



MONMOUTH
UNIVERSITY

HONORS
SCHOOL



THE HONORS SCHOOL

RESEARCH CONFERENCE

SPRING 2022

With great pleasure,
The Honors School presents its

SPRING 2022 RESEARCH CONFERENCE

Students will be presenting their
research in the following fields:

ANTHROPOLOGY

BIOLOGY

BUSINESS ADMINISTRATION

CHEMISTRY

COMMUNICATION

CRIMINAL JUSTICE

EDUCATION

ENGLISH

HEALTH STUDIES

HISTORY

MARINE AND ENVIRONMENTAL BIOLOGY AND POLICY

MATHEMATICS

MEDICAL LABORATORY SCIENCES

POLITICAL SCIENCE

PSYCHOLOGY

SOCIOLOGY

SPRING 2022

HONORS SCHOOL RESEARCH CONFERENCE SCHEDULE

Friday, April 22, 2022 - Library 101

Opening Remarks:

Dr. Nancy J. Mezey, Dean of the Honors School

SESSION A: 8:30-9:30AM

Kyle Anderson, *Mathematics (Statistics)*

Chyna Walker, *Sociology and Political Science*

Antonella Henson-Vendrell, *Biology (Molecular Cellular Physiology)*

Kostandinos Poniros, *Medical Laboratory Sciences*

Ariel Zavala, *Chemistry*

Hannah Craft, *Marine and Environmental Biology and Policy and Chemistry*

SESSION B: 9:45-10:35AM

Alexa Wallace, *Biology (Molecular Cellular Physiology)*

Jeannette Lombardi, *Anthropology*

Isabella Hannah, *Marketing and Management*

Haley Cichon, *Biology (Molecular Cellular Physiology)*

Gina-Marie Verrone, *Chemistry (Biochemistry)*

Jenna Cordaro, *Psychology*

SESSION C: 10:50-11:40AM

Kathryn Roeder, *Biology (Molecular Cellular Physiology)*

Ashley Pastore, *Marine and Environmental Biology and Policy*

Laura Sine, *Chemistry (Biochemistry)*
Gabriella Cleven, *Biology (Molecular Cellular Physiology)*

SESSION D: 11:55AM-12:45PM

Ana Huertas, *Health Studies (Exercise Science)*
Gabriella Herbert, *Biology*
Alejandro Garcia, *Finance*
Abigail Brooks, *Communication (PR and Journalism)*

SESSION E: 1:00-1:50PM

Diana Turcios, *Political Science*
Jo Vonderhorst, *Chemistry and Political Science*
Erica Santos-Reyez, *Political Science (International Relations)*
Elisa Ramos, *Biology*
Joseph DeMarco, *Finance*

SESSION F: 2:05-2:45PM

Makayla Laster, *Communication*
Emily Adamo, *English and Elementary Education*
Megan Chase, *Psychology*
William Dailey, *Criminal Justice*
Morgan Siracusa, *Communication*

SESSION G: 3:10-4:00PM

Derek Reina, *Marketing*
Bryan Derr, *Communication*
Anastasia Francisquini, *Political Science (International Relations)*
Leslie Michelle Cruz, *International Business*
Rowan Elrais, *History and Elementary Education*

THESIS ABSTRACTS

KYLE ANDERSON | FIRST READER: DR. RICHARD BASTIAN

HOW INTERNAL FACTORS INFLUENCE STUDENT'S ATTITUDE TOWARDS MATHEMATICS

Mathematics tends to have a negative reputation with students, often being considered one of the least liked courses taught in school. Not liking or being good at math has become normalized in our society, resulting in both a lack of interest and students refusing to consider higher education in the subject altogether. This thesis attempts to develop an effective survey that takes into account student's internal factors that influence attitudes towards mathematics. Literature revealed that internal factors gender, race, parental influence, confidence in the subject matter, and anxiety play a significant role in attitude towards mathematics. Using the case study methodology, questions from a number of studies examining these factors were analyzed taking into account the Cronbach alpha and test-retest reliability of said questions. Overall, questions from The Abbreviated Math Anxiety Scale were consistently used and reliable in Math Anxiety studies, and questions from the Patterns of Adaptive Learning Survey were the most reliable when looking into confidence of the subject matter. Race and Gender only served as identifier questions for the participants of the surveys, and Parental Influence questions consistently had the lowest internal consistency, but still high enough to be considered reliable questions.

