported for sushi dishes, few studies have investigated mislabeling of other raw, ready-to-eat (RTE) seafood such as poke and ceviche. The objective of this study was to evaluate the presence of species mislabeling in raw, RTE seafood products in Orange County, CA. DNA barcoding and mini-barcoding were used to investigate 70 samples of sushi, ceviche, and poke collected from various locations in Orange County. All samples underwent DNA barcoding, followed by species identification using the BOLD database. Six samples underwent further analysis with mini-barcoding. The FDA seafood list was used to identify common and acceptable market names. The results showed that 17 samples were substituted on the basis of species, and 13 samples did not have an acceptable market name. The overall mislabeling rate for all samples combined was 43% (30/70). These results indicate a need for greater scrutiny of labeling practices for raw, RTE seafood sold in Orange County, California.

Health Sciences and Kinesiology

24. **COVID-19 Safety Guideline Compliance by Gender Identity**
   Presenter(s): Emma Rothleutner
   Advisor(s): Dr. Jason Douglas, Dr. David Frederick

Many local, state, and federal government entities have imposed COVID-19 safety guidelines to lessen the burden of the pandemic, yet safety guideline compliance remains understudied. This study examined COVID-19 safety compliance by gender identity. The Chapman University National COVID-19 and Mental Health Study surveyed US adults on their compliance to COVID-19 safety guidelines and gender identity. Pairwise analyses were used to examine gender identity differences concerning indoor dining frequency, social distancing with people outside of their homes, attending gatherings with masks, attending gatherings without masks, and wearing masks when interacting with people outside the household. Results indicated that women tended to wear masks ($p < 0.05$) and follow prevention protocols (e.g., hand washing, social distancing, avoiding large gatherings, minimizing close social contact) more than men ($p < 0.05$). However, women attended social events (e.g., gatherings, dining, interacting with people outside of their household) more frequently than men did ($p < 0.05$). Thus, people who identified as women tended to adhere to COVID-19 guidelines more than those identified as men unless there was a social aspect associated with the situation. The difference in these behavioral practices reveals that adherence to COVID-19 guidelines has social isolation implications for men and that gender plays a role in determining an individual's health behaviors.

Mathematics

25. **Lattices Visualized as 3D-Objects in a Browser and in Virtual Reality**
   Presenter(s): Natanael Alpay
   Advisor(s): Dr. Peter Jipsen

Abstract algebra consists of the study of algebraic structures such as groups, rings, fields, modules, vector spaces, and algebras. Each of these mathematical structures has a subalgebra lattice and a congruence lattice, which are partially ordered structures that can be represented graphically in two or three dimensions. However, even for small algebraic structures these lattices can be large, and as the number of elements grow, can very easily get hard to be analyzed with pen and paper as a 2D projection on a plane. Using 3D models and virtual reality one can model lattices, and investigate these mathematical objects with better understanding and visualization of their form and properties. This is particularly helpful for students who have just been introduced to the concept of abstract algebraic structures, and gives them a tool to help visualize the abstract concepts.

We have developed JavaScript programs to visualize 3D models of lattices within the Babylon.js framework. This allows the lattices to be viewed as 3D objects in a standard web browser, as well as with a virtual reality headset. In the project, we will present a visualization of the lattice representation of a hypercube, the lattice of all preorders on a 3-element set with 26 elements, and the lattice of all preorders on a 4-element set which contains 355 elements.

Physical Therapy

26. **Maintaining Physical Activity During COVID-19: the Influence of Psychosocial Variables in Individuals with Back Pain**
    Presenter(s): Heidi Stabbert
    Advisor(s): Jo Armour Smith

Stressor events, such as COVID-19, may trigger adaptive or maladaptive pain management strategies among individuals with persistent low back pain (LBP). Individuals with lower fear avoidance, depression and anxiety, and greater positive affect and quality of life may better maintain positive pain management strategies during stressor events. This study investigated psychosocial characteristics of individuals with LBP who demonstrated adaptive pain management strategies during COVID-19, indicated by maintenance of physical activity (PA). Individuals with persistent LBP (age 22.4 (3.4) years, n=25) from an existing longitudinal cohort participated. Participants completed a baseline survey prior to COVID-19 quantifying demographics, pain characteristics, the Physical Activity Scale, the WHOQOL-Bref, Fear Avoidance Beliefs Questionnaire, Hospital Anxiety and Depression Scales, and Trait Affect scale. Participants then completed follow-up surveys for 18 months. During COVID-19 lockdown, the impact of lockdown on PA was assessed. The cohort was dichotomized into individuals reporting the same or more PA (MPA) and those reporting less PA (LPA) and baseline characteristics were compared between groups. There were 17 individuals in the LPA group and 8 in the MPA group. The MPA group had greater duration of LBP symptoms (p=0.015, d =1.16). The MPA group trended towards higher physical quality of life (p=0.101, d=0.79) and higher environmental quality of life (p=0.057, d=0.96) at baseline and had lower negative affect (fatigue domain) scores than the LPA group (p=0.038, d=0.86). Depression scores were lower in the MPA group (p=0.006, d=1.12). Individuals with persistent LBP who had greater duration of symptoms, better physical and environmental quality of life, lower negative affect, and less depression were more likely to maintain or increase physical activity during COVID-19. These characteristics may facilitate positive adaptation to a stressor event.

27. **Influence of Fatigue on Muscle Coactivation in Young Adults with/without Persistent Low Back Pain**
    Presenter(s): Mattin Moazzam, Jonathan Shaw, Mallory Matsumae
    Advisor(s): Jo Armour Smith

Individuals with persistent low back pain (LBP) have altered trunk motor control during walking and turning. Previous studies also indicate increased erector spinae fatigability in some individuals with LBP. Most research investigates middle-aged adults. It is unclear if young adults with LBP also demonstrate increased fatigability, or if isolated muscle fatigue contributes to reorganization of trunk motor control in individuals with LBP. The purpose of this study was to identify differences in trunk muscle coactivation between individuals with persistent LBP and back-healthy controls pre-and post-fatigue during 90° walking turns. Surface electromyography electrodes were placed bilaterally on the erector spinae (ES) at T10 (TES) and L4 (LES), external obliques (EO) and internal obliques (IO). Participants performed a 90° ipsilateral walking turn while walking at a controlled average speed of 1.5m/s. Participants repeated this task 10 times before and after the ES were fatigued using the Sorensen test. Coactivation between bilateral, ventral/dorsal, and summed ES/abdominal muscle pairs was calculated for the stance and swing phase of the turn. Mixed model ANOVA were used to test for effects of fatigue, group, and fatigue/group interactions. During the turn stance phase, there was a significant main effect of fatigue with decreased coactivation post-fatigue in the following muscle pairs: right/left TES, right/left IO, right TES/IO, left TES/EO and for right/left summed ES and abdominals. During swing phase, coactivation decreased for right TES/IO post fatigue. There was a main effect of group for left LLES/EO during swing, with greater coactivation in the LBP group. There was also a trend toward an interaction effect for right/left IO, with coactivation increasing in the LBP group and decreasing in the control group post fatigue. Preliminary results indicate a generalized decrease in trunk muscle coactivation in response to ES fatigue. Individuals with LBP have altered coactivation prior to and in response to fatigue during swing phase of walking turns.

Political Science

28. **The Rise of Social Media and the Fall of Internal Peace: How do Media Influence People's Fear of Mass Shootings?**
    Presenter(s): Christian Grevin
    Advisor(s): Dr. Ann Gordon

The impact of traditional versus social media on people's fears of a mass shooting is a matter worthy of study given the scarcity of research and analysis, as well as the prominence mass shootings have gained in American society and media. Many studies have been conducted evaluating the connection between local TV news and fear, showing that the consumption of

local TV news has increased people's fear of crimes. However, there have been few studies examining the relationship between social media usage and one's fear of crime. In this paper, I will examine the correlation between fear of mass shootings and different media sources, with particular emphasis on social media given its increased prominence in the past decade. According to data collected by Chapman University in their Survey of American Fears, social media usage appears to increase one's fear of being a victim of a mass shooting in comparison to most other forms of media consumption measured in the study (i.e. local and national newspapers, national nightly and local TV news, CNN, Fox News, MSNBC, talk radio show, and online news websites). Mediatization helps to explain the impact of media on shaping people's perceptions of mass shootings, which in turn influences their fear of being a victim of one. Media consumption, however, is not the only variable found to have a relationship with a person's fear of being a victim of a mass shooting. Among the interesting findings, gender also influences a person's fear of being a victim of a mass shooting; women tend to have higher levels of fear than men. The vulnerability model partially explains this correlation between gender and fear.

29. **Personal Concern vs. Personal Risk - Analyzing Climate Change Fear by County**
    Presenter(s): DJ Walia
    Advisor(s): Dr. Ann Gordon

It has been known for some time now that the general population of the United States has steadily grown more and more concerned with how the effects of climate change would personally negatively affect their lives. However, what is less known is where the effects of this broad movement towards concern are most concentrated, and if the location matters with respect to if those portions of the population are located in areas that will be more significantly impacted by climate change or will be affected in a much shorter timeframe than others. Some studies deal with the general US population, and other studies deal with individual sections of the population, but none compare the two in detail. This study took data measuring how afraid participants in a survey were of climate change affecting them on a national level and compared it to the respondents' data in each particular county with both their state and national average as a whole. Then the county data was paired with if the county was in or near an area designated as one that would be negatively affected by climate change in the form of an increase in one of three major natural disasters: flooding, droughts, and wildfires. Overall, this study found that most counties in these "disaster zones" have only slightly higher levels of fear of climate change than those around them, if any. These results show how little the overall population understands the incoming impacts of climate change on their specific environments, as well as how political and media groups are not producing effective messaging on the impact of climate change on both a local and state level.

30. **Behind the Belief: Predictors of Why People Believe in Conspiracy Theories**
    Presenter(s): Erisa Castillo
    Advisor(s): Dr. Ann Gordon

Many people have used conspiracy theories as explanations to justify situations or events that the United States Government has carried out; however, many have no reliable evidence. These theories are often made by power groups that are usually politically motivated. So why do people believe in conspiracy theories? One reason may be our lack of confidence, trust, and transparency between our government and us as American citizens. Using the Chapman University Survey of American Fears, I will look into the various variables that play leading factors in why people are influenced into believing conspiracy theories. Also, whether one conspiracy theory is more believed than another. This paper will be exploring four different conspiracy theories, the 9/11 attacks, John F. Kennedy's assassination, the South Dakota Crash, and lastly, the recent conspiracy theory known as Qanon. In addition, whether the variables, age, fear of corrupt government officials, social media usage, region, education, race, and the fear of being unemployed impact one's belief in these theories. To my knowledge, many people believe in conspiracy theories ranging from the elderly to the young; however, more recently, through outlets like social media, there has been a shift in those who believe in conspiracy theories. If the research shows a relationship between the predictors of conspiracy beliefs, it will allow me to understand better why people continue to believe in such theories. Ultimately, this paper will discuss four hypotheses; those who are Black and Hispanic and from southern regions of the U.S are more susceptible to believing these theories, those who are younger and less educated are more likely to believe in conspiracy theories, those who obtain their news information through social media are more likely to believe in conspiracy theories, and lastly, people are more likely to believe in conspiracy theories because of their fear of corrupt government officials and one's fear of unemployment.

31. **Covid-19 and QAnon: Enter the World of Conspiracies**
    Presenter(s): Gianluca Allesina
    Advisor(s): Dr. Ann Gordon

From Covid-19 to QAnon to a global warming hoax, we live in a world drowning in misinformation spread on the internet. This project will examine the possible relationship between a belief in various conspiracy theories and fear of the Covid-19 virus, utilizing the Chapman Survey of American Fears, a national study using a representative sample of U.S. adults. I expect to find that those believing in conspiracy theories will have an overall lower level of fear of the Covid-19 virus itself. I believe I will find this relationship to be dependent on the nature of the conspiracy theories themselves. Conspiracy theories that stress governmental lies and secret groups of great control likely will affect Covid-19 virus fears inversely. In this project, Questions Q11g: "How many days during the past 30 days would you say…you have worried that a loved one has

contracted the corona virus (Covid-19)?" and Q14g: "How afraid are you of the following: Catching the corona virus (Covid-19)?" will be examined and analyzed with three questions pertaining to conspiracy theories. The first question is Q20c: "Please indicate your level of agreement with the following statement: The government is concealing what it knows about.... the South Dakota crash." This question is the control question as there is no such conspiracy as the South Dakota crash. The second question is Q20d: "Please indicate your level of agreement with the following statement: The government is concealing what it knows about.... global warming." I expect respondents with higher fears of the Covid-19 virus will have higher fears of global warming. The third and last conspiracy question is Q20i: "Please indicate your level of agreement with the following statement: The government is concealing what it knows about.... QAnon." I expect respondents with lower fears of the Covid-19 virus to have a higher belief in the notion the government is hiding information about QAnon, a purposed government "leaker" who posts cryptic messages about the government on the now-defunct forum website, 8chan.

32. The Effects of Religiopolitical Ideology on Climate Change Attitudes in America
     Presenter(s): Jaymee Weisberg
     Advisor(s): Dr. Ann Gordon

Religion and politics has been shown to influence the attitudes of the American people which, subsequently, can persuade the enactment of climate change policy and legislation. In this poster, the extent to which religiosity is linked with the fear of climate change in America is examined by reviewing existing literature on the role of religion, belief in anthropogenic climate change, and political ideology in America. This is expanded on this by running frequencies and crosstabs using the the Chapman Survey of America Fears, a representative national sample of U.S. adults from 2018 and 2021, to find relationships between those who identify themselves with higher levels of religiosity, for example, biblical literalists, and those who do not fear climate change. Furthermore, those in this group label themselves as having a politically conservative political ideology. It is likely that those with less religiosity are more likely to indicate fear in climate change. The lack of climate change fear can be indicative of a lack of trust in climate science, including of anthropogenic environmental change, resulting in higher levels of resistance to climate change policy than those who do fear climate change. While overall trends have shown a decline in religiosity in America, the religopolitical interaction remains a strong force that must be confronted in order to make necessary advancements in climate change mitigation.

33. The Factors That Determine Public Levels of Vaccine Confidence
     Presenter(s): Jocoby Bolgrean
     Advisor(s): Dr. Ann Gordon

The rise of the COVID-19 pandemic quickly became the single-most politicized topic of discussion across the globe in 2020. With clashing reactions regarding how to handle the virus, particularly

in regards to quarantining and wearing masks, the vast majority of the public clung to their preconceived perception of the world, and put emphasis on their political ideology over the word of scientists across the globe. In this paper, I uncover distinct factors that help determine the public's level of vaccine confidence. Relying on the Chapman Survey of American Fears, a representative national sample of U.S. adults, I find that those with concerns related to trusting of the government, how the healthcare system is managed, and Big Tech presence, are much more likely to experience fears surrounding the COVID-19 vaccination. Individuals with the aforementioned concerns are more likely to blindly follow their representatives, who work tirelessly to overly politicize the vaccine. It is also found that those who are led to a low level of vaccine confidence are oftentimes those with higher health risks associated with COVID-19 and respiratory illnesses. Since the beginning of the COVID-19 pandemic, all aisles of the media have shown different statistics, concerns, and beliefs surrounding the danger of the virus. It is found that individuals with a higher intake of right-wing media led to lower levels of vaccine confidence, fear of the COVID-19 pandemic, and led to a rise in conspiracy belief and belief in fake news. Through analyzing a variety of factors that impact vaccine confidence, such as religious affiliation, fears, intake of media, race, and geographical mapping, our society can help adapt their outreach causes and learn how to target specific areas with low levels of vaccine confidence.

