

Climate Related Disasters and Hindsight Bias

Suzanne Aguirre

Mentor: Joy Drinnon

Hindsight bias is one of the biases that might influence decisions made in difficult situations, commonly known as the knew-it-all-along effect. The purpose of our study is to replicate both the studies of Walmsley et al. (2019) and Yama et al. (2021). A two-group study design was used with a convenience sample of 205 participants. Qualtrics, a web-based survey, was used to randomize participants into either a results group or a control group. We provide evidence of hindsight bias, including how it affects everyday people. We conducted an experiment with two dependent variables, each including three different hypotheses. We hypothesized that if a picture of a muddy riverbed and a photo of hailstorm clouds are shown to two groups of individuals while informing only one half of the group (Group A) of the flash flood and hailstorm actually occurring, then Group A will report that a flash flood and hailstorm will be more likely to occur whereas Group B will rate the likelihood of a flash flood and hailstorm to not be as probable. Two surprising themes emerged within the data collected. First, the results group responded with lower levels than expected in two of the six t-tests conducted – the ratings of the likelihood of a flash flood and the likelihood of a hailstorm. This resulted in a lack of statistical significance in both. Second, the results group rated the remaining four t-tests with statistically significant scores, showing that participants rated these probabilities as expected but did not rate the two main objectives as predicted. It demonstrated that even when posed with weather-related questions, people are frequently led by hindsight bias.

Keywords: hindsight bias, decision making, natural disasters

Complaints: A Research Proposal

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Complaining can be seen anywhere, from everyday social events to occupations to academic settings. Complaining might be especially relevant to university students who might want to complain about a variety of things, including inadequate facilities and learning resources; the amount of schoolwork given per course; grading policies for certain professors; issues with student housing; and privacy rights. Kowalski (1996) acknowledges that there has been relatively little research on complaining and offers a broader view of complaining, going on to say that complaining is a behavioral reaction to dissatisfaction. She also shows how there are both interpsychic and interpersonal motives behind complaints, how it can be contagious, and how it can have some effects on both the listener and complainer (Kowalski, 1996). Currently, there is a lack of scholarly research about the reliability of types of complaining and people's awareness of how much they complain. The purpose of this study is to measure the main types of complaints through an online survey using college-based scenarios to test whether people can reliably label each type of complaint. In addition, I will measure whether the survey respondents believe the complaints in the scenarios are justifiable, ask them if they've ever seen themselves complaining in those types of scenarios, and measure their current satisfaction with their life. With this study, I hope to measure the participants self-awareness when they complain, whether they believe it can be considered complaining, and whether life satisfaction correlates with self-awareness about their own complaining behavior. My session will include a discussion of my research proposal and a chance for audience members to look at my survey and give feedback.

Keywords: complaining, self-awareness, university students, life satisfaction

ChatGPT: The Future of AI and Learning

Grace Allen and Jake Crow

Mentor: Namyoun Choi

ChatGPT, or chat Generative Pre-Trained Transformer is the newest, most renowned use of AI in the world. ChatGPT is an online chatbot that is designed to respond to nearly any human inputted question or prompt with a human-like response. With this recent advancement in use of AI, comes along with a threat to academia, as ChatGPT can be prompted to write code, essays, or solve problems. The research conducted evaluates how ChatGPT uses natural language processing, deep learning techniques, and a generative pre-trained transformer to understand human prompts and use its training to output a reasonably sounding human answer. Then, the research studied the impact that ChatGPT has had on the educational system, in both its uses as a learning tool as well as its threat to academic integrity.

Additionally, the accuracy of ChatGPT is assessed in different academic settings, from the STEM fields to a more liberal arts setting. As a result, different strategies and tools are developed to ensure the proper adaptation of ChatGPT to the academic world in a positive way, allowing students to learn but not take advantage of this new technology. For example, different programs are developed to catch plagiarized work by recognizing the patterns of ChatGPT. Teachers can design homework to discourage students from plagiarism but could still be used as a tool. Ultimately, the prominence of artificial intelligence in life will only increase as time goes on, so academic institutions must adapt to the changing world while still ensuring that their students are learning.