CHYNA WALKER | FIRST READER: DR. JENNIFER MCGOVERN

THE LONG-TERM EFFECTS OF SCHOOL SEGREGATION

There are many studies about racial segregation of schools and its effect on students; however, the focal point of the majority of this research pertains to students in grades kindergarten thru twelfth grade. Scholars know much less about how these experiences in schools translate to why students have different experiences when they attend college. This study uses data collected from semi-structured interviews to examine how the racial compositions of schools prior to college affect how a student performed academically and socially once enrolled in college. Utilizing the perspective of W.E.B. DuBois through his theory of double consciousness, the analysis found that students who went to majority white schools before attending college performed better academically in college while minority students who enrolled in predominantly white institutions (PWIs) for college felt high levels of alienation, irrespective of the racial composition of their schools prior. Students felt more accepted and comfortable when they attended a school with students and faculty that looked like them in both high school and college, promoting better social and academic experiences. As a whole, the study concluded that the racial composition of schools prior to college enrollment did indeed have an influence on how well a student did once enrolled.

ANTONELLA HENSON-VENDRELL | FIRST READER: DR. JAMIE PIGMAN
SECOND READER: DR. JENNIFER MCGOVERN

INVESTIGATING THE INCIDENCE OF ANTERIOR CRUCIATE LIGAMENT INJURIES IN COLLEGIATE WOMEN'S LACROSSE PLAYERS DURING SEASON PERIODS AND IN GAMES VERSUS PRACTICE

Lacrosse is one of the fastest growing sports in the United States, which has led to an increased number of severe injuries in the sport, specifically anterior cruciate ligament (ACL) injuries. The ACL is a major ligament that stabilizes the knee joint. The ACL injury rate for female athletes is 3-8 times higher than male athletes. These injuries in female athletes continue to be the largest single problem in orthopedic sports medicine. There is little research available that identifies when female lacrosse players are most at risk for an ACL injury, so the purpose of this study was to identify in which period and setting are these athletes most at risk. This was studied with a Qualtrics survey that was shared to lacrosse players at various DI, DII, and DIII schools over social media. It was hypothesized that the incidence of ACL injuries in collegiate lacrosse players is highest during regular season games. Approximately 37% of the collegiate players sampled in our study reported tearing their ACL at least once, and the major findings supported our hypothesis. The results of this study can be used to identify when ACL prevention programs should be implemented and utilized during the lacrosse season.

KOSTANDINOS PONIROS | FIRST READER: DR. JAMIE PIGMAN

CONCUSSION PREVENTION IN YOUTH

The purpose of this capstone project is to create an evidence-based football program for young athletes that promotes strategies to prevent or reduce concussions. Our goal with this capstone project is to explore as well as investigate equipment selection, the environmental factors: temperature and field surface, the practice designs, as well as the awareness and knowledge of concussions of the players, coaches, and parents. This capstone provides information from current programs and is then put onto a website that can be easily referenced and utilized as a source of information in the hopes of reducing and preventing concussions in youth football. There is also a corresponding pamphlet that is condensed and easily distributed that directs the reader to the website.

ARIEL D. ZAVALA | FIRST READER: DR. JASON ADOLF

ENVIRONMENTAL CONTROL ON HARMFUL ALGAL BLOOM (HAB) TOXICITY IN MONMOUTH COUNTY COASTAL LAKES, NEW JERSEY

Reports of harmful algal blooms (HABs) in freshwater environments have been surfacing nationwide in news, leading to concern among researchers, environmental managers and citizens. Monmouth County's coastal lakes often experience summer-time HABs due to nutrient pollution and climate change. These lakes benefit the surrounding communities economically and environmentally, but when HABs occur they pose a serious health hazard, resulting in state regulatory action and a loss of a valuable community resource. The purpose of this research is to gain insight on local HAB characteristics and their relationship to cyanotoxin abundance through qPCR and ELISA analysis. Cyanobacteria is the phytoplankton that causes HABs and are known to produce cyanotoxins e.g., microcystin, saxitoxin, and cylindrospermopsin. Microcystin, a common cyanotoxin, are especially concerning for their contribution to illnesses in humans and animals. HAB toxicity can be influenced by the environment in which they are growing, therefore, microcystin is not always produced by HABs. The coastal lakes of Monmouth County, NJ offer an opportunity for comparative studies on the relationship between freshwater HABs and cyanotoxins, which will be the focus of this study. Evidence indicates that global change to aquatic ecosystems such as rising temperatures, nutrient loads, and CO₂ concentrations will affect the dominance and toxicity of Microcystis.