34. **Patterns of Fear of Being Murdered and Homicide Victimization: A Comparison of Perceived and Realistic Risk**
   Presenter(s): Madilyn Rosenson
   Advisor(s): Dr. Ann Gordon

In this research I will be observing the fear of falling victim to murder in the United States of America. The research will include comparison between the fear of being murdered by a stranger and the fear of being murdered by someone you know, and comparisons of this data collected from Wave 2 to Wave 7 of the Fear Survey. Also discussed will be the likelihood of either event happening – being murdered by a stranger or someone you know – and other potential independent variables that may have an impact on an individual's fear or vulnerability to the situations. For example, data from the 2018 Fear Survey found that female respondents recorded fearing both being murdered by someone they know and a stranger more than the male respondents. Using the vulnerability theory, observations can be made to determine whether people more vulnerable to victimization do have higher levels of fear recorded by the Fear Surveys. In order to get an accurate understanding of who is vulnerable, I will be looking at the statistics reported by the FBI from the years that correspond with the waves of the Fear Survey to conclude which gender, race, and marital status are more likely to be victimized. This data from the FBI will then be compared to the patterns of fear found to determine if the fears are realistic based on the risks. I expect this paper to make the scholarly contribution of comparing the risk factors/demographics of murder victimization to the levels of fear in order to minimize

the disconnect between crime statistics and fear. Minimizing this disconnect is important due to the constraints it can have on individual lives and the political system.

35. **Vaccine Hesitancy and The Real Problem**
    Presenter(s): Mariana Juarez
    Advisor(s): Dr. Ann Gordon

The U.S has a history of vaccine hesitancy and anti-vaccination sentiment. With the COVID-19 pandemic at its height and the rise of cases all around the country, the population debates whether getting the vaccine would be the right choice based on previous outcomes in the past. In this paper, I examine one of the most important vaccines "incidents" within the African American community which lead to the fear of mandatory vaccines. Look more into how parents are spreading false news about vaccines and not using reliable sources to prove their claim while finding out that the real reason they are doing this is because of public opinion. As well as address how in previous decades, vaccine companies have not provided reliable information towards the vaccine itself which has caused women to pave the way to get the reformation of the vaccines. Relying on the Chapman Survey of American Fears, a representative national sample of U.S. adults, I attempt to determine the connection between race, sex, and the fear of vaccines. The government seems to lack that sense of trustworthiness between its citizens when it comes to vaccines, especially people of color as events such as the Tuskegee experiments betrayed people getting experimented on. I will also address whether being a certain age determines the fear people have towards vaccines based on where they find their information whether that be the websites, social media, or public opinion. Vaccine hesitancy will grow if false information continues to spread. Before that occurs, we need to find the root of the problem and find a way to fix it.

36. **America's Declining Trust in Government**
    Presenter(s): Megane Bos
    Advisor(s): Dr. Ann Gordon

The world of media has grown immensely, from 24-hour daily news, to social media platforms, to business and advertising, and it's taken the American population by storm in a surprisingly short amount of time. Media exposure and usage increases with each passing year as new technologies emerge and are made available to a larger number of the population, including America's youth. This paper will examine how media exposure, age, and ideology influence public opinion on trust in government, looking at which types of media exposure people receive and how often they are exposed to it. Then, I will see how it relates to their levels of distrust in government, including fear of corrupt government officials, fear of government activity like drone usage and tracking personal data, the belief that the government is hiding information from the public, attitudes towards the Trump administration, and feelings towards voting by mail and the

COVID-19 pandemic. The main data sources that are used are the Chapman University Survey of American Fears (2018, 2020), which is a national, comprehensive survey that outlines how afraid the American population is of certain fears, and the American National Election Studies (2020), which is a national election survey summarizing voting behavior. I expect to find that media exposure will have a large impact on how each party and the younger population view the government. This topic is incredibly important because the American population's trust in government has crucial implications for our democracy and American society. This paper will discuss three hypotheses; higher media exposure leads to higher levels of distrust in government, America's youth has a higher level of distrust in government, and political party/ideology has an impact on trust in government.

37. **Systematic Racism Increasing Fear of Racial/Hate Crimes**
     Presenter(s): Nancy Lopez
     Advisor(s): Dr. Ann Gordon

In the proposed research, the fear of being targeted by racial/hate crimes will be measured to confirm that race, social media usage for news, political affiliation, likeliness to support BLM, and fear of being a victim of police brutality are major variables in deciding who is more susceptible to fear. Data collected from the Chapman University Fear Survey will allow input on whether the variables pose any influence at all. Relevance and significance of these variables will also be compared to each other to determine which has the greatest impact. People of color are more likely to be intimidated and fearful in regard to being targeted. Those who get their news from social media such as Twitter or Instagram more often are likely to be more aware of these crimes. Police Brutality has been a present systematic issue that comes intertwined with race. Based on society's behavior and stereotypes it can be predicted that all three will contribute to an increase in fear. According to the Department of Justice, in 2017 58.1 percent of the motivation behind hate crimes was race. Hate crimes were reported to have increased 17 percent from 2016 to 2017. In the Fear Survey data, it was concluded that all factors were significant contributors, although race was the most influential.

38. **The Distrust of Experts**
     Presenter(s): Noah Smith
     Advisor(s): Dr. Ann Gordon

This paper will compile demographic data and analyze their correspondence with trust of expert opinion in order to develop a profile of individuals who mistrust expert opinions. I will be using the American National Election Survey of 2020 as the central data source for this paper. I will also be using supplementary data from research into trust of expertise to create my profile. The mistrust of expert opinions has been an issue simmering in the background of American politics for quite some time. Previously its largest impact was on the discourse and policy surrounding

climate change. Now it is also paramount in the efforts to fight the Covid-19 virus, as those skeptical of experts are refusing to take the vaccine for reasons with little scientific merit. The dependent variable being tested is the trust in expert opinions. The independent variables will be a collection of demographic indicators. I expect that this may be a result of the personally expensive medical system in place in the United States, and expect those with lower income to be more skeptical. I also expect religious fundamentalism to be a relevant indicator. Overall I hope my research here will uncover key contributors to the distrust of expertise that has undermined the social fabric of this country.

39. **Terrorism and Media Deception**
    Presenter(s): Roxanne Aguilera
    Advisor(s): Dr. Ann Gordon

Deception is easy, especially with fast media in the 21st century. News outlets at both national and local levels are credited for exposure of inaccurate or dramatized information, which can negatively affect the population, especially during events of collective trauma. In lu of the September eleventh terrorist attack, despite the majority of civilians not having direct exposure, over 20% of participants in a past study believed this attack was the worst event of their lives due to media coverage and exposure. This essay will examine the correlation between fear of terrorism and several factors ranging from news validity, forms of media, age demographics, and political affiliation. I focused on politically affiliated news outlets to better understand if fear of terrorism is dramatized based on political party. This study will draw from a nationally representative sample out of the Chapman University Survey on American Fear and analyze related fluctuations within the variables. My findings show a light discrepancy between political affiliation and fear of terrorism and a stronger relationship between media mediums being the source for fear of terrorism. I found a greater percentage of Democrats being afraid of terrorism before factoring in the media. After I found more Democratic news outlets yield greater percentages of fear in comparison to the smaller percentage of Republican new sources causing fear. I found greater fear in younger generations when exposure to television is increased. Ultimately, the fear of terrorism in the United States is valid, yet it is essential to acknowledge this fear and the extent to which the population is plagued. To ensure action at a federal level and evaluate accurate media coverage, the issue needs to be exposed; our citizens need to feel safe in their own nation and trust the information that is relayed to them.

40. **The Power of "The Wall"**
    Presenter(s): Roxy Amirazizi
    Advisor(s): Dr. Ann Gordon

The issue of immigration is one that has been largely controversial and heavily debated. This has especially held up to be true since the 2016 election, where immigration was made a dominant

issue. This paper will focus on the effect of Donald Trump's rhetoric on the American public's perception of immigrants. By using data from Chapman University's representative, national sample of American Fears before and after the 2016 election, I will be able to identify the ways in which Trump influenced the American public. Donald Trump's successful campaign in 2016 consisted of a platform with a controversially aggressive stance on immigration; Trump made it clear that immigrants are burdensome on America and even advocated for the building of a border wall. These views, and the subsequent election of Donald Trump, likely led to further polarization among Americans on the issue of immigration. I predict that because of Trump's open hostility toward immigration, and his subsequent election to the presidency, the American public will display harsher attitudes toward immigration after the 2016 election. It has been said that America is a nation of immigrants; despite this, politicians and citizens continue to largely vary in their support of this sentiment, making the topic of immigration a central aspect of the American political process.

41. **Framing the Axis of Evil: American Fear of an Iranian Nuclear Attack**
    Presenter(s): Sabrina Ghashehbaba
    Advisor(s): Dr. Ann Gordon

Since 9/11, the American perception of Muslims, Islam, and Middle Eastern people and countries has shifted seemingly negatively. This paper will investigate American's opinions on Iran and fears of a nuclear strike by Iran while examining American fear of Muslims, party identification, 2020 election voting, news media representations of Iran, social media usage, fears of immigration, fears of falling victim to a terrorist attack, and fears of whites not being the majority. I predict the more Republican one is, the more they will fear an Iranian nuclear attack because of the conservative rhetoric used. I also expect those who voted for Donald Trump will be more afraid of an Iranian nuclear attack. I predict that fear of Muslims, immigration, belief in Qanon, fear of another world war, being victim to a terrorist attack, and whites not being the majority will also indicate how fearful one is of an Iranian nuclear attack. I also would like to examine how fear of an Iranian nuclear attack has progressed throughout the last seven years. To explore this, I will be using The Chapman University Survey on American Fears to analyze public opinion surrounding the fear of being victim to terrorism, their political ideology and voting record, how afraid they are of whites no longer being the majority, Muslims, and immigration, and fear of an Iranian nuclear strike. Some results include strong evidence that fear of being a victim of a terrorist attack, fear of Muslims, immigration, and whites not being the majority greatly influence fear of an Iranian nuclear attack. At the same time, political ideology and voting records are significantly less critical. Often representation of Middle Easterners and Middle Eastern politics in media and news is mainly acts of terrorism and radicalism. Since 1979, Iran has maintained a tenuous position in American society. The Trump administration has exacerbated fear of an Iranian nuclear attack, thus examining public opinion and fear of Muslims, Middle Easterners, and countries like Iran especially poignant.

42. **Pride and Prejudice: Affect in American Politics**
    Presenter(s): Sydnie Leigh
    Advisor(s): Dr. Ann Gordon

The political decision-making processes of the public have often been attributed to a rational consideration of the political world. However, scholars have begun to regard the presence of emotions as an integral factor within these processes. This paper explores the role of sentiments regarding the current status of the United States, and American voting behavior. While some have asserted that emotions are only developed through the act of rational information-processing, further research has established that emotions guide voter decisions. Affect, while not singularly defined, is thought to be separate from the cognitive process, and is the primary reaction in situations where cognition and affect conflict. To further investigate its effect on voting behavior, this study employs the competing theories of affect and cognition. Using the 2020 American National Election Studies pilot dataset, which encompasses responses from adults representative of the United States population, this study finds a moderate relationship between pride and voting behavior. Although the relationships between other emotions and voting behavior are statistically significant, pride accounts for the strongest, and remains the most influential variable in respondent ratings of the 2020 presidential candidates. Pride was found to be decreased in respondents who rated Joe Biden highly, but increased in those who favored Donald Trump. Further, Americans who felt warmly toward Trump expressed fewer negative emotions and higher levels of positive emotions, while the opposite is true for those who preferred Biden. Taken together, the findings indicate that emotions, whether positive or negative, influence the information-processing and political decision-making of the American public. Perfect rationality is an impractical expectation in the context of politics, so it becomes necessary to understand what other factors influence the decision made by voters. This study expands upon previous literature by examining specific emotions, and how they impact American voter decisions.

43. **"They Are Trying to STEAL the Election": Voter Confidence in 2020**
    Presenter(s): Wynn Maloney
    Advisor(s): Dr. Ann Gordon

Elections act as an instrument to preserve citizens' confidence in the legitimacy of political processes and outcomes. However, the 2020 presidential election sparked controversy over the vote count accuracy, leading American voters to question electoral integrity. This paper examines how voters establish such perceptions through three theories: the "winner effect," elite cues, and conspiratorial thinking. The winner effect states that voters who voted for the winning candidate are more likely to believe their vote was counted correctly. Contrary literature asserts mass public opinion derives from elite cues, where political figures generate opposing narratives, creating differences in identities and polarizing perspectives on political facts. Further literature

reveals those with conspiracist attitudes to have less confidence in vote count accuracy. Using the American National Election Studies 2020 Time Series Study, a representative sample of American adults before and after the 2020 election, this research finds a moderate relationship between perceptions of vote count accuracy, and the candidate they voted for. Confirming the winner effect, those who voted for Joe Biden were more confident in vote count fairness than Donald Trump voters. A modest negative relationship between conspiratorial beliefs and confidence in vote count accuracy emerged post-election, confirming the effect of conspiratorial thinking. The elite cues effect is confirmed by a modest relationship between favorable feelings toward presidential candidates and confidence in vote count accuracy, pre-election. Biden supporters had increased confidence, after witnessing Biden's trust in the democratic electoral process, but Trump supporters had decreased confidence, from noting his mistrust in the democratic electoral process. While absolute confidence in electoral integrity is unrealistic, this research provides insight on those more susceptible to mistrust which may be used to create safeguards to prevent abated faith in democratic norms, and preserve confidence in the legitimacy of democracy.

Psychology

44. **Validating the Threshold of Conscious Perception**
     Presenter(s): Cristina Uribe
     Advisor(s): Dr. Aaron Schurger

Recent neuroscience studies attempting to understand consciousness are focusing on the neural correlates of consciousness with the aim to understand the minimal neuronal mechanisms needed for consciousness. This is a very ambitious research program, and we are years away from truly understanding this. However, there is something very basic that all consciousness models should meet. "Any empirically derived or empirically testable model of conscious versus non-conscious sensory perception will ultimately "draw a line in the sand" between responses (in the brain, behavior, or both) that are conscious and those that, though still perceptual, are not conscious" (Schurger 2008). This distinction means that there must be a threshold above which a conscious experience and below which there is none. If this is the case, then any two stimuli that are both presented below this threshold must be subjectively experienced as the same. And any two stimuli where one is presented above the threshold and one below should be experienced as subjectively different. This is the criterion of subject validity, and any model of consciousness should, at a minimum, meet this criterion. This is extremely valuable as it provides a new empirical way to test models of consciousness.

45. **Prejudice Towards LGBT Men and Women Varies by Religiosity and Social Dominance Orientation.**
    Presenter(s): Debbie Nguyen
    Advisor(s): Dr. David Frederick

INTRODUCTION: Acceptance of LGBT people has increased dramatically over the past three decades. Some stigma still remains, however, and the extent of prejudice experienced can differ among men and women who identify as transgender versus gay/lesbian versus bisexual. These prejudices are likely fostered, in part, by political orientation, increased religiosity, and high social dominance orientation (SDO), which can lead to accepting the status quo and group-based dominance hierarchies. GOALS: Our study examined how expressed prejudice differs towards men of women with different gender identities and sexual orientations, and the individual differences associated with this prejudice. METHODS: We surveyed US adults (N = 2133) via MTurk (mean age = 41, SD = 12.4). In a 2X4 within-subjects design experiment, participants were asked how upset they would based on the gender (man, woman) and identity (heterosexual, homosexual, bisexual, transgender) of their child. Furthermore, we measured SDO and religiosity with validated measures. Additionally, we included subscales from a validated measure of anti-trans prejudice that assessed desired social distance from trans people and social tolerance of trans people. RESULTS: We found that regardless of target gender, trans targets received the greatest amount of stigma. People high in religiosity and SDO tended to be less socially tolerant and more upset at the idea of having a trans or sexual minority child. IMPLICATIONS: Our findings highlight the marginalized sexual orientations and gender identities and how anti-LGBT prejudice can relate to one's own identity and worldview. The present study emphasizes the importance of investigating anti-transgender attitudes, as anti-trans prejudice was prevalent within this national sample.