Rendered (In)Visible: Women's Complicity in Ireland's Magdalene Laundries, and Restored Dignity in
the Works of Claire Keegan and Eiléan Ní Chuilleanáin

Olivia Brokaw

Mentors: Lee Blackburn, Heather Hoover

In Ireland's troubled history, both the Catholic Church and the Irish state enabled abuses against women in Magdalene Laundries. Run by Catholic nuns, these Laundries served as torturous prisons for unmarried mothers and other "defiled" women throughout the 19th and 20th centuries. In this paper, I explore two contemporary writers who grapple with this abuse of women by women. In her 2021 novel *Small Things Like These*, Claire Keegan (b. 1968) follows Bill Furlong, a middle-class coal merchant who saves a young woman abused in his town's Laundry. Faced with few recourses to sexual double standards, nuns and female characters play an integral role in enacting or perpetuating this abuse. Like Keegan, poet Eiléan Ní Chuilleanáin (b. 1942) addresses Ireland's historic denigration of women by nuns and other women. In "Translation" and "Bessboro," she refuses to remain silent on the enduring legacy of Catholic-run institutions in Ireland, using her own voice to decry abuse. Both writers explore the enduring trauma wrought by women's violence against women within a patriarchal ecclesial system. While many nuns succumbed to complicity and abuse of other women over the centuries of Laundry operations, Ní Chuilleanáin and Keegan counter this complicity and seek dignity for abused women by elevating the long-suppressed voices of the Magdalene Laundries' victims.

Keywords: Claire Keegan; Eiléan Ní Chuilleanáin; Magdalen* Laundr*; women; abuse; systemic injustice

Survival Chemistry: Saponification and Application of Monovalent and Divalent Metal Hydroxide Soaps

Landon Brown

Mentor: Matthew McDonald

Saponification is the ancient process by which fat molecules (triglycerides) are chemically combined with metal hydroxides to produce amphiphilic ionic salts broadly described as “soaps”. These molecules are composed of a cationic head group and a fatty acid tail, and have different specific properties depending on the fatty acid and the metal cation chosen for the process. Monovalent metals tend to form soaps that are useful for cleaning and degreasing while divalent metal soaps are generally insoluble but have excellent friction reduction properties. This project focuses on discovering what specific metal hydroxides are readily available in the Appalachian wilderness, and the uses/efficacies of their corresponding soaps in a survival scenario. It was found that the most reasonable method of obtaining monovalent metal hydroxides is the collection of wood ash. This is a process that has been used for millennia, and provides raw and impure sodium hydroxide and potassium hydroxide mixed in with unburned carbon. Both NaOH and KOH are monovalent metal hydroxides and are useful in the process of soap making for sanitary purposes when reacted with a compatible triglyceride reagent. Lard was used to observe saponification with both of these monovalent metal hydroxides and the resulting soap was compared with off-the-shelf soap. It was found that the rudimentary soap is as effective at removing grease from a surface. Divalent metal hydroxides are more difficult to obtain, and also less common in traditional saponification processes. However, the Appalachian region is replete with limestone (CaCO_3) that readily releases CO_2 upon intense heating and forms the highly basic CaO, which subsequently hydrolyses to $\text{Ca}(\text{OH})_2$. In the current investigation, limestone pebbles were heated to temperatures exceeding $800\text{ }^\circ\text{C}$ and the calcium hydroxide was then reacted with lard to form a calcium soap. Future experiments will test the friction reduction in the produced calcium soaps. Such a material would be advantageous in limiting the friction build up in non-heating parts of a friction fire apparatus (a bow drill spindle, for example).

United Learning Corporation Benefits for Students and Teachers

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Mentor: Kelly Griffith

Online learning accompanied with artificial intelligence (AI) based interactive educational tools have proven beneficial in dealing with different types of learners while maintaining effective online support and quality instruction. It allows students to work and complete lessons at a pace that's customized to their personal levels of learning and the flexibility to learn from anywhere in the world. Combining the latest AI with online learning processes could help create a massive competitive advantage for a virtual online learning company. However, it is not enough to invest in just the latest AI technology tools. A company must also invest in people, and processes to make it work. Over the last 20 years, society has seen a radical up-tick in technology usage for social, academic, and business-related purposes. Individuals regularly have a reliance on their personal devices to keep them up to speed. My group will be creating a business centered around the academic usage of AI, and how different learning styles can be tailored to provide the user with a higher learning capability, regardless of their individual learning style. Although educational websites and teaching websites already exist, this paper will further detail how we will utilize AI and how beneficial AI learning can be. We will be investigating previous trials, as well as current research to give us a better understanding of more ways AI can be applied to the educational world. We will also research what marginalized groups, such as low income or low educational areas would benefit the most from the implementation of our business.