HANNAH CRAFT |

FIRST READER: DR. KEITH DUNTON
SECOND READER: DR. JASON ADOLF

SPATIAL AND TEMPORAL OCCURRENCE OF THE ENDANGERED ATLANTIC STURGEON (*ACIPENSER OXYRINCHUS*) IN RARITAN AND SANDY HOOK BAY

Sandy Hook Bay (SHB) and Raritan Bay (RB) are highly urbanized waterbodies within close proximity of known Atlantic sturgeon coastal aggregation and freshwater spawning sites in the Hudson River. While Atlantic sturgeon have been documented to occur here, no formal surveys have been conducted to identify their presence or occurrence within the bays. The purpose of this project was to determine the presence and seasonality of Atlantic sturgeon within this area using acoustic telemetry. Working cooperatively with Naval Weapons Station Earle, six acoustic receivers were deployed in spring 2016 in SHB and expanded into RB since 2018 to monitor for previously tagged Atlantic Sturgeon. A total of 304 unique Atlantic sturgeon were detected (n=240,033 detections). Detections showed a presence of Atlantic Sturgeon in both Sandy Hook and Raritan bays with strong temporal patterns and some fish displaying high residencies. Atlantic sturgeon largely came from the NYB DPS but some from as far south as the Chesapeake Bay and Edisto River, therefore, multiple DPSs utilize the area. This study indicates that the region represents an important late spring – early summer habitat, therefore management may be needed to protect this region against localized threats within this shallow, urbanized bay during these periods.

ALEXA WALLACE |

FIRST READER: DR. DENNIS RHOADS

BIOCHEMICAL ALTERATIONS ASSOCIATED WITH GLUTAMATE RECEPTORS AND LIPID RAFTS DURING ETHANOL WITHDRAWAL IN ADOLESCENTS

Alcohol is the most commonly abused substance amongst adolescents in the United States. This thesis will be analyzing the biochemical changes that occur in the adolescent brain when in a period of ethanol withdrawal. Specifically, this thesis will be focusing on the upregulation of NMDA receptors, an ionotropic glutamate receptor in the brain, and an increase in low buoyant lipid raft fractions, which are lipid-detergent microdomains found in the plasma membrane of cells. This thesis will be using a specific rat strain named the Spontaneous Hypertensive Rat (SHR), which is a rat strain that has been accepted as a model for ADHD in adolescents. In a prior honors thesis, results showed that SHR rats did not exhibit the same behavioral cues associated with withdrawal like the other rats involved in the study. Alcohol research done on SHR rats in particular is beneficial due to the fact results could emulate what occurs in the brains of adolescents with ADHD. This study was carried out using different biochemical techniques including: homogenization, and gel electrophoresis, western blotting.

JEANNETTE LOMBARDI | FIRST READER: DR. HILLARY DELPRETE

AGREEMENT IN SEXING AND ESTIMATING STATURE IN HUMAN SKELETAL REMAINS: DO THE BONES AGREE IN AN INDIVIDUAL REGARDING SEX AND HEIGHT?

Forensic anthropology involves the application of anthroposcopic and anthropometric techniques to analyze human skeletal remains. This thesis outlines the assessment of a set human skeletal remains for characteristics of sex and stature using forensic anthropological techniques to find whether various bones are in agreement regarding these characteristics. The data for this study were collected using sliding calipers, spreading calipers, a soft measuring tape, and an osteometric board. In addition to the anthropometric data collected for statistical analysis, anthroposcopic data were also used to visually assess the individual. After the data collection period ended, various methods were applied for assessing sex and estimating stature that are used by individuals in the field of forensic anthropology. The sex was concluded to be female and the stature found in the range of 5 foot 5 to 5 foot 6 inches as determined by the majority of the results of the collected and tested data. Albeit being affected by some limitations, the study contributed to knowledge in the application of assessment methods for these two characteristics and how well various bones agreed regarding the sex and stature of the individual.