46. **Investigating the Neural Correlates of Intention and Foresight**
    Presenter(s): Emma Chen
    Advisor(s): Dr. Uri Maoz

Intention and foresight play important roles during deliberate decision-making and are crucial for determining culpability for the outcome of one's actions, particularly in cases involving difficult moral decisions. Distinguishing between the two is often a necessary step for assessing criminal liability, yet no empirical method exists to accomplish this. Thus, the goal of this study is to disentangle the neural correlates for intention and foresight during deliberate decision-making. Varying degrees of intention and foresight will be manipulated in different decision-making scenarios using a novel online paradigm. If separating intention from foresight in brain activity is possible, such a finding would be able to impact legal judgments of responsibility when actions have unintended but foreseen consequences.

47. **Lifespan Urbanicity and Perceived Neighborhood Disorder on Cardiovascular Health**
Presenter(s): Jackie Pak
Advisor(s): Dr. Jennifer Robinette

While there is some evidence indicating neighborhood characteristics (e.g. disorder and urbanicity) are related to poor health, few studies observe these characteristics simultaneously. Using the 2016 wave of the Health and Retirement Study (HRS), this study observed two research questions. First, is urbanicity over the lifespan related to cardiovascular health. Second, do urbanicity and perceived neighborhood disorder predict cardiovascular health synergistically? HRS participants were asked whether they lived in an urban or rural neighborhood in childhood, and the 2013 Beale Continuum code was used to assess the participants' current (adulthood) neighborhood. Participants self-reported whether they had been told by a doctor they had a heart condition and whether they perceived disorder in their neighborhoods. Weighted logistic regressions demonstrated that participants who consistently lived in urban neighborhoods over their lifespan had better heart health than those who had lived in rural areas in adulthood, regardless of the type of neighborhood they lived in, in childhood. This finding was further qualified by a significant interaction between adulthood urbanicity and perceived neighborhood disorder. However, although people perceiving their neighborhoods as more disordered had worse heart health, the interaction between perceived disorder and adulthood urbanicity was not significant. Nevertheless, a plot representing average heart health by urbanicity and perceived disorder indicated some evidence that perceived disorder was somewhat worse for the heart health of urban, relative to rural residents. These results suggest that disorder is a modifiable aspect of people's neighborhoods that relates to poor heart health, particularly for residents of urban areas.

48. **Attention in Decision-Making**
Presenter(s): Nancy Zhu, Martha Shaw, Amber Hopkins
Advisor(s): Dr. Uri Maoz, Dr. Aaron Schurger

Attention encompasses the behavioral and cognitive processes of focus; however, these processes can be divided into two subtypes based on their function and methods of execution. Overt attention involves the selective processing of one point of fixation over another by physically directing gaze. Covert attention involves the effortful internal neural adjustment of attention in space while keeping the eyes fixated in one spot. Broadly speaking, attention seems important to the decision-making process. Previous studies have shown that directing overt attention can influence the choices people to make (Shimojo et al., 2003). However, it remains unclear whether directing covert attention, will impact choice in a similar way. More specifically, an impact on deliberate-reasoned, purposeful, and bearing consequences-decisions (Ullmann-Margalit & Morgenbesser, 1077; Maoz et al., 2019). Thus, the proposed study aims to investigate whether directing covert attention will impact choices made in a deliberate decision-making

context. Subjects will be prompted to choose between non-profit organizations (NPOs) while their overt or covert attention is further directed to one option over the other. We predict that subjects will be more likely to choose NPOs that they attended to for longer. We hope that this research will contribute to our understanding of the role of attention in decision-making, and how decisions can be influenced by these types of behavioral and cognitive processes.

Theatre

49. **Designing Agency and Morality in Choice-Based, Single Player RPGs**
    Presenter(s): Avery Tang
    Advisor(s): Dr. Andrew Chappell

Role-playing games (RPGs) are games in which the player assumes the role of a character in a fictional setting. The ephemeral experience of playing role-playing video games is a crucial storytelling medium of the modern day. Such games can fall upon a spectrum between predetermined RPGs, where the player has no ability to affect narrative outcome regardless of their play style, and indeterminate RPGs, where the player's choices throughout the game have a distinguished impact on the narrative outcome, which may be unforgiving to the point of one wrong choice on the player's part ending a major character's life. More specifically, choice-based RPGs vary widely in their deployment of player agency: an open world game gives the player the choice to either progress through the narrative or explore a limitless buffet of pursuits (including side quests, superfluous romances, or house decorating), while a game confined to its narrative centers the player's actions in the locational scenes of the narrative while still offering a plethora of dialogue options that drastically shape the narrative outcome. This thesis investigates the exploration of narrative and agency experienced through single player, narrative-centered role-playing video games significantly designed around branching paths of player choice. To inform my research methodology, I will play and analyze my experiences of three globally successful video games that match these classifications: Undertale (2015), The Walking Dead: The Game (2012), and Detroit: Become Human (2016). Drawing from the interdisciplinary school of performance studies, I seek to identify the artistic design choices (of perspective, world-building, and game mechanics) that influence the player's emotional experience and moral decisions throughout each game. I intend for my research to educate designers on how to build choice-based, single player role-playing video games that offer compelling, socially engaged narratives.

50. **On the Economics of Theatre - Analyzing the Potential for Theatre Subsidies in the United States**
    Presenter(s): Brandon Ah Tye
    Advisor(s): Dr. Andrew Chappell

Theatre and the performing arts has seen a drastic economic decline over the past few decades. Demand for theatre continues to drop as cheaper substitutes for live performance become more prevalent in the modern world. In this paper, I make use of modern economic theory to argue for theatre and theatre education subsidies at the Federal and State level in the United States. Positive externalities are showcased both by data based evidence and macroeconomic thought experiments, implying that subsidies for theatre arts will shift the current demand curve to a socially efficient solution. In other words, government subsidies will aid American society in realizing the true economic value of theatre. Subsidizing theatre in America would, on a surface level, level, eliminate price barriers and the ostracization of working class audiences. On further examination, however, theatre subsidies in major urban locations have the theoretical potential to spur more economic innovation and productivity while subsidies for educational programs in theatre have demonstrated the ability to boost academic achievement for America's youth.

51. **The Looking Glass: Innovating the Future Through Theatre**
    Presenter(s): Courtney Foster
    Advisor(s): Dr. Andrew Chappell

Mirroring societal changes throughout the ages, theatre is an art form that continually evolves and adapts to modern day relevancy through meaning making moments on stage. During the COVID-19 Pandemic, theatre reflected the BIPOC community's demand for equity, inclusivity, and sociopolitical justice by way of its own movement and manifesto titled "We See You White American Theatre". As a makeup artist, how can I evolve to meet the demands of people who are underrepresented and marginalized within the theatrical community? The first step of a makeup artist's design process is to develop a 2-D rendering on paper called a makeup face chart. The go-to face charts for makeup artists are premade, outdated, and unrealistic sketches that look like line drawings of Ken and Barbie. Further, makeup charts convey neoliberal consumer capitalism, in that if the actor does not look like the makeup on paper, it is the individual's problem rather than society's issue. As theatres begin to open, it will be the slight changes that make significant impacts. This creative project asks the theatrical makeup industry to become the looking glass for society to mirror by innovating the future of theatre. I am developing the blueprint for an app that will filter a photograph into a personalized face chart that is ready to print and design on. I will show designers, artists, and actors that simple technology affords the ability to produce personalized, more effective renderings, and thus an inclusive theatrical environment. Utilizing the tenants of White American Theatre, I will design renderings on personalized face charts, thus creating an inclusive foundation for others to mirror.

52. **How Disneyland is Different: Theatrical Influence on Immersive Entertainment and Lands Design at the Disneyland Resort**
Presenter(s): Kaylee Snow
Advisor(s): Dr. Drew Chappell

In 1955 Disneyland changed the theme park industry forever with its immersive and themed entertainment that brings beloved movies and characters to life, evokes their guests' emotions, and makes them believe in magic. Disneyland differs from traditional theme parks is due to its theatrical influence and it focuses on immersive entertainment design through Imagineering. Designers of the resort, better known as Imagineers, focus on the attention to detail placed in their designs and follow the story behind each land to decide what they are depicting. When Imagineers focus on immersive experiences there are distinct choices made that relate directly to Aristotle's six elements of drama: plot, character, language, theme, song, and spectacle. These immersive experiences have provided an escape from reality that takes guests away from their previous surrounding environment and into new and different locations with each turn. Disneyland is a place that brings imagination and fantasy to life through creative engineering for guests who visit the parks through strategic and immersive design in the same way a theatrical performance is depicted on a stage by utilizing Aristotle's six elements of drama. Through these influences, Disneyland becomes the happiest place on earth with magic immersion and entertainment that suspends disbelief for children of all ages.

53. **Importance of Body Inclusive Media**
Presenter(s): Shayla Jamieson
Advisor(s): Dr. Drew Chappell

Inclusive casting within the entertainment industry has seemingly been a struggle since the beginning of time. Starting in Ancient Greece where women weren't even allowed to participate in theatre, to 21st century America where the stage and screen are dominated by exclusive beauty standards, casting has not reflected the average audience population. Media and capitalism's obsession with beauty has alienated the average woman, leaving her insecure and with low self esteem. As an overweight woman and a former "fat kid," I have experienced the lack of representation media offers, and the negativity associated with being overweight. In order for society to evolve past the severe expectations and judgements people in America face simply for existing in their body, a change must be made. Mass communication is the most effective and efficient way to integrate change into a society. Committing to body inclusive casting choices, the entertainment industry, specifically theatre, film, and tv could potentially make major strides in reducing body shaming and low self esteem. In order to prove the importance of body positive and body inclusive casting, I will research scholarly articles detailing effects of media representation on society. Along with my research, I will perform case studies examining one piece of theatre, one television show, and one movie to identify progression or regression within

the industry. If the media does not begin to represent the public more accurately through casting and writing there may never be a recognized culture shift towards a body positive society. Eventually this research should be used to broaden the spectrum of body types within the entertainment industry, as I hope to do as a casting director.

World Languages and Cultures

54. **Code Switching, Expanded Meanings, and Worldviews in Bilingual Plays by Cherrie Moraga and Dolores Prida**
    Presenter(s): Allie Chow
    Advisor(s): Dr. Polly Hodge

In recent decades, Spanish-English bilingual speakers have significantly increased due to immigration and the growing popularity of Spanish speakers in the United States. Within this bilingual community, more and more have started to use "code switching" when talking to each other. Many studies have shown the benefits of having the ability to change between languages, for example, having more words to express how one feels. According to the Sapir-Whorf hypothesis, an individual's language can influence how they view the world around them. Every language has unique systems and structures that are reflected in its speakers' cognitions. Therefore, speakers of different languages have different cultural worldviews, and one culture may emphasize certain aspects that another culture may not. In this essay, I analyze two Spanish-English bilingual plays, The Hungry Woman by Cherrie Moraga and Beautiful Señoritas by Dolores Prida, to see if changing the language affects the dialogue's meaning. The majority of the two theatrical plays were written in English, however, Moraga and Prida switch to Spanish for certain events – such as a character explaining ethnic cleansing to her grandson – or to express a character's intense emotions – such as finding out you are going to have a daughter when you wanted a son. In this essay, I present charts that detail more specific patterns and analysis of when and why code switching is implemented in The Hungry Woman and Beautiful Señoritas, and how it relates to the worldview of the plays, its characters, and the audience.

55. **The Truth Revealed in Plays by Osvaldo Dragún and Ariel Dorfman: Social Injsutices and Torture in "Historia de un flemón, una mujer y dos hombres" (1956) y "La muerte y la doncella" (1990)**
    Presenter(s): Erika Wiles
    Advisor(s): Dr. Polly Hodge

This project aims to highlight the social conditions and injustices of two different countries, Argentina and Chile, and their influence on the works of Osvaldo Dragún and Ariel Dorfman. By examining the plays "Historia de un flemón, una mujer y dos hombres" (1956) by Dragún and "La

muerte y la doncella" (1990) by Dorfman, both playwrights focus on social issues and use their platform to show the theme of dehumanization. For Dragún, his inspiration comes after the coup's d'état in Argentina in 1943 and 1955. As did Dorfman and the coup in Chile in 1973. In each country, civil unrest and human rights violations dominated the political scene. Both playwrights illuminated these social problems during the dictatorships to denounce the poor social conditions of human beings and the torture they suffered.

56. **Flamenco Dance and Film in Francisco Franco's Spain**
    Presenter(s): Gia Roberts
    Advisor(s): Dr. Polly Hodge

In this project, it is postulated that during and after Francisco Franco's dictatorial regime, Franco's strict rules affected both flamenco dancing and the films Carlos Saura created. This paper explores how flamenco dance was implemented into his Nationalist agenda and in movies by Saura, and also how Saura created films (without flamenco dance) that criticized Franco because of his censorship of films during his authoritarian regime. Interestingly enough, Franco considered flamenco dancing a part of the Spanish national identity, so he encouraged it during his reign, and it also influenced other industries in Spain, such as film. The two famous films by Carlos Saura that are researched in this project are, Blood Wedding (1981) and Sweet Hours (1982). These films artistically articulate the significant cultural impact of Francoist Spain, and how flamenco dancing became a very important role in Saura's films. Franco had control over all aspects of culture in Spain and was not a supporter of the work Saura was doing, except when Saura integrated flamenco dancing in his films. It is evident that flamenco dance and Carlos Saura's films were integral parts of Spanish culture, and they were heavily impacted by the Franco regime.

57. **Mythic and Historical Women: Malintzin and Cleopatra on Theatrical Stages**
    Presenter(s): Jon Paul Lawton
    Advisor(s): Dr. Polly Hodge

Cleopatra and Malinztin come from distinct time periods in world history— respectively, the declining Ptolemaic dynasty of Egypt and the age of the Spanish conquest. Literature has been inspired by these historical characters, creating various interpretations of this Egyptian queen and Aztec translator. Fundamentally, these two figures share similarities: both women fall in love with foreign invaders. For this, they must rectify their desires between loyalty to their home countries and prohibited love. The plays Todos los gatos son pardos by Carlos Fuentes and Antony and Cleopatra by William Shakespeare reveal this concept. The dialogue between the two plays creates two distinct worlds, or "stages," (of the invader and the invaded) that Cleopatra and Malintzin embody. This essay investigates how both women navigate the cultural clash between the invader and the invaded in order to harmonize the tension between romantic and patriotic

desires. Comparatively, the Aztec and Egyptian stages can be defined as settings of novelty, fluidity, and excess, while the Roman and Spanish stages emphasize rigidity, logic, and dogmatism. Considering how these individuals embody and defy these characteristics of the stages they come from, this literary and analytical comparison demonstrates that romantic and patriotic loyalty cannot be synchronized. The discrete relationship between these concepts, as examined in both dramas, destabilizes the cultural identity of both figures in such a way that they become defeated and fatalistic.

58. **The Societal Ladder in 20th Century Spain as Demonstrated in the Works of Antonio Buero Vallejo**
Presenter(s): Kate Syverson
Advisor(s): Dr. Polly Hodge

The twentieth century was a period full of wars, violence, and conflict that revolved around the differences of political opinions in Spain. The country was divided by the Spanish Civil War during 1936-1939, which induced a turbulent and transformative time for Spain throughout the rest of the century. In this paper, I explore two theatrical works written by Spanish playwright Antonio Buero Vallejo—Historia de una escalera (1949) and Las trampas del azar (1994)—concentrating on the concept of justice in relation to the opportunities for social and economic mobility within Spanish society. I focus on the Postwar Period (1939-1962), with emphasis on Francoism and censorship, and the following transition to democracy after the death of dictator Francisco Franco in 1975, highlighting the economic success and the expansion of human rights that the transition inspired. I consider the political manifestations, ideologies, and themes of the works and analyze how they transform from the Postwar Period to the democratic transition. The investigation shows that the play Historia de una escalera demonstrates the lack of mobility in society due to the injustices of the Franco regime that caused poverty, frustration, and the disparity between the social classes that is seen through the work. Conversely, the play Las trampas del azar illustrates the return of social mobility, as a result of the transition to democracy, and that concepts such as destiny, luck, and passion are unpredictable and subject to change, much like the political environment of the twentieth century.