Keywords: AI learning, AI Education, Learning styles, Effective teaching strategies, AI, ML, Education, Online learning, Artificial intelligence, Teaching, Virtual learning tools.

Bicycle Power Generation System for Future Engineers

Rachel Scheffer Connell, Jonathan Barrett, Eleazar Orona Mijares, & Katelyn Warf

Mentor: Landon Holbrook

Many high school students and college freshmen are unaware of opportunities in the discipline of engineering. This project uses a typical bicycle to teach students about power generation in a fun way in order to inspire them to consider engineering as a career. The bicycle power station is intended to engage high school students and university students studying engineering and illuminate the amount of energy we as humans consume on a daily basis. A student mounts the bicycle like normal and uses their own physical effort to pedal the bicycle. Mechanical power is transmitted from the bicycle to a pulley on the generator, which then produces electrical power. Common uses of electrical power are shown on the display board using items such as fluorescent light bulbs, LED lights, and fans. Electrical power and mechanical power are displayed simultaneously, allowing educational topics such as efficiency and power losses to be experienced and understood. Voltage, current, and energy are also displayed in order to teach different electrical concepts. The whole system has been tested to ensure that the project is safe and educational for the target audience. The bicycle power station is expected to produce at least 150 watts of electrical power. Future teams may continue developing the bicycle power station for implementation in resource poor communities and places around the world where consistent electrical power is not guaranteed.

Revolutionizing Agriculture: A Sustainable and Inclusive Approach with Automated Gardening Technology

Isabella Crabtree, Evan Henson, Matthew McNulty, Taylor Pavich, and Garrett Vines

Mentor: Kelly Griffith

As our society increasingly relies on technology, agriculture is also evolving with automated systems presenting new opportunities for technical and economic advancement. The development of automated farming systems is key to ensuring a consistent supply of fresh produce in a sustainable manner, regardless of environmental factors. Growtopia is dedicated to developing cutting-edge, automated gardening solutions that leverage technology to provide self-servicing farms and gardens. Our focus is on developing Internet of Things (IoT) sensors, driverless farm equipment, and vertical farming technologies to provide efficient and cost-effective solutions. We aim to create an automated farming system that audits a plant's essential needs (light, water, nutrients, and air) to provide the necessary inputs for optimal growth, leading to a thriving crop. Our system is based on a Raspberry Pi and several sensors, which monitor the plant's current state and automatically provide the appropriate necessities to ensure optimal growth. The system is scalable and can be used to manage crops in both small domestic settings and large commercial farming operations. Our goal is to make our automated gardening systems accessible to people and communities around the world, particularly those who face challenges in growing fresh produce due to environmental or economic factors. Our innovative solutions have the potential to reduce global poverty and increase food security while promoting sustainable living practices.

Keywords: Agtech, automated gardening, sustainable agriculture, food security.

Holistic Treatments of Attention Deficit Hyperactivity Disorder

Hope Davis

Mentor: John Paul Abner

As Attention Deficit Hyperactivity Disorder becomes an increasingly popular diagnosis, more research is required to understand how best to treat the disorder. The first line treatment for ADHD is most often stimulant medication; however, there are many holistic methods that can be used to regulate symptoms of inattention. This research study explores the efficacy of play and meditation on levels of attention. We hypothesized that individuals who engaged in physical activity and play would perform better in measures of attention than individuals who did not. In the experiment, 51 participants were randomly assigned to three groups: 3-minute balloon game, 3-minute guided meditation, or a pop quiz. Before and after the assigned condition, participants played a one-minute game (Stroop test) to measure their attention levels. It was expected that those in the balloon game group would show the largest increase between their pretest and posttest values. However, our study revealed similar differences in pretest and posttest results among all three test groups. The differences in levels of attention before and after the three conditions were not significant.