ISABELLA HANNA | FIRST READER: DR. JOELLE ZABOTKA
SECOND READER: DR. ROBERT SCOTT

INTEGRATING BIG DATA INTO NON-PROFIT ORGANIZATIONS: INVESTIGATING THE EFFICACY OF RESOURCENET PROVIDER ROSTER AT A NJ CARE MANAGEMENT ORGANIZATION

In recent years, non-profits, or not-for-profit organizations, have had to operate increasingly more business savvy to meet the needs of their constituents. This pressure to change is more specifically apparent within the social services industry— a sector of the economy that is largely non-profit in nature. Moreover, research shows that a popularly adopted strategy is to capitalize upon available data and increase a firm's data analytics effort. As a result, this study aims to uncover whether this claim for integrating for-profit, big data practices into non-profit business models is not only warranted but also effective. A survey was distributed to care managers employed within Monmouth County's Care Management Organization (CMO), a non-profit that provides a multitude of behavioral and emotional supports to individuals ages 3-21 and their families, to measure their feelings towards a recently established, state-wide database tool, ResourceNet Provider Roster. Upon analyzing the results of the survey, it was found that ResourceNet Provider Roster has had a positive effect in advancing the efficacy of this CMO; however, as the care managers' feelings towards the program were not overly positive, more research should be conducted to determine whether the results were specific to Monmouth County or can apply to the entire state of New Jersey.

HALEY CICHON |

FIRST READER: DR. ELLEN DOSS-PEPE
SECOND READER: PROFESSOR KATIE GATTO

ALTERNATIVES TO ANTIBIOTICS

As the popularity of antibiotics grows, and subsequently as the misuse of antibiotics increases, the number of multidrug resistant bacteria is also on the rise. Multidrug resistant bacteria pose a global threat to the antibiotic market, and thus alternative medicinal options must be further researched and considered. In this thesis, the antibacterial properties of different essential oils were studied, along with their interactions with common bacterial strands. Information was pulled from a multitude of sources and studies and compiled into a literary review and was then displayed as a website using Adobe Dreamweaver. Using HTML and CSS coding, the information on essential oils and multidrug resistant bacteria was gathered and presented in a way that is easily understandable. The literary research that was done revealed both unique and shared antibacterial properties of different essential oils, as well as a variety of uses for these oils. Essential oils have tremendous potential in terms of their antibacterial, antifungal, antiviral, and antiseptic properties, and show to be a promising alternative to antibiotics.

GINA-MARIE VERONE |

FIRST READER: DR. STACI DREWSON

THE IMPACT OF MEDITATION ON COLLEGE ATHLETES

Meditation is an ancient practice that dates back to 5,000 BCE where an individual utilizes one of many techniques to bring them to the present moment. The practice improves mental clarity and trains individuals to learn to focus their attention more effectively. The goal of meditating is to simply be present, allowing the individual to enter a state of mindfulness. Over time, the practice can reduce anxiety, improve levels of focus, improve emotional regulation abilities, and promote a clear state of mind for the individuals. Physiologically, meditation lowers one's heart rate, blood pressure, and increases brain processing abilities. The benefits of mediation can be particularly useful to Division I, II, and III athletes competing at the collegiate level. The immense amount of stress involved in sport participation including countless hours of physical conditioning, skill development, travel, and competition, leads athletes to be more vulnerable to negative mindsets. These demands lead to altered thinking patterns revolved around perfectionism and fear-of-failure, ultimately increasing levels of anxiety and stress. Just before and during competition, an athlete's mental state is the most susceptible to negative states, altering the individual's ability to perform. Practicing meditation is an effective course of action to prevent fears and thoughts from overcoming an athlete. Instead, the mental clarity provided by successfully meditating can guide the athlete into a flow state, where they can perform optimally. A consistent meditation program for college athletes would likely enhance their mental and physiological health over time, specifically reducing their anxiety levels while elevating their mental clarity, improving their ability to achieve a state of flow and compete on game day.