59. **Reality as an Ambiguous Sign in Two Stories by Jorge Luis Borges**
Presenter(s): Kyler Escutia
Advisor(s): Dr. Polly Hodge

We live in a chaotic world. Oftentimes it is easy to lose oneself in chaos and conflate reality with the imaginary. This essay aims to demonstrate the idea of an ambiguous reality utilizing the two short stories, "The Circular Ruins" and "The Wizard Postponed", by Jorge Luis Borges and how one can be deceived through numerous interpretations of reality. Roland Barthes' theory of semiotics on signs and the social connotations that they inspire will be considered in order to

further dissect these symbols and their various meanings that Borges employs in his works to transmit his ideas of the vagueness of reality. Furthermore, it is posited that the very same fabric of reality can be quite deceiving, as witnessed in these two stories which highlight many signs that point to ideas such as magic and dreams.

60. Eva Perón, the Radio, and her Strategic Influence on Peronism
Presenter(s): Natalya Bachoura
Advisor(s): Dr. Polly Hodge

Eva Perón (Evita) was known for her powerful speeches. She played a fundamental role in her husband´s rise to power and increased her own power along the way. This paper analyses the communication strategies that Evita used to gain influence in society and expand Peronism. It tells the story of how a lonely woman climbed out from her impoverished background and learned to wield the power of her voice to completely transform a society. To demonstrate her success in gaining the hearts of the Argentine people, this paper focuses on two specific strategies that she often used: Peronist rhetoric and the manipulation of emotions—pathos. Specifically, three of Evita´s speeches will be dissected: "To the Shirtless—October 17, 1951¨, "Renunciation of the Vice Presidency—August 31, 1951", and "Eva Peron´s Final Speech—May 1, 1952". These speeches are used to explore the imagery and emotions that Eva inspired with her words and how she infused them with Peronist rhetoric to convince her listeners of the "goodness" of Peronism and its pure intentions. Ultimately, this study reveals how Eva and Juan Perón were brought together and empowered by the radio—changing the trajectory of their path and multiplying their communicative influence and power as they pursued change in Argentina.

61. Surrealist Expressions of Psychological Struggles in Select Paintings by Frida Kahlo and Salvador Dalí
Presenter(s): Regina Juarez
Advisor(s): Dr. Polly Hodge

This project aims to establish a connection between suffering expressed through art and Sigmund Freud's ideas on the ego, sexuality, and unconscious. This is explored through three of Freud's books—On Narcissism, Sexuality and Psychology of Love and The Ego and the Id—and selected paintings by Frida Kahlo and Salvador Dalí. As Kahlo and Dalí's paintings show, suffering can be communicated through pictures and colors. Their complicated lives led them to create masterpieces that reflected a distressed ego, aggrieved sexuality, and unconscious suffering. In this essay, the visual content of La cama volando (Kahlo, 1932), Metamorfosis de Narciso (Dalí, 1937), Dos desnudos en un bosque (Kahlo, 1939), Cráneo atmosférico sodomizando a un piano de cola (Dalí, 1934), Las dos Fridas (Kahlo, 1939) and El autorretrato blando con tocino frito (Dalí, 1941) is explored in collaboration with Freud's writings. The works of art demonstrate how the images and colors in the selected paintings illustrate a fragmented ego, repressed sexual desires,

and an afflicted unconscious to reveal an inseparable connection between Psychology and Art such that suffering can be expressed and mentally processed through artistic creativity.

Room A

Moderator: Dr. Ahmed Sebbar

Software Engineering

2:30-2:50 pm

Fabricating Nanophotonic Devices using Nanofabrication Techniques
Presenter(s): Scott Cummings
Advisor(s): Dr. Mark Harrison

Nanofabrication processes are widely used to make the integrated circuits and computer chips that are ubiquitous in today's technology. These fabrication processes can also be applied to the creation of nanophotonic devices. The ways in which we apply these fabrication techniques in the field of photonics is often constrained by the technologies used for electronics manufacturing which presents an interesting engineering challenge. These limitations include availability and cost of certain fabrication equipment and techniques required to create state-of-the-art nanophotonic devices. Through work with the University of California Irvine nano-fabrication cleanroom, we designed and fabricated various integrated photonic components including grating couplers, waveguides, and inversely designed photonics logic gates. We then adapted the designs to the fabrication techniques available at UCI and the techniques most applicable to achieving the original design goals. I explore the fundamental design process and then discusses nano-fabrication in more detail. Finally, I describe the creation of these devices and their utility for various information-processing applications. Results are preliminary, but we were able to fabricate a suite of nanophotonic devices. Additionally, we characterized the performance of these devices experimentally and compare them to simulations. These devices represent the first step toward designing and experimentally verifying a suite of other devices; and lays the foundation for future work in this area.

Communication Studies

2:50 – 3:10 pm

Development of a Chatbot for Influenza Vaccine Persuasion

Presenter(s): Nicole Yoo, Audrey Shin
Advisor(s): Dr. Austin Lee

Anti-vaccination ideology has been increasingly observed in recent years, especially in relation to the COVID-19 pandemic. There is a lot of misinformation regarding vaccinations, especially the influenza vaccine. Many people believe that they do not have to receive the influenza vaccine in addition to the COVID-19 vaccine or are unaware that they have to get the vaccination yearly. An artificial intelligence chatbot was developed to inform and persuade users to receive the influenza vaccine. The chatbot is designed to enhance the user experience and is able to communicate with human users through natural language to assist them with specific tasks. Current communication problems were identified and a proposed application of the chatbot was developed and evaluated. An open-source chatbot scripting language AIML (artificial intelligence markup language) will be used to create the chatbot which will be displayed through the Pandorabot platform. The study will help determine the potential role of chatbots in persuasion contexts and other potential applications.

3:10 – 3:30 pm

Developing Chatbots for Various Educational Contexts

Presenter(s): Nicole Yoo, Izzy Alfonso, Denise Alonso-Pecora, Bella Briskorn, Noah Christensen, Gabriela Jimenez, Jillian Morris, Priscilla Ocampo, Nick Richmond, Celine Tran, Lauryn Yost
Advisor(s): Dr. Austin Lee

School of Communication students enrolled in Dr. Austin Lee's COM329 Human-Machine Communication developed artificial intelligence chatbots that are applicable in various educational contexts (e.g., a cybersafety education chatbot, an ocean safety information chatbot, a nature education chatbot). The chatbots can communicate with human users using natural language, possesses domain knowledge, and assist them with specific tasks. Our chatbots are designed to streamline interactions between a primarily younger userbase and services and enhance user experience. In this project, we identify current communication problems, discuss how chatbots can address the problem, introduce the proposed application, and examine its technical feasibilities and difficulties. We will use an open-source chatbot scripting language, AIML (artificial intelligence markup language) to build a rule database, and the Pandorabot platform to deploy the chatbot.

Room B

Moderator: Dr. Sougata Poddar

<u>Chemistry</u>

2:30 – 2:50 pm

Mechanism and Chemoselectivity Models for Hypohalous Acid Sensing at a Zinc-Sulfur Complex Implicated in Bacterial Redox Signaling
Presenter(s): Morgan Grimes
Advisor(s): Dr. Maduka Ogba

Bacteria that colonize animal host systems utilize tetrahedral zinc-sulfur complexes in their cellular defense system against neutrophilic bursts of reactive oxygen species (ROS) at sites of inflammation. Of the several ROS characterized in this oxidative burst, hypohalous (HOCl and HOBr) and hypothiocyanous (HOSCN) acids are among the most potent for killing the invading pathogens. It is known that HOX-sensing occurs through oxidation at the zinc-bound cysteine(s) and consequent geometric disruptions at the metalloprotein. However, experimental reports suggest that HOCl/HOBr oxidation reactivity may be fundamentally different from that of HOSCN. In this work, density functional theory methods is used to investigate the likely mechanism for HOX-sensing at zinc-sulfur complex. The preferred oxidation pathways using HOCl, HOBr, and HOSCN have been computed and compared to illuminate reactivity differences that explain experimental observations. The computational data reveal (1) the role of minimizing geometric strain at the zinc center in controlling the mechanistic preference and chemoselectivity for cysteine oxidation when comparing HOCl, HOBr, and HOSCN, and (2) the role of the counterion produced in the reaction in facilitating the localized geometric disruption that launches the signaling cascade within the bacteria.

<u>Political Science</u>

2:50 – 3:10 pm

COVID-19 and its Disproportionate Affects on Certain Segments of the Population
Presenter(s): Max Zucker
Advisor(s): Dr. Ann Gordon

The COVID-19 pandemic has affected all of us, whether it be through the virus itself and the illness that comes alongside it or the pandemic as a whole and the economic turmoil that's been a result. That being said, the pandemic in its entirety has certainly had disproportionate effects

on certain demographics more so than others, and those consequences are having overwhelmingly negative impacts. If you find yourself falling into certain minority demographics, such as but not limited to a lower socioeconomic class or persons of color you may fear not only contracting the illness but the pandemic on a larger scale due to its implications on your specific demographic. Relying on the Chapman Survey of American Fears, a representative national sample of U.S. adults, I am attempting to describe the nexus between a fear of contracting the COVID-19 virus and the pandemic as a whole with what socioeconomic, gender, age, or racial demographic any given person identifies with. Among my findings were some particularly interesting perspectives that I find myself often missing given my white, male, upper/middle-class privilege that gave me unique insight into what is generally worrying to the communities being hit by this pandemic the hardest. What I was able to conclude from a portion of my research was that if you do identify with any of these lower-income or minority groups, your fear of COVID-19 at large is going to be greater than that of someone on the opposite end of the demographic spectrum due to the simple fact that you will either get much sicker than the average person and/or suffer the economic and healthcare related consequences.

3:10 – 3:30 pm

Effects of Media Consumption on Public Health Behaviors Within the Context of the Coronavirus Pandemic
Presenter(s): Steele Viverette
Advisor(s): Dr. Ann Gordon

The media, particularly television, is widely accessible and highly influential in shaping our worldview and our attitudes, particularly during a time of rapid information development, such as the coronavirus pandemic. Using the Chapman University American Fears Survey, a national survey conducted in 2020, the goal of this research is to provide insight into the relationship between news sources (i.e., major television news outlets like Fox News, MSNBC, and CNN) and individuals' attitudes towards the coronavirus pandemic as well as the public health practices that accompany it, such as vaccination. This research aims to shed light on how harmful behaviors such as vaccine hesitancy and conspiratorial beliefs are disseminated through media. Prior research and content analysis of these news networks has revealed that biases and messages differ greatly between these networks as sources of information. The coronavirus pandemic has created many topics of contention in our nation- from the effectiveness of vaccines and masks to whether the pandemic has been a conspiracy to begin with. Television, while very accessible, can also be a dangerous source of misinformation and can perpetuate conspiracy theories and biased viewpoints, which with reinforcement and without exposure to counter-information can permeate into dangerous worldviews, beliefs, and behaviors, such as those that undermine the best practices for public safety that have been advised by experts during this pandemic.

Misinformation and the continued entertainment of conspiracy theories has extremely dangerous effects on our public health and has greatly harmed our ability to combat the coronavirus pandemic, thus it is crucial to understand the sources of that information and address them.

Room C

Moderator: Dr. Jan Osborn

Political Science

2:30 – 2:50 pm

How Minority Groups Pass Legislation: The Immigration and Nationality Act of 1965
Presenter(s): Sara Fujii
Advisor(s): Dr. John Compton

When the Immigration and Nationality Act of 1965 (INA) passed it was regarded as non-impactful, and no one thought it would have a significant influence within the United States. Yet, the Immigration and Nationality Act of 1965 changed the demographic makeup of the United States to what we know it as today through striking down the quota system and discriminatory practices towards Asian immigration. The bill's success is often attributed to President Lyndon B. Johnson and the aftermath of the civil rights movement. Despite this, I argue that there are more overlooked factors, such as movement within the Asian community, that caused the shift in immigration policy and the passage of the Immigration and Nationality Act of 1965. This paper will explore the historical trends and factors, using congressional hearings, historical periodicals, and other evidence, to give a more holistic and comprehensive understanding of the major shift in immigration policy towards Asian countries in the 1960s. In addition, this paper will explore how minority groups or groups with little political clout manage to get legislation passed.

2:50 – 3:10 pm

A Checkerboard of Interests: Investigating the Driving Motivations in the Debate of Land Tenure Reforms for Native American Tribes
Presenter(s): Anika Manuel
Advisor(s): Dr. John Compton

People have long disputed over the financial system constructed for indigenous communities and their resulting economic rights within U.S. native reservations. Indigenous tribes themselves remain split concerning the state of their tribal economies. Although scholars have extensively researched the historical component regarding the construction of the financial system we see in place today, very few have focused on the politics and rationale behind certain policy positions of relevant actors in modern-day society. In an attempt to fill this gap, this research paper will

focus on answering two key questions: How has public policy shaped the economic and property rights of indigenous nations in the U.S.? And what are the different interests driving the various policy stances of relevant political actors in this issue, including the federal government and indigenous tribes? This will explore more of the driving interests influencing political actors and the dynamic between them in regards to U.S. public policy. Looking at data gathered from interest groups, tribal newspapers, public policies, congressional reports, and more, I will outline the various stances on proposed solutions to the economic hardship among native communities and how they affect policies proposed in congress. This research aims to shine a light on the nuances embedded in the contemporary debate of economic self-determination within the Native American reservation system and offer a new framework of understanding through which to look at this issue.

3:10 - 3:30 pm

The Affects of Race and the Fear Employment in the U.S
Presenter(s): Gaurav Chintamneedi
Advisor(s): Dr. Ann Gordon

As a nation that runs on the idea of capitalism, the importance of having a job has high societal value. On an individual level, jobs provide financial security and ultimately help others live a sustainable life. Traditionally, people engage in the education system in place to gain adequate skills that will help them find sustainable employment in the job market. Yet, despite the educational process and a constant emphasis to get a well-paying job, Americans still struggle to find sustainable jobs and ultimately face the huge, daunting problem of unemployment. Unfortunately, many Americans fear unemployment due to various factors such as race, level of education, annual income, social status and many more. In recent times, the unprecedented COVID-19 pandemic has also become a huge factor in affecting the employment levels of Americans. In my research, I examine the reasons on why Americans fear unemployment but specifically the relation between race and employment. Using the Chapman University Survey of American Fears, I examine the correlation between the fear of unemployment to race. How does one's race affect their employment status ultimately? Statistics have indicated that African Americans face a higher level of difficulty to get employed and in this paper I further explore this correlation and provide reasonings for such causes. This paper will focus on the different factors that affect unemployment status of Americans but specifically the effect race has on employment and how that relates to the fear of being unemployed.

Room D

Moderator: Dr. Julye Bidmead

Peace Studies

2:30 – 2:50 pm

Global Approaches to AI Ethics and Governance
Presenter(s): Haley Lilla
Advisor(s): Dr. Hilmi Ulas

This research project is an examination of international initiatives for the development and implementation of AI with a focus on ethics, automation, and the nature of work. While the AI race fosters innovation and competition between global powers, a shortcoming of ethical considerations and lack of legal structure has been an increasing concern. Consideration of trends and priorities of international AI initiatives demonstrates a pattern of global powers pushing acceleration in innovation that presumes benefits over risks while less technologically mature countries focus on establishing an ethical governance. In this project, I will conduct documentary research that investigates the priorities in current international AI initiatives. I will then raise questions of ethical shortcomings in these plans, focusing especially on the impacts of automation and the future of work. This paper is a call for social sciences and humanities to assert themselves in the present age of the Intelligent Machine to fill the ethical gaps in AI development.