Keywords: attention deficit hyperactivity disorder, play therapy, meditation, attention

Solar Powered Desalination

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Mentor: Daniel Cutshall

Access to potable drinking water is something that many people take for granted; however, water scarcity is still a significant problem in many areas of the world. Approximately 16 million people in Tanzania, alone, do not have access to clean drinking water. In addition, over one-third of the population lives on less than \$3.25 per day and many lack access to a reliable power grid. In response to these concerns, we developed a desalination system capable of converting dirty salt water to clean drinking water that meets the Environmental Protection Agency's (EPA) clean water standards. To accommodate an average Tanzanian household of five people, the system produces a minimum of 15 gallons of potable water per day. A single 100 W solar panel and one battery are used to power the system and allow for off grid operation. The desalination system purifies the water in three distinct stages. In the first stage, the system uses three particle filters to remove contaminants like dirt and larger microbes found in the source water. Then, an ultraviolet light sanitizes the water to prevent bacterial reproduction in the second stage. In the event that insufficient power is available to operate the system, two automatic safety valves disable the flow of water, separating the clean and dirty water until sufficient power is available. In the third stage, the water is pushed through a reverse osmosis membrane, removing 99.1% of the salinity from the water. The clean water is then stored in a pressurized tank to ensure that it remains clean until being accessed by the end user. The system was tested with source water that was created by adding salt to water from Buffalo Creek until the salt concentration was 25,000 parts per million; equivalent to ocean water. Hundreds of gallons of salty Buffalo Creek water was run through the system, and the output water consistently met the EPA standards for potable water. Despite our focus on Tanzania, the desalination system has been designed such that it can be implemented in a variety of locations near bodies of salt water.

Eco Living Solutions

Clay Gallant, Herver Yang, Samuel Crews, Jake Crow, Gaven Jones

Mentor: Kelly Griffith

In 2022, about 582,000 people were considered homeless living in the United States. Issues like addiction and natural disasters caused this number to increase from the estimated 580,000 homeless estimated in 2020. With only about a quarter of these people being homeless for more than a year, temporary and clean-living solutions are always needed and can help these people get on their feet. How do we make our world a better place for generations to come? With the population of our world growing at a fast rate and our carbon footprint growing it creates the current problems of homelessness and unclean living solutions. By creating an affordable housing community that is self-sufficient we can create a zero-emission lifestyle for a large portion of our population. Starting in cities in the United States where homelessness is the highest, air quality is the worst and clean living is hard to come by for all, our solution can provide a new innovative way to make living for all better. The housing problem: the question arises of why we have such a high rate of homelessness when our housing market is currently booming. As a nation we are in a current state of deurbanization where people are leaving cities but the homeless cluster in cities even though they cannot afford housing. With the construction of an affordable living community this can provide the homeless with a sustainable solution, due to fewer monthly bills and a consistent home. This differs from the current band-aid solutions in place today such as shelters or soup kitchens which only provide a daily service rather than a consistent service to give foundation to the homeless so that they can get back on their feet. As only a quarter of the homeless population are actually chronically homeless for more than a year, an affordable eco-friendly living solution can help these people get a sturdy foothold in their lives. Using renewable energy systems such as solar power, hydro or wind power and the new omniprocessor created by the Bill Gates foundation, we aim to create a self-sustainable living solution for all. Implementing these systems into mini housing units, we can also help aid in disaster relief and give people who lost their homes temporary mini homes to live in while they figure out what to do next.

Perceptions of Law Enforcement According to Age, Race, Gender, and Political Party

Kelli Griffin

Mentor: Dr. John Paul Abner

In recent years, the public has become increasingly concerned with interactions regarding law enforcement. This growing concern has fostered the development of various studies in which participants provide their sentiments pertaining to police officers. The current study aimed to analyze the perspectives of both college students and the general public by utilizing an identical survey in two separate pools. Participants were tasked with selecting adjectives they believed best represented their perceptions of law enforcement. In addition to this, participants were also asked to provide a percentage of officers they believed represented a single adjective presented. In general, Milligan students viewed officers more positively as opposed to the general public. A significant difference was found between political party and perception of officers. The current study elucidates the attitudes of individuals from multiple backgrounds in an attempt to encourage empathy from the perspectives of civilians and law enforcement alike.