JENNA CORDARO

| FIRST READER: DR. MICHELE VAN VOLKOM

ARE YOU A SOCIAL MEDIA PERSONALITY? THE EFFECT OF SOCIAL MEDIA USAGE ON PERSONALITY

This study examined the effects of personality on social media usage. Since social media is a recent phenomenon in society, there has been limited research on user habits. There were 97 participants who completed a Social Media Survey that asked to use the iPhone "Screen Time" settings to record the time spent on social media applications in a given week. They then completed the 44-item Big Five Inventory to measure their personality based on openness, conscientiousness, extraversion, agreeableness, and neuroticism. It was hypothesized that people with higher levels of openness and conscientiousness will spend less time, on average, on social media per week. Also, those with higher levels of extraversion, agreeableness, and neuroticism will have higher levels of social media usage. Similarly, it was hypothesized that people who score higher on openness, agreeableness, and extraversion will use Snapchat the most. It was also hypothesized that those who score higher on conscientiousness and neuroticism will use Instagram the most. Finally, it was hypothesized that TikTok will be the most used application overall. There were no significant correlations between social media usage and any of the five personality traits. Also, the only significant finding between any of the social media applications and personality traits was between YikYak and neuroticism. No other correlations between the applications and the personality traits were significant. As hypothesized, TikTok was the most used social media application.

KATHRYN ROEDER

| FIRST READER: DR. PEDRAM DANESHGAR

SALINITY'S EFFECT ON MARITIME FOREST GERMINANTS

As a result of climate change, global sea levels are rising at an alarming rate, causing an increase in coastal flooding. These more frequent coastal floods bring with them excess salinity and the threat of increased coastal erosion, both of which pose substantial threats to coastal ecosystems. Along the Mid-Atlantic coast, coastal forest trees, as a result of the influx of salinity that comes from increased coastal flooding, are suffering from non-optimal growth rates, suppressed seed germination, and other harmful effects. This research project will focus specifically on maritime forests along the New Jersey coast to study the effects of soil salinity on forestry generation within these ecosystems and to determine the implications that results of this study hold for the future of coastal and maritime forest ecosystems. Qualitative and quantitative data will be obtained from the observation of saplings of the most abundant species in two locations - Gateway National Recreation Area at Sandy Hook and Island Beach State Park - to be used in the generation of a health index score for each species. These scores will be used to gain insight into the composition of future maritime forests and will aid conservationists in the preservation of existing maritime forest ecosystems as sea levels continue to rise in the coming years.

EXPLORING GHOST FORESTS: ASSESSING THE IMPACT OF STORM SURGE AND SEA LEVEL RISE ON COASTAL FORESTS

The purpose of this project was to compare the floral and microbial composition of a ghost forest in Catus Island County Park to the coastal forests they once were and the salt marshes they may become. Ghost forests are areas of dead trees that were once a coastal forest, and these are becoming more common along the NJ coast. Not much is currently known about ghost forest ecological function. Utilizing mathematical analysis to quantify plant community diversity along with genomic sequencing and R programming to characterize microbial community diversity, a better picture of these communities within a ghost forest was better able to be described. Ghost forest plant diversity was considered to be much higher than anticipated, and microbial community composition was fairly typical of what was expected. With a full picture of the species found in each treatment and an understanding of their functional role, predictions can be made on the future of these ecosystems and their ecological significance. As climate change ultimately begins to leave its mark on NJ, this project can help ecologists and coastal engineers alike in planning for what is to be expected in coastal.

RNA THERAPEUTICS FOR THE TREATMENT OF GLIOBLASTOMA MULTIFORME AND COVID-19

Glioblastoma Multiforme (GBM) is an aggressive malignancy of the central nervous system whose standard treatment protocol has not seen any recent significant improvements. The current median survival rate is low while the chance of the tumors recurring is relatively high. The therapeutic approach introduced in this thesis is to allow the cells to create shortened transcripts of the overexpressed Epidermal Growth Factor Receptor (EGFR) to disrupt an important signaling cascade whose activation ends in tumor growth. To create this shortened transcript, the RNA secondary structure had to be uncovered and then targeted to increase the availability of the cryptic polyadenylation signal (cPAS) hidden in intron 10. The results show the antisense therapies were able to increase intronic retention with the most effective treatment, one targeting the downstream region of the intron with a 4GQ tail, resulted in over a 60-fold increase in intron retention.