Religious Studies

2:50 – 3:10 pm

Artificial Consciousness: Door to Empirical Investigations of Free Will and Souls
Presenter(s): Evan Johnson
Advisor(s): Dr. Julye Bidmead

Based in the possibility of artificial, non-biological consciousness, I propose a means to empirically examine the existence of free will as well as an immaterial soul. Free will has important theological implications regarding the problem of evil, which is if God is all-knowing, all-powerful, and all-good, how can evil exist in the world? One seminal response is that human free will is the source of evil (Plantinga, 1977). Utilizing an artificial consciousness, I detail a way

of testing if humans have free will, which would contribute to this discussion of evil. Next, I outline a manner in which the existence of an immaterial soul could be empirically verified. This would be done by testing whether both an artificial, computer-based consciousness (that is functionally equivalent to that of a human) and an actual human have free will. If the human has free will and the artificial consciousness does not, I contend that provides evidence for the existence of an immaterial soul. Then, by repeating the same experiment with an animal, one can attempt to determine whether humans are unique in having an immaterial soul. All of this points to the possibility of a closer relationship between science and religion, two subjects often considered entirely distinct or in conflict with each other (e.g., Haught, 2012).

Dance

3:10 – 3:30 pm

Embodied Rhetoric: Meaning-Making in Dance Protest Art
Presenter(s): Lauren Bramlett
Advisor(s): Julianne Pedersen

This project observes examples of protest art in concert dance choreography during the latter half of the 20th century. The study seeks to understand choreographers' usage of bodily movement as a form of activism, observing how and why bodies act as rhetorical agents. Using Mikhail Bakhtin's theory of dialogism in conjunction with the theory of new materialism–specifically as it is situated by Laurie Gries and Rosi Braidotti–the project takes a joint methodological approach to rhetorically analyze dance pieces with a focus on dialogic relationships, affect, spatiality, and temporality. Through both analysis of dance artifacts and embodied practice of movement, the project questions where rhetorical power exists within the dance and the dancer's body. Movement research Further, the project asks how the dancer's body interacts with its surroundings and how such interaction produces meaning, observing the dialogic relationship between all material present in the situation. The movement of dancers functions to contribute to the movement of social change, revealing the human body as an accessible and effective vehicle of rhetorical power.

Room E

Moderator: Christine Fugate

<u>Theatre</u>

2:30 – 2:50 pm

Auditioning as a Nonbinary Actor in a Binary World
Presenter(s): Chloé Boulard
Advisor(s): Dr. Andrew Chappell, Michael Nehring

Auditions have remained the same for decades - an actor chooses two contrasting monologues that fit their type and the role they want to play, showing off for directors and producers to be cast in shows. For cis actors, searching for monologues and navigating an audition is fairly straightforward. For nonbinary actors, auditions become a nightmare. How can a nonbinary actor present an authentic audition and still be cast? Do nonbinary actors find themselves exaggerating gendered aspects of themselves in order to be cast? The focus of this creative project will be on creating an authentic audition as a nonbinary, gender fluid actor in order to demonstrate that presentation does not equal identity, and an actor's pronouns should matter more than their presentation. By the end of this project, I will present a series of audition monologues that are authentic and truthful to who I am and how I identify. I will also interview fellow nonbinary actors to provide insight into the struggles of presentation in a field that revolves around looks. I hope this project can serve to begin a series of research into the gender of theatre, and will serve to include nonbinary actors into conversations surrounding educations and careers within the theatre.

2:50 – 3:10 pm
Drama Therapy
Presenter(s): Maryanne Cozzetto
Advisor(s): Dr. Andrew Chappell

Theatre has continuously provided a space of healing for many artists in many different capacities, and drama therapy is purely an extension of this. Drama therapy uses psychodramatic practices to examine the relationship between self and others while combining performance techniques with traditional psychotherapy methods. Traditional one-on-one talk therapy may not appeal to all. Individuals may find expressing their emotions artistically while in the presence of an ensemble as a more digestible form of therapy. It is crucial for drama therapy to be

recognized as the true form of therapy it is in order to gain the resources needed to make it accessible to all. Once becoming easily accessible, drama therapy will help encourage a new demographic of individuals to be open to therapy. In proving the importance of drama therapy, I will research the different forms and practices that are utilized as well as researching the leading theories of these psychodramatic practices. I will then create my idea for a typical five-week drama therapy program, based on my research. I believe the future implications of this research will be popularizing this form of therapy and erasing the stigma attached to nonconventional forms of therapy. In doing so, a wider class of people will then have access to the form of therapy best suited for them.

3:10 – 3:30 pm

BYE-naries; An Ethnodramatic and Devised Exploration of the Fluid Nature of Identity
Presenter(s): Fiona Burrows
Advisor(s): Andrew Chappell

This thesis will examine the construction and deconstruction of binary identities in gender, sexuality, and race through the creation of an ethnodrama focused on college students' transformations during their time at school. I will be conducting interviews to gauge general themes, similarities, and differences across peoples' experiences. I will then develop a cast to conduct theatre of the oppressed workshops with and devise a one-act script. This script will be the culmination of my project this semester and my cast and I will stage the production next semester. Our world boxes people in binary identities and looks down upon those who do not fit into these rigid roles. I will investigate how people play into and break these binaries, how gender, sexuality, and race are performed, and how identity is a fluid and ever-changing aspect of people's lives. I will seek to understand how individual experiences and social norms shape identity through the lens of queer theory and performance studies. I will also be implementing theatre of the oppressed techniques such as, but not limited to, forum theatre and identity maps in workshops with the cast. This piece seeks to queer and disrupt traditional theatrical practices and will give the opportunity for a marginalized group to dictate how they want to be represented in theatre. Ideally, this production will have audiences question their relationship to binary identity and the role they play in upholding systems of power.

Biochemistry and Molecular Biology

1. **Affect of Biorhythm on the Symbiotic Relationship of Alfalfa and its Microbiome**
   Presenter(s): Kim Nguyen
   Advisor(s): Dr. Hagop Atamian

Alfalfa is a legume that is commonly used as a nutritious feed source for ruminants. Being a member of the fabaceae family, alfalfa interacts with the bacteria rhizobia in order to get the nitrogen it needs. Alfalfa encapsulates rhizobia and provides the home for it, and the rhizobia fixes nitrogen for its host in return. However, less known are the other bacteria present in the soil microbiome that also interact with the alfalfa root . In addition, it is well known that plant circadian clock (biorhythm) has significant effects on its interaction with the soil microorganisms. In this project, we are experimenting with alfalfa grown in field soil in order to identify and understand the time of day dependent interactions between alfalfa and the soil microbiome. We are hoping that by understanding this intricate interaction between alfalfa and soil microbes will be valuable in increasing the alfalfa productivity.

2. **Using HPLC to Analyze Methylated Arginine Derivatives in Myelin Basic Protein, a Protein Implicated in Multiple Sclerosis**
   Presenter(s): Sidney Briski, Tiffany Lubrino
   Advisor(s): Dr. Cecilia Lopez

Myelin basic protein (MBP) is necessary for the proper function of the central nervous system. Since it maintains the integrity of the myelin sheath, its degradation is implicated in multiple sclerosis (MS). MS is a chronic autoimmune neuromuscular disease that currently has no cure. Patients with MS are typically diagnosed when their immune system reacts to modified forms of MBP. Once translated, MBP is heavily modified by the chemical addition of molecules including phosphoryl ($PO3-$) and methyl ($CH3$) groups at serine and arginine residues. Although phosphorylation by various kinases is generally absent in patients with MS, methylated arginine residues as well as the enzyme that causes methylation, PRMT5, have both been implicated in MS and are established markers of autoimmunity. Since arginine groups can be mono- or di-methylated (asymmetric vs. symmetric), we have set out to optimize methods using high performance liquid chromatography (HPLC) for the detection of these three arginine derivatives. Preliminary data shows that monomethylated arginine can be distinguished from dimethylated arginine, however further work to resolve the two dimethylated species is underway. Resolving the two species will allow for a more efficient way to distinguish between healthy modifications of MBP vs. MBP found in MS. Once we can distinguish between these arginine derivatives, we will perform in vitro methylation reactions using modified MBP and resolve these acid hydrolyzed derivatives via HPLC.

Biological Sciences

3. **Handedness in Thread Skein Coiling**
   Presenter(s): Arly Adame
   Advisor(s): Dr. Douglas Fudge, Dr. Zeng

Hagfishes are a group of eel-like animals that are known for their secretion of slime when they are disturbed or attacked by predators. Slime glands contain intermediate filament protein threads that are manufactured within specialized gland thread cells. The glands produce two main cell types, gland thread cells, and gland mucous cells. The thread cells are then diluted by the seawater where they uncoil and extend as fibers. The mucus absorbs the water, making the mucous component of the slime. Gland thread cells make the fibrous part of the slime, which deploys as coiled threads known as skeins. The slime threads within skeins exhibit a coiled morphology. While the 3D morphology of thread coiling is known, the origin of the coiling is unknown. The coiling of the thread can be left-handed or right-handed. I wondered whether there are patterns of skein coiling within individuals and species. One possibility is that the coiling direction is the same in all individuals but varies among species. It is also possible that left- and right-handed coiling is randomly distributed individually, within a species, and among species. In my project, I will measure the handedness of coiling in skeins from numerous individuals from several species of hagfishes. I will do this by observing skeins through a scanning electron microscope (SEM) and using an established protocol of handedness. The results will provide clues on whether there is a preferred method of thread skein production from coiling in a given species or individual.

4. **Hagfish Epidermal Thread Cells**
   Presenter(s): Hannah Campbell
   Advisor(s): Dr. Douglas Fudge, Dr. Yu Zeng

Hagfish are a species of bottomfeeder fish with the unique defense mechanism of slime secretion. This slime is able to clog the gills of their predators. Their slime is composed of a matrix of mucus and threads, with these threads being released from the gland thread cells (GTCs). Epidermal thread cells (ETCs) are another type of cell in the hagfish that contains threads, and they are embedded throughout the epidermis. Very little is known about the function of the ETCs or the structures that have been observed inside of them. It is known that their threads are thinner, shorter, and less complexly coiled within the cell than the GTCs' threads are. ETCs have no active mechanism of releasing their threads like GTCs do, but it has been found that they can be released passively upon disturbance to the skin. When hagfish skin was scraped with a microscope slide cover slip, ETCs were able to be collected on the slip, which was placed on a slide and observed under a microscope. Images were captured, and using the image analysis

software "image J", ETC threads were measured from end to end to obtain their lengths. Threads so far have ranged from just under 2 mm to just over 3 mm long. Understanding the morphology of these cells and the structure of their different components will help us understand the ways in which these cells may function, and what role they serve for the hagfish.

5. **Uncovering Slime Deployment Mechanisms in Hagfish**
   Presenter(s): Lucy Chalekian
   Advisor(s): Dr. Douglas Fudge, Andrew Lowe

Hagfishes are a diverse group of jawless marine fishes that are noteworthy for their ability to produce gill-clogging slime when threatened. The slime exudate ejected by the slime glands is made up of two main components: thread skeins and mucous vesicles. Although the biophysical mechanisms of exudate deployment in seawater are not understood, some details are known. Thread skeins must unravel from their coiled state and provide strength to the slime in the form of a network of silk-like threads. Deployment of mucous vesicles is known to involve the swelling of constituent glycoproteins their subsequent deformation into a vast mucous network that interpenetrates the slime thread network. Recent theoretical work suggests that thread skein unraveling would be greatly enhanced under conditions where the skein (or a loose piece of thread) is pinned to a solid surface. There are two competing hypotheses that work to explain the unravelling. The first is the anchor point hypothesis which states that skeins need to be connected to a solid object in order to unravel and form effective slime. This is contrasted by the elastic mucus matrix hypothesis which explains that skeins stay embedded in mucus and as the mucus deforms, it loads skeins in tension and effects unravelling. We have employed high-speed camera mounted on an Axio Zoom microscope and an upright microscope to observe this process in detail. Our preliminary results align more closely with the elastic mucus hypothesis as there was no unravelling before the mucus was formed with the hydrating mucus also acting as an elastic solid for the skeins to embed in. Furthermore, unravelling occurred only for skeins embedded in the mucus matrix when the mucus remained attached to the slide and turbulence seemed necessary to provide force to the mucus which could then transmit to the skeins to facilitate unravelling.

Chemistry

6. **Hydroboration of Isocyanates Using a Carbodiphosphorane Catalyst**
   Presenter(s): Benjamin Janda
   Advisor(s): Dr. Allegra Liberman-Martin

Hydroboration is a reaction that is becoming increasingly used in the synthesis of many organic compounds as it is typically chemo-selective and the hydroborated product leads to a number of

synthetic routes. These reactions are traditionally catalyzed by expensive transition metals. To explore a more efficient catalyst, the use of a cyclic carbodiphosphorane catalyst has been investigated. This catalyst can be prepared in a two-step synthesis and is very reactive due to a carbon containing two lone pairs. This, in turn, makes the catalyst an excellent nucleophile. The research being presented will explore the hydroboration of isocyanates and test the overall efficiency of this catalyst in providing the expected products.

7. **Comparison of Morse and Harmonic Oscillator Basis Sets for Diatomics**
   Presenter(s): Gary Zeri
   Advisor(s): Dr. Jerry LaRue

In the course of chemical innovation, laboratory experiments can often be costly and time-consuming. The use of computational chemistry, the simulation of chemical reactions by a computer, can provide a method to cheaply perform hundreds of reactions faster than can be done in the lab, allowing researchers to focus their time and financial resources on the experiments that prove the most promising. Although computational chemistry is a powerful tool in the sciences, it is a topic that undergraduate students rarely work with due to the intrinsic difficulty of quantum mechanics and implementing dense mathematical theory into computer code. Thus, there is a need for a pedagogically focused computational chemistry package that illustrates the benefits of the subject and walks students through the process of converting chemistry theory into executable code. To address this issue, a pedagogical Python package for Jupyter Lab was designed and implemented to provide both LaTeX descriptions of the theory and mathematics, along with a breakdown of how to convert the theory into code. The library is designed in a modular fashion to support conceptual learning and provides a built-in graphing system to allow for visualization of any data being computed within the package. To illustrate the difference between harmonic and anharmonic potentials and basis sets to students, the harmonic oscillator and anharmonic morse oscillator basis sets were implemented within this framework to illustrate the strengths and weaknesses of both in the context of computing vibrational wavefunctions for diatomic molecules.

8. **Investigating the Role of the Counterion in Calcium-Mediated Sulfur-Fluoride Exchange**
   Presenter(s): Leah Zahn
   Advisor(s): Dr. Maduka Ogba

Calcium triflimide, triflate, and fluoride salts have recently gained attention as cheap, abundant, and non-toxic Lewis acid catalysts. However, little is known about the mechanism of activation or the role of the counterions in these chemical reactions. Recent experiments show that calcium bistriflimide was effective in activating sulfur(VI) fluorides toward nitrogen-containing sulfur(VI) compounds via sulfur-fluoride exchange (SuFEx). However, significantly reduced yields were observed when calcium fluoride instead of bistriflimide, was used as the Lewis-acid activator,

suggesting the non-innocent role of the counterion in facilitating calcium catalysis. In this work, density functional theory methods were used to compute and compare the SuFEx mechanism mediated by calcium fluoride to that of calcium bistriflimide. Structural, energetic, and electronic properties of the activated species are analyzed to reveal the origins of the counterion-induced differences in reactivity between calcium Lewis acidic salts.

9. **Counterions Effects in Calcium-Mediated Sulfur-Fluorine Exchange**
   Presenter(s): Michael Bertagna
   Advisor(s): Dr. Maduka Ogba

Calcium ions, bound to weakly coordinating anions (e.g., bistriflimide or triflate ions), have gained significant utility within the last two decades as catalysts for facilitating challenging chemical reactions. This is particularly exciting because calcium, unlike the transition metals typically used as catalysts, is cheap, abundant, and non-toxic. Despite these obvious advantages, calcium catalysis is in its infancy - little is known about the mode in which calcium salts activate substrates in chemical reactions. Recent experimental work has shown that calcium bistriflimide salts activate sulfur(VI) fluorides in a sulfur(VI)-fluorine exchange (SuFEx) toward nitrogen-containing sulfur(VI) compounds of medicinal relevance. A closer look at the experimental data show that switching the anion from bistriflimide to triflate results in dramatic yield losses, indicating that the counterion plays a crucial role in facilitating the chemical process, beyond being weakly coordinating. In this work, density functional theory methods were used to compute and compare the SuFEx mechanism mediated by calcium triflate to that mediated by calcium bistriflimide. Structural, energetic, and electronic insights from computations that explain the origins of the counterion-induced reactivity differences between calcium bistriflimide and calcium triflate will be presented.