Keywords: law enforcement, police, policing, police reform

Robotics Experiences Should Be Accessible

Chancery Hall, Brandon Kelly, and Tyler Oakes.

Mentor: Landon Holbrook

The Milligan Engineering Department utilizes LEGO EV3 robotics kits to educate students in the knowledge of programming, sensors, and problem-solving. The \$400 EV3 also serves to help develop prospective students' interest in engineering through summer camps. LEGO has discontinued production of the Mindstorms EV3 robot, prompting the replacement robotics kit designed by the robotics team. The requirements for the robotics kit design included a \$130 price point per kit, integration with the existing Milligan Engineering curriculum, and similar performance to the EV3. To achieve these goals, the robotics team utilized Arduinos, an open-source and popular brand of robot control boards, and TinkerCAD Circuits, an online and visual tool for programming. Both of these tools were present in the preexisting freshman curriculum. The Robotics team elected to measure educational outcomes and student interest with a combination of surveys using before and after knowledge testing. The final robot, christened the MR-Alpha, was designed to be student built and programmed, with specific instructions for both open-loop and closed-loop controls. The MR-Alpha includes a customizable 3D printed shell allowing students to learn basic 3D modeling in software such as AutoDesk Inventor. The MR-Alpha was found to meet, and in certain cases, exceed the capabilities of the current fleet of LEGO robotics kits. The MR-Alpha can be built in less than five minutes, which is quicker than the twenty-plus minute assembly time of the EV3. The MR-Alpha was found to be 33% quicker than LEGO's rated speed in a straight line. Overall, the MR-Alpha was found to be an effective replacement for the LEGO EV3, due to its lower price, improved performance, and quicker assembly time.

A Foucauldian Analysis of Bret Easton Ellis's *American Psycho*

Dawson Jacobs

Mentor: Michael Blouin

French theorist Michel Foucault is responsible for a multitude of interesting concepts regarding power relations in modern society. One of his most prominent theories, which he begins to develop in the first volume *The History of Sexuality*, examines how power evolved from the right of seize life into the right to administer life: a bio-power that concerned itself with the management of human populations. The tools employed by bio-power for managing aspects of population such as sex, birth rates, and life expectancy became instrumental to the development of capitalism, an economic system built around the idea of population as labor power. Bret Easton Ellis's 1990 novel *American Psycho* depicts a society completely embedded in bio-power's grasp. This research takes a Foucauldian approach to the *American Psycho* and examines how the disciplinary branches of bio-power, such as anatomo-politics and bio-politics, affects and influences the lives and actions of the characters.

Keywords: bio-power, Foucauldian, anatomo-politics, bio-politics

Flying High: Telemetry Data for Water Rockets

Brandon Kelly

Mentor: Daniel Cutshall

Milligan Engineering utilizes water rockets at summer camps and for certain mechanical engineering classes to illustrate key principles of aerodynamics and get students excited about engineering. While the rockets perform admirably as a tool to drive interest and encourage further learning, there are two major pitfalls. The first is the lack of hard data available from launches, and the second is the lack of post launch control. The current method of determining peak altitude consists of measuring the angle of the apotheosis (the highest point) of the launch from the roof of Emmanuel. This allows the manual calculation of the data using trigonometry. While acceptable for a rough estimate, this data is imprecise and limited in usefulness. Out of control launches also have the possibility to harm individuals or damage property. In order to solve these problems, a telemetry system has been devised. A pair of ESP32 microcontrollers are linked with a peer-to-peer network which allows for two-way communication. One of the ESP32 boards is placed inside the rocket along with an accelerometer and a barometric sensor, while the other ESP32 remains on the ground. The onboard ESP32 sends back the acceleration and altitude data, which is saved onto an SD card. This data link can also be used to deploy landing aids, such as a parachute, or recovery devices, such as a speaker. The data delivered by the telemetry system allows for students to optimize their designs post launch with brand new information. Students can prepare for future launches by optimizing aerodynamics to reduce horizontal acceleration, adjusting the water load to balance initial mass and “burn time,” and varying nozzle diameter to change the thrust characteristics. This telemetry system provides students the ability to monitor rocket performance and learn how revisions made to the rocket can affect the flight characteristics. This telemetry hardware provides the Engineering Department a powerful tool to teach iterative design and generate engineering enthusiasm.

The Effects of Three Factors on the Motivation and Academic Achievement of Students at Milligan
University

Ashlynn Kennedy

Mentor: John Paul Abner

There are many different factors that all coincide in their effects on students' academic success. These factors include a student's academic motivation, personal self-efficacy, as well as the autonomy support they receive from parents or guardians. These factors, as well as others, have been proven to have individual effects on students, but have yet to be correlated with one another. A survey was distributed amongst students at Milligan University, which included Vallerand's Academic Motivation Scale (1992, 28 questions), the P-PASS, or Perceived Parental Autonomy Support Scale (2015, 24 questions), and the New General Self-Efficacy Scale (2001, 8 questions). 67 students completed the survey, with 53 containing usable data. All data was organized under a 2-tailed T-test, and each scale was correlated with the others at the $P < 0.01$ level. This information grants a greater understanding of the effects of outside factors on the motivation behind a college student's academic success, and will hopefully allow for further research on better ways to support students in their academic endeavors.

Off-Grid Air Conditioning Systems for Developing Countries

Parker Kent, Truc Bui, Eli Dixon, Bennett Hawkins, and Derian Janeke

Mentor: Choonsang Park

Air conditioning (AC) has become one of the critical drivers of the increased global energy demand and global climate change, particularly in developing countries where electricity cannot be adequately supplied. AC already serves to increase the comfort of a room's occupant. Still, it can be even more critical in hospitals, where having proper cooling and ventilation helps save lives and prevent the spread of diseases. These regions need access to clean, reliable energy. The Milligan Engineering Solar AC Capstone Design Team has worked over the past year to design and implement a solar-powered air conditioning system in the Phillips Building and Webb Hall as a proof of concept. The system consists of 4 solar panels that gather energy, 4 of 12-Volt batteries that store the energy, a charge controller to protect the batteries, and an inverter to change the type of current being supplied 1700 ft² room. After building a test box in the Phillips Building to simulate conditions and performing a heating analysis of Webb Hall, we were able to test the characteristics of the system and properly size the system needs for Webb Hall. This allowed us to prove that our design was possible, and we will install the system in Webb Hall or in developing countries. The system could provide at least 8 hours of cooling every day with up to 2 days of battery backup in case of overcast conditions, although these conditions are not summertime, so it was not definitive, but future testing will occur in the summer. This project has proven that it is possible to create an air conditioning system that could be implemented in developing countries. It will require regional specifications to create within developing countries, but this serves as a proof of concept that can easily be expanded to other regions.

How Music Can Support Refugee Children During Resettlement

Rebekah Mabus

Mentor: Kellie Brown

As of 2021, over 30 million people worldwide lived as refugees or asylum seekers having been torn away from their homes and normal lives by war, violence, natural disasters, or persecution. Upon arriving in a host country, these individuals face various resettlement challenges including a lack of resources, language barriers, and cultural disparities. Rather than giving in to despair, activists, educators, and refugees themselves can employ a critical hope framework to imagine a brighter future and to work towards its fulfillment. One way of building this new reality is through music. For young refugee students, music can not only provide a catalyst to education and language learning but may also aid in community formation by transcending barriers between them. For some students, music can also become an avenue through which they maintain complicated identities, build self-esteem, and release distressing emotions. These effects may be observed in various music classes around the world including at the Global Village Project in the United States where the author observed refugee minors from across Asia and Africa making music together. While group music sessions like these present a multitude of challenges, they also support young students through an often disorienting and painful migration experience.