Communication Sciences and Disorders

10. **The Influence of Maternal Language on the Vocabulary Development of Infants After Early Cochlear Implantation**
    Presenter(s): Matthew Kim
    Advisor(s): Dr. Mary Fagan

Mother-infant language interactions are correlated with the vocabulary size of infants. The language diversity of mother-infant interactions influences the baby's vocabulary development, which is considered important for later academic and linguistic achievement. Vocabulary development consists of vocabulary comprehension and production. Vocabulary comprehension is the individual's ability to understand the meaning of a word. Vocabulary production is the ability to utilize labels or describe the nature of a stimulus. Most infants with cochlear implants

have less early hearing experience than hearing infants of the same chronological age. The hearing experience of the individual is referred to as hearing age; while chronological age refers to their actual age. For infants with profound hearing loss, hearing experience typically begins when they receive cochlear implants. Therefore, early implantation tends to decrease delays in vocabulary acquisition. Our research project assesses the language and communication skills of infants, ages 8-30 months, and the influence of maternal language on vocabulary size. The number of words spoken by mothers is compared with the vocabulary size of infants with and without cochlear implants using the MacArthur-Bates Communicative Development Inventories. Although there are various studies analyzing the vocabulary delays of children with cochlear implants, there is less research available that examines the relationship between maternal language and vocabulary development for infants who have received cochlear implants in the first year. Therefore the goal of this study is to examine the influence of maternal language on the vocabulary development of infants who had received cochlear implants at 13 months of age or earlier.

Communication Studies

11. Effects of Family Communication on a Young Adults' Self-esteem
Presenter(s): Samantha Friedman, Kathryn Nowell, Jimmie Gardner
Advisor(s): Dr. Austin Lee

The family environment is the first setting in which children internalize communication styles and learn behavior. Throughout a child's life relationships with family members and experiences impact an individual's self-esteem. The purpose of the research project is to further investigate the relationship between family communication styles and young adults' self-esteem. Our overall objective is to closely investigate whether positive or negative communication has an effect on children's self-esteem. Positive family communication is respectful, honest, open, straightforward while negative communication includes yelling, passive-aggressive behavior, blaming, name-calling, etc. Self-esteem and family communication are important to study because there needs to be a better understanding of how family communication affects children's self-esteem which in turn can affect mental health.

We will be collecting our data through a survey that asks multiple questions that will measure an individual's self-esteem and gauge their family relations and styles of communication. Our participants will be young adults ranging from the ages of 18-25. We are using Rosenberg's self-esteem scale to calculate the participant's self-esteem. To measure is family communication has an effect on self-esteem we will be using the four family communication pattern theory, conversation orientation scale, and conformity orientation scale. According to the Family Communication Patterns Theory, there are four different types of family communication patterns: consensual, pluralistic, protective, and laissez-faire. The conformity

orientation scale attempts to measure the orientation through an environment and network where the family members provide unconditional and unqualified obedience to family values and decisions. The conversation orientation scale is aimed at measuring whether one was raised in a high conversation or low conversation environment. We believe that those who were raised in high conformity and low conversation families have lower levels of self-esteem than others.

Computer Science

12. I Don't Have Any Friends: Encouraging Teen Socialization during COVID-19
Presenter(s): Christopher Chang, Aaron Yeh
Advisor(s): Dr. LouAnne Boyd

During the COVID-19 pandemic, with its social distancing and remote learning, it has been apparent that teens have found it difficult to socialize. To address this problem, we have explored two ways of encouraging socialization among teens: in real life, via an app which matches suitable friends, and in online classes, via a cooperative multiplayer video game which integrates with Zoom-style breakout rooms. When asked in interviews, multiple teenagers reported a decline in socialization not just in the real world, but also in educational settings online. In line with the "Prototype" stage of the design thinking process, we developed wireframes with Figma and collected teenagers' interactions with these wireframes. We then used these wireframes in the "Test" stage of design thinking. Some of our user tests focus on an app that matches teens with possible friends, based on their locations and/or interests. These tests prompt teens to find friends by location, and then by interests, recording the time it takes the users to do these tasks. Other prototype tests focus on the user experience of starting to play a video game in a Zoom-like breakout room. Specifically, we explore the interactive processes of starting a multiplayer game and joining a pre-existing one. A summary of quantitative and qualitative data is discussed.

13. Escape to Better Things: Limiting Social Media to Increase Productivity
Presenter(s): Eric Phan, Dylan McIntosh, Michele Okeyemi
Advisor(s): Dr. LouAnne Boyd

Covid 19 has been detrimental for the world, unable to physically socialize, teenagers have been shifting gears towards remote leisure activities such as social media. Unfortunately, research suggests that this worldwide issue has led to teens being negatively impacted by their continuously growing obsession with social media as a distraction. It is evident that this change ultimately decreases their productivity. From interviews with teens, they have shown that they recognize these effects and have a desire to get help with this issue. Additionally, research has shown that teenagers' rate of utility for social media apps are decreasing as they spend more time being productive throughout the day. Our goal, led by a design thinking framework, is to

limit social media and the distractions that come with it by possibly blocking notifications from these applications periodically. A different approach is by setting a daily limit on the amount of time spent using social media. By applying user centered design, we first developed multiple prototypes to tackle the problem at hand while boosting productivity. Then, we had a range of users test our works in progress. By analyzing the research we gathered from this, we progressed by applying and generating further improvements to our blueprint to draw a final conclusion. The information accumulated throughout this project is also discussed.

14. Personalizing Stress Relieving Activities for Teens
Presenter(s): Joseph Ellis, Chris Carlton, Romtin Rezvani, Samith Lakka
Advisor(s): Dr. LouAnne Boyd

The rise of social media has come with a variety of issues for the younger generation, especially concerning the stress they experience every day because of it. Teens should be able to express themselves and enjoy life without worrying about the "where" or "how" to do this. Our research found some areas that could be improved so teens can more easily find activities to de-stress. By having access to these apps, teens might be able to relieve more of the anxieties they are experiencing. Through ideation sessions, we created four program ideas that should provide quality of life improvements (haircuts, food and movie recommendations, and music playlists). To ease the haircut process, teens can use one of our apps to search for hairdressers that specialize in their preferred style, ensuring a satisfactory cut. Other apps provide specialized playlists and movie recommendations based on preferences and possible triggers, respectively. Finally, we wanted to provide an app that offers teens a chance to share food ideas and locations as a way for teens to easily bond and have fun. All four of these applications provide quick and easy solutions to activities that should be relaxing but can sometimes be tedious and/or stressful. We each prototyped one of these four programs, testing how understandable the interface systems are for each application. We will assess qualitative and quantitative data collected from these teen user tests.

15. Human Computer Interaction Elements in Development of Productivity Applications for Adolescents
Presenter(s): Riya Mody, Stephanie Munday, Garrett Bolen, Nathan Cuadros
Advisor(s): Dr. LouAnne Boyd

Living remotely as a teenager has had some important consequences. Research has shown that during COVID and post-COVID, social media use has hindered productivity. Existing literature in the field illustrates that social media use among teens correlates to lower well being, depression, anxiety and lower productivity. During the pandemic, these symptoms have become amplified and are now bigger sources of concern than ever. We ask "Are time limits and separate workspaces effective in increasing productivity by decreasing social media use? To answer this

question, we collected data from teens from which we developed prototypes that aimed to reduce time spent on unproductive applications (including social media). In order to achieve this, we gathered qualitative and quantitative data from teen participants, developed low fidelity prototypes, and tested and refined prototypes. Then, we created wireframes and tested the high-fidelity prototypes on the group of interest. By developing ideas for applications we hope to aid productivity and reduce time spent by teens on social media. We conducted user testing of low and high-fidelity prototypes and results are discussed.

Data Analytics

16. Causes of Technophobia in Adults
Presenter(s): Sophie Imondi
Advisor(s): Dr. Ann Gordon

Would you like to update the software? Rapid advancements within the field of technology have led the average consumer to grow fearful of technology. This paper will highlight research from the Chapman Survey of American Fears. Hypothesis Ⅰ: I suspect that Individuals who are in the lower class income bracket and the lower education spectrum tend to be more fearful of technology. My theory behind the hypothesis is that those in the lower-income brackets do not have the resources of technology at hand and those who are in the lower education brackets might not have enough experience with technology. Hypothesis Ⅱ: I suspect that those in older generational age brackets will tend to be more fearful of technology. The technological advancements in the last 40 years have inspired this generational theory. Hypothesis Ⅲ: I suspect that specific regions of the United States are more fearful than others. My theory was created with the thought that regions with more rural customs will tend to be more fearful. Technophobia is showcased in many ways, some that might not be picked up by a naked eye. This research will bring light to a relatively new and rapidly developing industry creating stress and worry among individuals nationwide. If the hypotheses are proven to be true we will begin to explore options to give adults resources to combat this fear. Technology surrounds us from the simplest forms like watches to the most complex algorithms on social media. The majority of the population can be oblivious to the covers we put on technology which is why this research is necessary.

17. How does Social Media affect Teenagers' Moods?
Presenter(s): Tor Parawell
Advisor(s): Dr. LouAnne Boyd

Over a year of being quarantined for COVID-19, teenagers (age 15-18) have switched to using their phones and laptops more than ever. This is shown by interview data collected in class and through public online app usage trends. Our goal is to create an application that allows a user to

manually enter their mood throughout the day, then once their mood is entered, the user will get a list of important statistics about their screen time and mood correlation. A user's phone screen time data will be synced and thoroughly analyzed, showing the user how or how much a certain application affects how they feel. By analyzing social media usage on laptops and mobile phones, we can survey users and see if and how social media usage correlates to their mood from a selection of different moods, social life on a scale of lonely to extremely socially active, sex life on a scale of 1-10, and mental health on a scale of 1-5. Our team will analyze these patterns using simple statistics and regression models to predict how a teen will feel after using social media for an arbitrary amount of numbers. We expect a negative correlation between social media usage and mood, meaning that the more teens use social media, the worse they will feel in the long run. We came to this conclusion due to dopamine being manipulated and raising users baselines through application usage, meaning once they stop using social media, the users dopamine levels will fall below their new heightened baseline.

Environmental Science and Policy

18. **An Analysis of Particulate Matter and Meteorological Conditions during California Wildfires**
    Presenter(s): Micaela Wilcox
    Advisor(s): Dr. Jason Keller

For my research, I will be looking at the Dixie and August complex fires, both of which happened in the past two years and the two largest fires recorded in California. I work at an air quality technology company called IQAir, so the data will be gathered from our network of both low cost and federally regulated ground sensors surrounding the fire locations to track the movement of the smoke. I plan on analyzing both PM2.5 and PM10, which are different sizes of particulate matter that represent pollution in the air. This data will be observed using hourly measurements over the course of the days of the fire and compared to the days leading up to the fire. The length of time to return to the standard air quality will also be analyzed. The data will be supplemented with satellite imagery of the region gathered from NASA through the Giovanni platform, such as humidity and meteorological factors, along with the average wind speed in the area in m/s. This research is important because wildfires continue to get more common and more extreme with climate change, and they have significant impacts on human health, livelihood, and the environment. I plan on referencing the new WHO guidelines on air quality to demonstrate the significant impact on health air pollution can have as well.

Health & Strategic Communication

19. Personality Traits and Coping During COVID-19
  Presenter(s): Jolie Stieneker, Ryan Deeb, Jillian Takeuchi, Caroline Sarkani
  Advisor(s): Dr. Austin Lee

The COVID-19 pandemic brought many novel experiences and unprecedented effects to the United States population. Specifically, from March to May 2020 much of the world was under strict lockdown. The purpose of this research study is to examine if different personality traits affected individuals' coping styles during the pandemic's peak. Previous research has analyzed the relationship between personality traits and coping mechanisms. Due to the uniqueness of the COVID-19 pandemic, this study looks to provide a more contextual application of personality traits and coping mechanisms. Participants completed a questionnaire including the Eysenck Personality Questionnaire-Revised (EPQ-R) and the MERS-CoV Staff Questionnaire which was adapted to the context of COVID-19. The three personality traits that will be measured by the EPQ-R are neuroticism, psychoticism, and extraversion. The two categories of coping that will be assessed are problem-focused and emotional-approach coping. It is expected that there will be significant correlations between personality traits and coping strategies such that higher levels of extraversion and psychoticism will be linked to more significant problem-focused coping strategies while higher neuroticism will yield links to more and emotion-focused coping strategies.

Health Sciences and Kinesiology

20. Mindfulness Meditations Contribution to Emotional Control via Executive Control Network Functioning to Decrease Likelihood of Developing Alzheimers
  Presenter(s): Amanda Hamilton, Jenna McKee, Rabia Asif
  Advisor(s): Dr. Manjari Murali

Mindfulness meditation has been shown to have a plethora of positive effects on attention, stress, and memory, and this attentional control may prove to strengthen emotional regulation (Moore et al., 2012). Other studies have shown that those with a history of depression are at risk for developing Alzheimer's disease later in life (Ownby et al., 2012). One of the predominant outcomes of Mindfulness practice is an increased ability of the practitioner to maintain equanimity in the face of difficult situations. By maintaining balanced emotions, these individuals can effectively quell depression symptoms, which by extension can decrease their chance of getting Alzheimer's later in life. This study includes an extensive literature review on the effects of mindfulness meditation on emotional control, the correlation between emotional regulation

and Alzheimer's, and the link between a history of attentional and mental disorders and Alzheimer's. Our research has led us to believe that the risk of developing Alzheimer's can be greatly decreased by mindfulness meditation practice in mid life. We identified peer-reviewed scientific publications using search engines and plugged in key words like, "meditation, "emotion," "depression," "attention," and "Alzheimer's." Additionally, we located open-source and research data sets to compare the prevalence of attentional and mental health disorders by state (in the United States) with the likelihood of an Alzheimer's diagnosis. Our analysis of the literature indicates that the Mindfulness Based Stress Reduction (MBSR) Program improves attention control in participants by allowing their executive control network to function at a greater capacity. This leads to greater allocation of attentional resources, even in the case of emotionally charged situations. We argue that Mindfulness-mediated regulation of one's emotional response will decrease their chance of developing depression, and therefore, decrease their chance of developing Alzheimer's disease later in life.

21. The Effects of Mindfulness on Stress, with Implications for Alzheimer's Disease
    Presenter(s): Rabia Asif, Jenna McKee, Amanda Hamilton
    Advisor(s): Dr. Manjari Murali

As new research emerges on the effectiveness of mindfulness practices, there is a growing interest in the specific neurophysiological and longitudinal outcomes of mindfulness, including its long-term effects on stress. Through an extensive literature review, we are considering a surplus of experimental studies that have found an inverse relationship between mindfulness and both perceived and physiological stress. We are also seeking out studies that have investigated chronic stress as a factor for Alzheimer's disease (AD). Numerous studies indicate that Mindfulness Based Stress Reduction (MBSR) is an intervention beneficial for stress management and general mental health (Klatt et al., 2009). Although there have been many studies that individually explore either the link between mindfulness and stress, or between stress and AD, there is less research done on the implications of mindfulness on preventing or delaying the onset of AD. Existing public and research data sets will be analyzed to identify potential connections between the prevalence of AD in a population and levels of stress and mindfulness. In addition to literature review and data set analysis, we will present our longitudinal research design to investigate the correlation between mindfulness and levels of perceived and physiological stress in participants of the 6-week Mindfulness Course taught by the Fish Interfaith Center at Chapman University. Our research study has implications for Alzheimer's disease prevention because chronic stress in midlife is believed to increase the risk of Alzheimer's disease in later life (Jeong et al., 2006). Mental health surveys and salivary cortisol tests will be taken before, immediately upon completion, and 3 months after the completion of the Fish Mindfulness Course. It is anticipated that both the levels of perceived stress as well as the physiological stress of the subjects will decrease after completing the mindfulness course and partaking in regular meditation, both short-term and long-term.