Keywords: refugees, music, music education, immigration, acculturation, resettlement,

Jesus is a Black Woman: The Implications of Intersectionality on Christology

Susan Mahaffey

Mentor: Heather Hoover

Oppressive Christologies have historically pervaded the Church, and even progressive ones, such as feminist and Black Christologies, have still furthered the exclusion and oppression of Black women. This research critically analyzes these oppressive perspectives and their history of the oppression of Black women. It also examines the more constructive Womanist Christology and the concept of intersectionality through contemporary writings from these perspectives. The research reveals that most Christological perspectives exclude the experiences of Black women, while Womanist Christology and intersectionality center Black women's experiences. Overall, the latter perspectives provide a more holistic perspective on the person of Jesus by asserting that Jesus himself identifies with the most oppressed (i.e., Black women), which offers hope for the future of Jesus' ideal justice and liberation. The research suggests that those who are privileged can adopt these perspectives by, like Jesus, identifying with the oppressed and working toward their liberation.

One Neighborhood: Unity and the Character of God in the Intercultural Churches of Baltimore, Maryland

Madeline Manear

Mentor: Nikki Hunt

Baltimore is filled with racial and socioeconomic segregation that goes all the way back to the late 1800s. While the laws that previously allowed segregation have changed, the scars and pain they produce still negatively affect the city to this day. Intercultural churches in Baltimore were created to bring together diverse people groups in a place where unity could prevail. Through interviews, readings, and visits, I researched intercultural churches in Baltimore to prove that, while sometimes challenging to create and maintain, they ultimately express God's ideal creation and provide unity in a city with powerful division. This research does not argue that every church in Baltimore should become an intercultural church; instead, this research emphasizes that intercultural churches must be more prevalent in the city, so that people can have the opportunity to experience intercultural ministry and the richness that flows from it. Through establishing a common memory and relationship building, the increased presence of intercultural churches in Baltimore City will uphold biblical expectations to promote personal growth and city-wide impact and reveal a more complete image of the nature and character of God.

Keywords: intercultural church, Baltimore, diversity

Reactions to Decision Making by Artificial Intelligence

Camden Mills, Greyson Stevens, Paulina Owens

Mentor: Joy Drinnon

There has been a major increase in companies using artificial intelligence to improve hiring decisions. Companies have implemented AI to eliminate bias by hiring specialists. However, studies have shown that artificial intelligence may be just as biased as its human counterpart. We were interested if people even cared about this bias, therefore we decided to test whether people were more outraged when discrimination was shown by an AI or an HR specialist. We also wanted to test if there was perceived prejudice in regard to the algorithm or hiring specialist. We modified our study using a study done by Bigman et al., (2022) that measured participants' levels of outrage as well as their perception of prejudice. We used an online survey in which 54 participants were randomly assigned to a scenario where an algorithm or an HR specialist discriminated towards women applicants. We instructed participants to read the scenario and then rate their outrage and perceived prejudice on a scale from 0 - 100. We predicted that the participants would be less outraged when the discrimination was done by an algorithm than when the discrimination was done by the human hiring specialist. We also predicted that the likelihood of the participants' perception of the hiring specialist being prejudiced would be greater than the perception of the algorithm. Our results suggest that there was no statistical significance between whether people were outraged by discrimination from an algorithm or an HR specialist. Our results also suggest that there was no statistical significance between the likelihood of a person's perception of the HR specialist being prejudiced or the algorithm being prejudiced.

Keywords: artificial intelligence, discrimination, attitudes

Nonviolence in Escobal

Daniel Roshak

Mentor: Todd Edmondson

For decades, South America has been subject to foreign actors occupying their mines. According to *Mining in Latin America*, investments increasing by over 100 percent between 2002 and 2012, a sign that the insertion will only increase in the coming years. This research project will draw analysis from the recent history of the Escobal mine in Guatemala, occupied by Pan American Silver, a Canadian company. Using information from a nonviolent movement against the mining in Guatemalan, the paper will make conclusions and recommendations for other Latin American states facing foreign occupation. Strategies will be heavily sourced from Gene Sharp's *From Dictatorship to Democracy*. In publicizing what has already occurred, the research will point to a new framework for future movements.

The Effect of Gender and Preparedness on Perceptions of Crying

Madison Simounet, Genevieve Plum, and Filo Lopez

Mentor: Joy Drinnon

The current study investigated the effects that gender and effort have on the perceptions of individuals crying. Participants ($N = 125$) were randomly assigned to read one of four vignettes, all of which described a college student who cries after performing poorly on a midterm exam. The subject of the scenario varied on gender (male vs. female) and effort towards preparing for the exam (studying vs. not studying). We hypothesized that participants would display a higher acceptance score, (a score determined by adding four dependent variables: justification, appropriateness, perceived competency, and perceived maturity), towards female students (vs. male students) who were described as studying (vs. not studying) in preparation for the test. Overall, participants gave higher acceptance scores to the students who studied regardless of their gender.

Keywords: experimental, perceptions, crying, gender

“What Can We Do for You?”: A Critical History of Anaheim First Christian Church

Spencer Taylor

Mentor: Jason Bemby

It is no secret that the tensions and struggles of the contemporary American church are often expressed at a micro-level in local congregations. Arguments about race relations, white supremacy, and gender equality are continued in church committee meetings, youth group discussions, and, of course, Sunday morning sermons. In this project, I examine the way these tensions are manifested in the life of a single local congregation, Anaheim First Christian Church. I will follow this congregation from their tumultuous past, with special attention paid to their troubling connections with the Ku Klux Klan in the 1920s. Into the present, where Anaheim First is a bilingual congregation that is continually processing and discerning their role in the immediate, primarily Latinx, neighborhood. Along the way, I will describe the specific actions and decisions that transformed Anaheim First from the home of the Klan in 1925, into a multi-lingual, multi-national, and multi-generational community less than a hundred years later. This narrative will pay close attention to the way the church engaged in the public square and how important reflections about race and women in church leadership became a part of this incredible transformation.

Keywords: race relations, church leadership, ministry, social ethics, prophetic tradition.

Buprenorphine Medicine Assisted Treatment's Impact on Opioid Relapse

Alexandria Thomas

Mentor: Joy Drinnon

In 2020, opioids were involved in 68,630 overdose deaths, which accounted for 74.8% of all drug overdose deaths (Centers for Disease Control and Prevention, 2022). In the past few decades, an increased understanding surrounding the neurological, and subsequent physiological, dependence caused by substances has shifted society's ideology away from viewing addiction as a choice and instead towards a disease that has claimed the lives of millions. Opioid addiction as outlined by the 5th edition of the Diagnostic and Statistical Manual, indirectly effects arguably all Americans due to the financial toll and how this disease impacts not only loved ones, but also communities surrounding individuals suffering from addiction. Buprenorphine, a Food and Drug Administration (FDA) approved pharmacological treatment option for opioid use disorder, has yielded drastically positive outcomes, especially when combined with behavioral health interventions. More specifically, Greiner et al. (2021) found that of those who retained treatment, fewer met relapse criteria (16.4% vs 38.9%), they had fewer opioid use days in the past month (4.4 days vs 9.8 days), and they had less stimulant use (15.2% vs 27.7%). An opposition to MAT options such as Buprenorphine, neglects the empirically sound evidence, disregards the importance of combating the opioid epidemic, and exhibits a lack of urgency to save lives. It is important to note that buprenorphine at any dose has been found to retain patients in recovery better than a placebo (Reimer et al., 2020). The availability of these treatment options is vital to preserving the health of Americans and combating years of stigma attributing to barriers individuals face when receiving addictions treatment.

Keywords: opioid, Buprenorphine, addiction, and MAT.

"William gathered sticks:" Embodied Unification of Mind, Body, and People in the Writings of Dorothy
Wordsworth, Samuel Taylor Coleridge, and William Blake

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Samuel Taylor Coleridge offers a vision for imaginative pursuit of higher truth that depends upon unification and creativity. In this paper, I examine this imagination amidst the creative work of Dorothy Wordsworth, Samuel Taylor Coleridge, and William Blake. Each demonstrates Coleridge's vision of imagination that pursues a higher truth with creativity and unification. Entries in Dorothy Wordsworth's journal depict daily embodied activities, such as when "William picks up sticks." These activities unite their mind to their body and are required for the work of poetry. Coleridge's "Epitaph" pursues an embodied presence between the narrator and reader. Blake's "London" unites people through their shared "marks of woe" and bodily cries of anguish. Together, with an insistence on embodied existence and engaged recognition of others, the work of Dorothy Wordsworth, Samuel Taylor Coleridge, and William Blake imaginatively cultivates unification.