Music

22. A Playlist for Productivity: A Music Therapy Analysis on the Impact of Music Familiarity, Genres, and Productivity.
Presenter(s): Reina Sambrano,
Advisor(s): Dr. Jessica Sternfeld

Research has shown that listening to music has the power to influence people's moods. One researcher, DeNora, found in a study 2000 that mood-matching music, or listening to music that matches your current emotional state, has proven to be emotionally transformative. When interviewed, all participants in her study stated that they typically listen to music that they felt they needed in the moment. This research supports the idea of music for productivity, which is the subject of my project. Music therapy is a growing and influential field that has the ability to affect people's emotional, psychological, and physical well-being. Evidence has shown that music therapy can unlock lost memories in patients with dementia and can be a form of stress relief for veterans with PTSD. However, few of these studies seem to dive deeper into what genres of music are most beneficial in certain situations and/or could create certain outcomes. For example, would an elderly patient find more or less benefit from listening to current pop hits than hits from the 50s? In this paper, I examine the research that has already been done in the field of genre-specific music therapy and related areas, and draw conclusions from what is already known. I also provide templates for further studies, including testing familiarity with the music being played, that can be conducted to expand these results and ideas already in practice.

Pharmacy

23. Aged RBC and Brain Endothelial Interactions in Vivo in Tie2-GFP Mice
Presenter(s): G. Chuli Roules
Advisor(s): Dr. Rachita Sumbria, Rudy Chang

Cerebral microhemorrhages (CMH) are microscopic bleeds in the brain that have a high prevalence in the aging population. Brain vascular disruption and the ensuing red blood cell (RBC) migration into the brain is considered to be the main route of CMH development. It is known that brain endothelial cells can engulf fibrin clots and translocate them to the perivascular area. Further, our previous work, which was primarily done in vitro, has demonstrated that oxidatively stressed RBC (utilizing tert-butyl hydroperoxide (t-BHP)) or RBC degradation products can migrate across the brain endothelium demonstrating that the brain endothelium has erythrophagocytic capabilities. The aim of the current study was two-fold: 1) to extend our in vitro observations in vivo, and 2) to study the interactions between the brain endothelium, microglia, and RBC, given the role of microglia in RBC clearance and CMH development. Here,

using Tie2-GFP mice, which express GFP in the endothelium, and fluorescently labeled RBCs, we aimed to study the interactions between the brain endothelium and RBCs exposed to oxidative stress, in vivo. For this, PBS- and tBHP-treated RBCs were injected into Tie2-GFP mice (n=4 per group) and allowed to circulate for 24h. Brains were harvested, sectioned, stained for Iba1 (a microglial marker), and imaged using a confocal microscope, post-mortem. All the images were analyzed using NIH Image J for: RBC-positive vessels, Iba-1-positive area, and microglial activation state (resting or activated). Our results showed that tBHP-RBCs attached to the brain blood vessels and corroborated our in vitro findings. Further, there was a significantly higher iba1-positive area in the tBHP-RBC treated mice. These results confirm the erythrophagocytosis phenotype of the brain endothelium for damaged/stressed RBCs, and this process was associated with microgliosis, in vivo.

24. Biologic TNF-α Inhibitors Reduce Microgliosis in Aged APP/PS1 Mice for Alzheimer's Disease
Presenter(s): Tamara Abdullah
Advisor(s): Dr. Rachita Sumbria, Joshua Yang, Dr. Rachita Sumbria

Microglia are the immune cells of the brain and their role in Alzheimer's disease (AD) is increasingly reported (1). Microglia are the main source for tumor necrosis factor alpha (TNFα), a major pro-inflammatory cytokine in the brain (1). Further, studies show that TNFα plays a pathological role in AD pathophysiology (3). For example, TNFα is increased in the plasma and brains of AD patients. As a result, TNFα inhibitors (TNFIs) can be potential treatments for AD. The current existing biologic TNFIs do not cross the blood-brain barrier (BBB) (2). To cross the BBB, a fusion protein was engineered wherein the TNFI was fused to an antibody against the transferrin receptor (TfRMAb). The bioengineered fusion protein enables the TNFI to get into the brain using receptor-mediated transport (2). Our goal was to study the effects of two TNFIs: Etanercept, which is a currently FDA-approved TNFI for peripheral inflammatory conditions, and the BBB-penetrating TNFI. For this, 10.7-month-old male APP/PS1 mice were injected intraperitoneally with saline (n=16), BBB-penetrating TNFI (3 mg/kg, n=9), Etanercept (1.5 mg/kg, n=9) or TfRMAb (2.25 mg/kg, n=5) three days/week for 10 weeks. At the end of the study, the brains were collected, sectioned, stained for Iba1 (microglia marker), imaged, and analyzed using NIH Image J for the Iba1-positive area. The data quantified indicated that both Etanercept and the BBB-penetrating TNFI treated mice had reduced microgliosis suggesting that both peripheral and central TNFIs can reduce microgliosis in the aged APP/PS1 mice.

Physical Therapy

25. Tug Study in Grail Lab at Rinker Health Campus
Presenter(s): Christine St Clair, Mira Ananthanarayanan
Advisor(s): Dr. Rahul Soangra, Michael Shiraishi

With the number of stroke patients on the rise, including amongst a younger population, it is imperative to better understand the role of gait and posture asymmetry as a precursor to an individual's fall-risk and how this information can be utilized for stroke rehabilitation. This study investigates how asymmetry influences mobility in healthy participants using TUG (timed up and go) test. We seek to establish which aspect of TUG, if any alone, determines an individual's risk of falling. These tests include a sit to stand test (STS), 10-step gait ('OGW' over ground walking), and 360° turn test (TURN), in addition to the complete TUG test time. Kinematic and kinetic data was collected from the participants with and without weight attachment on their non-dominant leg. The asymmetry of the weight will simulate a stroke patient's reduced mobility characteristics and will help determine if limb asymmetry due to attached weight influences TUG performance. In this study, we recruited 10 healthy young (5 males, 5 females, Age M±SD, Height = M±SD, weight = M±SD), and 10 healthy old (5 males, 5 females, Age M±SD, Height = M±SD, weight = M±SD). The amount of weight was normalized to 7.5% of their total body weight. Data was collected using motion sensor capture on Vicon Nexus, X-Sens accelerometer data, and Smartphone data on the platform EdgeImpulse. Data was processed and biomechanics parameters of gait and posture will be assessed and compared to identify any patterns or discrepancies among participants within each aspect of the TUG test.

26. Evaluating Effects of Asymmetry Load on Shank on Postural Sway Characteristics on Healthy
Young and Older Adults
Presenter(s): Talia Brennan, Bridgette Kohl, Johanna Darendinger
Advisor(s): Dr. Rahul Soangra, Michael Shiraishi

Postural stability involves a person's ability to control their body center of mass (COM) over the base of support . In individuals with stroke, postural stability is greatly altered due to hemiparalysis, limiting the ability of these people to maintain their balance, and increasing their fall risk. It can be affected by varying factors such as decreased control of affected side, strength of affected side muscles, neuromuscular deficits, endurance or stamina, and increased body mass index (BMI). In this study, 10 young males (age 23.67 ± 5.5 years, height 169.50 ±7.42 inches, weight 153.13 ± 40.77lbs) and females (age 25.75 ±7.85 years, height 169.50 ± 7.42 inches, weight 169.15±82.97lbs) and 10 elderly males (age 70.75 ±7.37years, height 174.75±6.02 inches, weight 180.00±4.96lbs) and females (ages 69.50 ±4.51years, height 165.19±4.88inches, weight 135.43± 28.01lbs) participated. All Participants performed postural stability standing task with

and without weights attached on the dominant lower limb . Participants were asked to stand still for one minute with eyes open and eyes closed condition. Weights made up of 7.5% of the participant's body weight were placed on their ankles in order to stimulate how a stroke patient's mobility is altered. Postural parameters such as sway area, sway velocity, center of pressure length were evaluated for with and without limb weights. This was done in order to see how weight asymmetry affected their balance during standing. Ultimately, it was hypothesized that more center of pressure excursions would be present with weight than without thus resulting in deficits to maintain balance. This study can simulate stroke conditions to some extent and facilitate understanding on how stroke affects postural stability and increased fall risk.

Political Science

27. **Setting the Fear Agenda: How Media Accessibility Affects Hate Crime Victimization Fears in America**
   Presenter(s): Daniel Mayberry
   Advisor(s): Dr. Ann Gordon

The Department of Justice and the FBI designate hate crimes to be crimes, often violent, based on race, color, religion, national origin, sexual orientation, gender, gender identity, or disability. Since the 1990s, crime news reporting has tripled, and news media has geared more towards 24-hour news coverage. As media accessibility and consumption have increased, the visibility of crime, in general, has increased, but a spotlight on hate crimes has become emergent. Sociological and political theories aim to explain how rising accessibility to media can affect people's opinions and the social and political agendas of the country. Countless research contributions to the theory of agenda-setting have aimed to show the effects media has on influencing viewers based on obtrusive and unobtrusive issues; however, little research has questioned if the media can influence the fears of its viewers through such reporting. This paper will investigate the relationship between one's media consumption and the extent to which one fears being the victim of a hate crime (including racially motivated hate crimes). Relying on original data from the Chapman Survey of American Fears (2019 & 2020/2021), a nationally representative sample of U.S. adults, I expect to find a noticeable relationship between one's media consumption and their fear of being victim to a hate crime. I also expect to find that the amount of media one consumes will affect whether they fear being the victim of a hate crime due to heightened media coverage of hate crimes and racially motivated violence during 2020. Nevertheless, finding a relationship between one's media consumption and fear of being the victim of a hate crime could signal a new era in American history where its citizens fear each other more than international or environmental threats simply due to access to information.

28. Wildfire Unpreparedness in California
Presenter(s): Daniel McGreevy
Advisor(s): Dr. Ann Gordo

The California fire season has extended into a full year with Golden State residents finding themselves facing more frequent and more intense wildfires than in years past. In this analysis I explore the relationship between wildfires, voting behavior, and class. Utilizing a statewide representative dataset, the Public Understanding of Debris Flow and Wildfire Messaging, I find that affluence has a strong relationship with being prepared for a potential wildfire. Additionally, I find that poorer Californians are less likely to have taken precautions to protect their homes from wildfires. These findings highlight that as these fires continue to pop up across the state that low-income homeowners will be hit disproportionately hard as local and state governments fail to fill in the cracks and support these individuals. These findings should elicit a reckoning that major steps are needed to be taken not only to combat wildfires but also to prepare less affluent Californians for when these fires inevitably occur. Californians across the state are feeling more threatened by wildfires now than they have in years past but low-income Californians still need support to prepare for the next potential fire. While we may not think of fires as purveyors of classism, the lack of resources to prepare for these fires results in them having racist and classist impacts.

29. Partisanship and its' Impact on our Beliefs About Immigration.
Presenter(s): Danielle Lindeman
Advisor(s): Dr. Ann Gordon

Our beliefs about undocumented people and their movement to the United States are heavily rooted in our partisanship and subsequently our consumption of any and all forms of media. In this paper, I examine the relationship between a person and their political identity, their sources of information as well as their overall consumption of the media, and conclusively their beliefs about the undocumented population and their status or a lack thereof in the United States. I have found that those that identify themselves as Republican or are more conservative in their beliefs, are inclined to believe that a heavier restriction or an absolute ban on immigration is the only solution to make the United States safer and to maintain a particular set of values. Democrats, or those who label themselves as liberal, are more likely to think on the contrary, and that it makes no difference to the safety of the country and whether or not we open the borders to people will not affect the dynamic in the United States. News and media consumption go hand-in-hand with partisanship and therefore act as an increasingly large component in a person's belief about this policy. Republicans who consume conservative leaning media such as Fox News have a significantly higher likelihood of being anti-immigration, whereas Democrats who source from social media forums, which are often more left leaning, tend to think the opposite.

30. Fear and Skepticism: A Changing Climate During the Trump Era
Presenter(s): Devin Lopez
Advisor(s): Dr. Ann Gordon

Public awareness of the climate crisis has increased over the past several decades due in part to increased exposure to climate science and the drastic reports released by the Intergovernmental Panel on Climate Change. This report uses the past four years of the Chapman Survey on American Fears to track the groups most fearful of climate change and those who have high levels of environmental concern. The variables tracked across these years include individual income, education level, age, political ideology and party identification, as well as the extent to which one believes the Bible is literal in its content. These demographics are analyzed through a series of linear regression models and correlation tests. Hypotheses tested in this report are derived from the anti-reflexivity hypothesis and the concept of End Times Theology. The Agenda-Setting effect of mainstream partisan media in the United States is also analyzed to provide context to the information sources of various demographics. Republicans and conservatives, as expected, are least likely to fear climate change of any demographic and exacerbate differences in smaller demographics when controlling for party identification. Republicans with higher incomes yield a negative relationship to fear of climate change and overall environmental concern. Democrats as a whole are more likely to fear climate change and have higher environmental concern, though the more specific demographics of income, age, and education hold highly mixed results across the four years of data. Interpretation of the Bible as literally true, word-for-word, increased its strength in determining one's fear of climate change throughout the Trump presidency. Fear of climate change, while climbing from 2017 to 2019, saw a slide backwards during 2020, setting a bleak stage for the future of climate policy in the United States.

31. The Pro Life Movement: Misconceptions and Demographics
Presenter(s): Jaylynn Vega
Advisor(s): Dr. Ann Gordon

In the past decade, the pro-life movement has been strongly associated with the Republican Party, however, party affiliation is not the only determining factor in picking a stance on this hot topic. An individual's party identification does not necessarily determine their stance on certain issues nor can we say that their stance on certain issues determines their party affiliation. In this paper, I examine the relationship between being pro-life and other demographics such as household income, race/ethnicity, age, religiosity, and other stereotypical markers of the pro-life movement. Using the ANES 2020 data set which represents the general population of Americans in the U.S. I expect to find a correlation between being pro-life and having less college education, lower income, religious affiliation and being part of the hispanic community. I will be examining how these factors are looked at when seperated, as well as how they may paint a different picture than when these factors are analyzed in multi-variable crosstabs. The correlations made between

the pro-life group and the dependent variables may line up with what has already been previously discovered as markers for support of the movement, but with a closer examination of the relationships that have previously not been uncovered, I hope my data will give insight to the pro-choice movement and how anyone could be pro-life, and vise versa. To have a better understanding between these variables could lead to less hostility and less political divisiveness between the two groups so that we can potentially bring this topic to the negotiation table.

32. Identifying the Key Contributors of Environmental Fears
Presenter(s): Kealani Tanizaki-Hudson
Advisor(s): Dr. Ann Gordon

Climate change is taking a strategic position in international and national politics. The recent emergence of climate change effects has reached record high numbers within the last two decades. My research examines how the belief in climate change and other environmental fears relate to the media, political preferences, and generational differences. Additionally, the research will investigate the role of partisan group identity and how that can influence the science behind climate change's politicization. Utilizing the Chapman University Survey of American Fears, a nationally representative sample, this study explores the correlation between the fear of climate and other environmental fears, with media, demographic, and social-psychological variables. Two themes identified include: (1) the demand for unbiased media, political, and social change focusing on the climate emergency, and (2) identifying critical contributors to the division of fear on climate change, including the media, political leaders, generational differences, and capitalist ideologies. The research will conclude with a discussion of how the media and party identification affects the way climate change is perceived and why scientific information is understood differently, from person to person. As my research found, the politicization of environmental crises is one of the most prevalent explanations for fear of climate change. Thus, it is crucial to question why there is a divide within society amongst the legitimacy of climate change. This fast-growing crisis will not stop without significant changes on both sides of the political divide.

33. Social Media Impact on the General Public's Fears
Presenter(s): Natalie Tropea
Advisor(s): Dr. Ann Gordon

Prevalent everywhere, fake news remains camouflaged amongst the social media posts of over 4.48 billion people worldwide. This paper will provide analysis regarding the complexive dilemma society faces against falsified information through the usage of social media and how in general people obtain more fears through heavy social media usage. Relying on the Chapman University Survey of American Fears, a Representative National sample of US adults to display the fears developed through society's usage of social media and being deceived by misleading posts. In

comparison to other Americans, participants who utilize social media to perceive breaking news are twice as likely to obtain a fear or believe a conspiracy in comparison to people who typically utilize a more Democratic news outlet. Three times as likely to obtain a fear when compared to a more Republican-leaning perspective. Applying social media usage as the independent variable, we can analyze that heavy reliance on social media and how it increases certain fears. Contrasting social media usage against users of CNN and Fox News, two well-known news outlets with generally differing political parties, and ran a cross tabulation between participant's usages of informational outlets in comparison with how afraid they are of contracting coronavirus. With the majority of adult Americans receiving their daily news from popular social media websites and applications, it is imperative that social media companies rigorously fact-check the information cloaked as news circulating the web. This analytical approach allows for the solid assumption that due to the more common circulation of fake news and its prevalence in social media rather than standard news sources, people are more likely to develop a fear when constantly relying on social media as their primary source of information.

34. Does Fear of Corrupt Government Officials affect Voter Turnout In The United States?
   Presenter(s): Ryan Nahmias
   Advisor(s): Dr. Ann Gordon

According to the Chapman Survey of American Fears (2020-2021) fear of corrupt government officials is the number one thing Americans fear: 79.6 % of them in fact. In addition, voter turnout is one of the quintessential pillars that allows a democracy to function properly. In this paper I will examine the extent to which fear of government officials' corruption affects voter turnout. Using the data from the Chapman Survey of American Fears and variables from the American National Election Study between 2020 and 2021, I expect to find a moderately strong relationship between fear of government corruption and voter turnout. Moreover, I expect to find that the more an American, fears that government corruption is taking place, the less likely that individual is to vote. When looking at the 2020 and 2021 data on elections and fears, I expect media, policy, and party control to affect the fear Americans have of governmental corruption. Another mechanism I expect to affect American's fear of corruption is political preference; more specifically I expect Republicans to have less of a fear of government corruption. Although eliminating fear of corruption is nearly impossible, limiting outside factors that increase fear of corruption can increase voter turnout, and increase political activism in the United States.

35. Followers of Q: Who are They and What Inspires Them?
   Presenter(s): Sarah Kashani
   Advisor(s): Dr. Ann Gordon

The anonymous figurehead called "Q" has divided the nation and helped create the online infrastructure, QAnon, that has spread some of today's most well followed and supported

conspiracy theories. What began as an anonymous person dropping random commentary on the website 4chan turned into a prominent figure that spread conspiracies such as the Pizzagate theory and accused high level politicians of being "deep fakes". QAnon has turned into a huge political movement that defined the 2020 United States presidential election and created a faction within the Republican Party. But what type of people are apart of QAnon? How has QAnon grown to this level and have these always been the people that followed conspiracies. Conspiracies are nothing new to American culture, but it has never held so many real-life consequences than what we have seen QAnon created.

Using the 7th Annual Chapman Survey of American Fears, a representative national survey, conducted in January 2021, I will be examining the relationship between believing in other traditional conspiracies, media consumption, and demographic factors such as political affiliation and education, to having a strong to moderate agreement level with QAnon. This is significant because QAnon has changed the shape of the United States Political System and has been a platform that has breed mistrust between citizens and the government, with this dissertation I will be able to distinguish how creations like QAnon get to their target audience and what characters these individuals share.

36. How do Conspiracy Theories and Party Affiliation Affect Vaccine hesitancy and COVID Mandates?
Presenter(s): Lisbeth Rosales
Advisor(s): Dr. Ann Gordon

In this paper I will examine how party affiliation and belief in conspiracy theories affect COVID-19 vaccine hesitancy and the following of COVID-19 mandates in the United States. I examine how much of an influence these factors have in the decision to get the COVID-19 vaccine while focusing on how belief in conspiracy theories is hindering progress against the virus. Many factors have an influence in the decision to get the vaccine but trust in experts happens to be one of the most influential while interestingly finding that race and religion also play a role. It is also important to observe other deciding factors such as effectiveness and safety of the vaccine and whether previous vaccine hesitancy differs from that of the COVID-19 vaccine. Relying on the Chapman University Survey of American Fears, a representative national sample of U.S. adults, I was able to observe how many U.S. adults fear that the vaccine is an excuse to insert tracking technology into their bodies. I find a possible correlation between income and education and the difference in vaccination rates per group. Additionally, race and religion are revealed to be significant influencers. While we are living in uncertain times it is important to analyze the factors behind people's opposition and rejection to the vaccine and overall mandates.

Psychology

37. **The Coronavirus Pandemic: Associations of Optimism and Positive Affect with Mental & Physical Health Outcomes**
    Presenter(s): Harshitha Venkatesh, Amber Osorno
    Advisor(s): Dr. Julia Boehm, Dr. Brooke Jenkins

COVID-19 has led to the emergence of an altered society. Cumulative and individual stressors may lead to a time of crisis for students over time. Considering the detrimental impacts that stress may have, proper attention should be given to various mental and physical health issues. Previous studies suggest that certain psychosocial factors, such as optimism and positive affect, serve as valuable resources for mental and physical health during times of stress. However, the associations between optimism and positive affect with mental and physical health outcomes during the pandemic are yet to be investigated. This study aims to investigate these associations. We hypothesized that greater levels of optimism and positive affect would be associated with lower levels of depression, anxiety, and physical health symptoms during the early months of the COVID-19 pandemic. 293 university students were recruited to complete an online questionnaire in the spring of 2020. Longitudinal data was collected from participants every two months after, for a total of five assessments. Students self-reported their optimism, positive affect, anxiety, depression, and physical health levels. Multilevel modeling was used to test associations. Results indicated that greater optimism and positive affect were associated with fewer depressive symptoms, lower anxiety, fewer physical health symptoms, and better self-reported physical health (ps < 0.05). When testing optimism and positive affect together, both were associated with depressive symptoms, but only optimism was associated with anxiety (ps < 0.05). When entered together in the model, optimism and positive affect were not significantly associated with physical symptoms or self-reported physical health (ps > 0.05). Results suggest optimism and positive affect may serve as resources during COVID-19, and there are overlaps in their effects on health. Further investigations could create and implement effective health interventions that promote optimism and positive affect.

38. **Perceived Control's Association with Adolescent Substance Use: Longitudinal Findings from the National Child Development Study**
    Presenter(s): Jolie Binstock, Hannah Fereday, Amber Rahim, Kimi Uenaka
    Advisor(s): Dr. Julia Boehm

Adolescent substance use has a net negative effect on the population as it interferes with cognitive processes, contributes to mood disorders, and costs society in healthcare, education, and juvenile crime. Perceived control may be a relevant factor for adolescent substance use, including cigarette and alcohol intake. Past longitudinal research that studied the relationship between personal control and cigarette smoking and alcohol use in ninth grade students revealed

that those who showed more perceived control were less likely to have experimented with alcohol and smoking than those who showed less perceived control. However, most evidence examines adults and focuses on gender effects, leaving a gap of information about perceived control in adolescents and substance use. We hypothesized that adolescents with less perceived control would have more recent alcohol consumption and cigarette smoking relative to those with more control. The study used data from 2,824 participants in the 1958 National Child Development Study, which examined individuals born in England, Scotland, or Wales in March 1958 from birth through older age. Essays written by participants at age 11 were rated for perceived control by two judges (Finn's r interrater reliability = .88). Cigarette smoking (smoker vs. non-smoker) and alcohol consumption (drinker vs. non-drinker) was self-reported at age 16. A logistic regression did not show a relationship between perceived control and being a smoker (b = -0.05, standard error [SE] = 0.04, p = 0.18, odds ratio [OR] = 0.95). Similarly, a logistic regression did not show a relationship between perceived control and drinking alcohol (b = -0.06, SE = 0.09, p = 0.51, OR = 0.94). However, the direction of associations were consistent with the hypothesis that more control would predict less smoking and drinking. Findings do not suggest that feeling in control of one's life at age 11 is correlated with less recent alcohol consumption and cigarette use 5 years later. Further research on this topic would be beneficial.

39. How Self-Evaluation of Demographics Modulates the Effects of Attractive Celebrity Images on Self-Image
Presenter(s): Leyla Rakshani
Advisor(s): Dr. Aaron Schurger, Dr. Matthew Ballew, Dr. Marina Kahana

Recent research indicates an effect of attractive celebrity images on mood and body image (Brown, 2016). This effect can further develop into long term issues, such as body dysmorphia or depressive/suicidal symptoms. Female adolescents are especially susceptible to these effects, as they are likelier to engage in intense personal celebrity worship (Maltby, 2005), although this may also be attributed to the lack of research on the impact of media exposure on males' body image (Agliata, 2004). My research will focus on how a self-evaluation of one's own demographics (race, gender, etc.) may modulate the effect of attractive celebrity images on self-image. I predict that participants will rank themselves as less attractive when asked questions about their demographics before being exposed to images of celebrities versus being asked those questions after (as is usually done in research).

40. Unknown and Unhoused: Californians' Perceptions of Homeless Demographics, Causes, and Policy Ideas
Presenter(s): Sophie Srivastava, Nina Wolf
Advisor(s): Dr. Vincent Berardi

Homelessness is a growing issue in California, with more than half of all unsheltered people in the country residing in the state. As public opinion is known to impact policy formation, the first goal of this study was to quantify the accuracy of the public's understanding of the homeless population and its attitudes towards this group, with an emphasis on measuring stigma and mental illness. The second goal was to determine if certain misperceptions and/or attitudes are associated with preferences for different policy solutions. The Perceptions of Homeless and Mental Illness survey was sent via Amazon Mechanical Turk to participants in California (N = 389; mean age=39) and consisted of items in 5 categories: Homeless Demographics, Opinions/Attitudes, Causes of Homelessness, Policy Ideas, and Social Dominance/Modern Racism. A Principal Components Analysis was run on the Causes and Policy questions to build subscales, and then multiregressions and ANOVA analyses were run on these subscales to compare perceptions of causes and policy ideas to participant demographics and general attitudes. Regarding findings, political party was the most significant predictor of causes opinions and policy support, with conservatives being significantly more likely to attribute causes to personal failings, such as laziness, as well as support policies that emphasized personal responsibility. Opinions regarding social dominance were associated with support for more individualized causes and exclusionary policies. Finally, significant associations were found between personal failings causes, personal responsibility policies, and stigmatized opinions about homeless and mental illness. These findings emphasize the need for interventions to address stigma and prejudice in addition to solving the homelessness problem.

Sociology

41. How Wealth Inequality and Race Affect Fear of Police & Law Enforcement in The US
Presenter(s): Deven Launchbaugh
Advisor(s): Dr. Ann Gordon

American police, like the cultural and social structure of the country, are highly individualistic. People living near and under the poverty line, too often people of color, in the US are actively more afraid of our law enforcement due to the years of our government fostering a failed system of policing, incarceration, discrimination, and injustice. Our modern police force is a close derivative of the brutal "slave patrol" forces that monitored the slave movement and enforced discipline across the south. Fear of police abuse is not uncommon among minority communities,

and harsh law enforcement is a device and result of procedures to keep up with racial isolation and disparity. This paper will evaluate the relationship between minority and low-income families and fear of police brutality, using data retrieved from the Chapman University Survey of American Fears. Low-income black families are more likely to be under the federal poverty line than other races. As the middle class disappears and cities become more divided into a binary of classes, upper or lower. Undertones of segregation hold firm as low-income neighborhoods also tend to have a higher number of black people. The higher-class areas tend to have fewer black people; however, higher rates of police killing black people. Black people living in America often fear police regardless of their economic status; however, combined with those who face income disparities, it further deepens the discrimination. This fear of our law enforcement system is not a displaced one. In this article, I hope to delve into the factors that fuel this fear for so many low-income people of color in the US.

Software Engineering

42. Reducing Social Media Consumption
Presenter(s): Scott Foreman, Nick Fuess, Luis Riva
Advisor(s): Dr. LouAnne Boyd

Our goal is to understand concerns teens may have in a post-COVID environment particularly when it concerns social media. Teens are searching for more authoritative self-imposed controls over their social media usage (ages 16 - 17). This is shown by the interview data we collected in which multiple teens mentioned trouble managing their time due to a compulsive tendency to overindulge when it concerns social media. With this in mind, we've set out to design applications and features that will (hopefully) aid in curbing some of the more addictive parts of social media. By helping teens use social media less, we hope to improve their overall productivity in life. Through a variety of paper prototypes, we conducted user testing to determine the best designs for setting self-imposed goals for app usage, including choosing to set either an automatic limit schedule or one with more manual impositions, and having an in-app feature to set a time limit reminder to take a break. Through interactive wireframing, these apps and features, as well as general usability will be tested. Results will follow.

Theatre

43. How K-Pop and Culture Interact in Koreatown Los Angeles
Presenter(s): Nikki Trippler
Advisor(s): Dr. Andrew Chappell

Korean pop music, also known as K-pop, has become a widespread global phenomenon over the past 20 years. Most recently, boy group BTS has captured the attention of record labels and audiences for their structured dances, group dynamic, and exciting performances. Similar to how K-Pop artists have become international sensations, other aspects of Korean culture and entertainment have established a spot in mainstream popular culture. Films like Parasite, Korean dramas, and television shows like Netflix's streaming hit Squid Game, and even Korean beauty products are all forms of Korean entertainment and leisure that are a part of mainstream American entertainment. The unprecedented influence of Korean pop culture on Western entertainment is known as the Hallyu wave, and aspects of the wave can be observed most readily at ethnic enclaves such as Koreatown Los Angeles. Through cultural hubs like Koreatown Los Angeles, the different commercial entities serve as bridges for people who might otherwise not experience Korean culture. From a westernized, non-Korean perspective, elements of tourism and history are analyzed within this project. The purpose of this research is to explore how forms of entertainment at Koreatown Los Angeles such as Korean pop are ways by which Koreans express aspects of their identity, within a westernized setting. In an ethnographic observation, the researcher visited Koreatown Los Angeles and has also studied the history of the cultural site and Korean pop music. Using this western lens, comparisons are drawn culturally to see how capitalist pastimes such as visits to Koreatown Los Angeles and watching idols on a screen, capture the minds and hearts of audiences around the globe.

44. Managing the stress and the Stage: An In-Depth Research into What it Takes to be a Stage Manager
Presenter(s): Maya Braunwarth
Advisor(s): Dr. Andrew Chappell

The theater is a unique and collaborative art form where individuals from diverse backgrounds are able to come together to develop and transform words into something meaningful. From actors to production managers, each individual provides important insight into their unique area of focus. The role of a stage manager is to not only manage but it is also organized, communicate and facilitate in order to ensure that the process of production runs smoothly and efficiently. Stage Management is a crucial part of the production process however, it can become extremely stressful and tiring. Because Stage management is a relatively new role to theater, there isn't much in-depth research into this role.

By looking into the details of what it means to be a stage manager and the stress that comes with it, I hope to discover ways to cope with the stress for future stage managers to come. Through the help of faculty members such as Kim Weber and the professional connections that I have made, I hope to conduct comprehensive interviews on the experiences of other stage managers. I will look not only into the stressful times but also into what made the positive moments so great and how we can turn negatives into positives for the future. I am also hoping to look into further detail into stage management through history and look to see how it has changed throughout time. Even though the idea of stage management is still relatively new, individuals had to take on some part of stage management roles. This is such a prominent issue in the current climate as the role of stage manager is transforming right before our eyes. As the pandemic adds in another factor to stage management, we must learn and juggle our previous responsibilities with our new responsibilities.

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