SARS-CoV-2, the virus that causes the Covid-19 pandemic, contains four distinct structural glycoproteins. The SARS-CoV-2 genome is known, so the gene therapy approach to this virus is to create reverse complement miRNAs from the sequences of each structural protein and hide them in a naturally occurring miRNA cluster, miR-17-92. These will be processed in a cell and eventually incorporate with an RNA-Induced Silencing Complex (RISC) where they will act as guides and take the endonuclease directly to mRNA transcripts of the SARS-CoV-2 proteins and cleave them. Upon testing of these therapies specifically against the spike protein, the results approximately show a 2-fold reduction.

THE SYNERGESTIC EFFECTS OF ESSENTIAL OILS (EOs) ON THE GROWTH OF MUTLIDRUG RESISTANT *ENTEROBACTER CLOACAE*

The overuse of antibiotics has resulted in bacteria evolving to become resistant, rendering many of these drugs ineffective in modern medical treatment of bacterial infections. One specific bacterium highlighted in the 2019 antibiotic resistance report from the CDC was *Enterobacter cloacae* (*E. cloacae*). This bacterium primarily infects immunocompromised people in nosocomial settings such as the intensive care unit (ICU).

In this in vitro study, 102 essential oils (EOs) were initially tested against an American Type Culture Collection (ATCC) strain of a multi-drug resistant bacterium, *Enterobacter cloacae* (*E. cloacae*), as an alternative treatment to antibiotics. The EOs with the greatest inhibitory effects against *E. cloacae* were arbor vitae, cassia, cinnamon bark, oregano, and thyme. The minimum inhibitory concentration (MIC) of these select EOs were determined by preparing dilutions using jojoba oil and measuring their zones of inhibition. These were also tested in different combinations of two to determine their synergistic effects.

To determine the synergistic effects between these EOs, various dilutions were prepared using jojoba oil, the MIC was determined and then the fractional inhibitory concentration (FIC) index was calculated to estimate the interaction between each pair of essential oils. The results showed that the effectiveness of each combination was additive. Future research will include synergistic testing of the EOs with the leading antibiotics.

ASSESSING RACIAL BIAS AMONG UNDERGRADUATE PRE-CLINICAL STUDENTS

Research has shown that medical racial bias may contribute to disparities in health care, including poor clinician-provider interaction, treatment adherence and patient outcomes. This online study of 51 pre-clinical undergraduate students (PA, OT, nursing, etc.) sought to evaluate if medical providers treat patients of color equally compared to their White counterparts. Pre-clinical undergraduate students assessed their racial bias towards the perception of pain using a standardized vignette and randomized photos of women of different races/ethnicities (White, Black, Hispanic/Latinx, and Asian). Participants used a numerical pain scale to assess how much pain participants perceived of a potential patient compared with their own pain. In addition, participants answered an assurance question regarding the race/ethnicity they classified their patient, based on the photo they received. The data was grouped by pre-clinical track, gender, and the race/ethnicity participants self-identified. Out of 22 participants who identified as white and were assigned a hypothetical patient of color, 8 (36.4%) thought their pain was greater than the patient. Out of 8 participants who identified as Black and were assigned a hypothetical non-Black patient, 3 (37.5%) rated their pain greater than the patient. Findings suggest that there are differences in how pain is perceived based on racial/ethnic group.

GABRIELLA HERBERT | FIRST READER: DR. CHRISTINA MERCKX

PEDIATRIC PHYSICIAN ASSISTANT EDUCATION

The role of PAs in the medical field is growing. Although PAs have opportunities to specialize, some may argue that there is not enough specialized education to best prepare PAs for practice in non-primary care specialty fields of practice, including the field of pediatrics. Along with the lack of specialized education for pediatric PAs, the number of pediatric PAs continues to decrease as the population of children in the United States continues to increase. When compared to the amount of general PA programs and fellowships, there are significantly fewer pediatric programs. In this study, data from Physician Assistant National Certifying Exam (PANCE), Certificate of Added Qualifications (CAQ) for pediatrics by the National Commission on Certification of Physician Assistants (NCCPA), and pediatric post-graduate fellowships was used to determine the major differences between general PA programs, pediatric concentrated PA programs, and pediatric post-graduate fellowship programs. The websites and curriculum of six general PA programs were compared to a PA program offering specialized training in pediatrics, the University of Colorado. Though the study produced inconclusive results, it explored if further exposure to pediatrics is needed beyond general PA education to best prepare PAs for practice in the pediatric specialty.

ALEJANDRO GARCIA | FIRST READER: DR. JONATHAN DAIGLE

IS THERE A CHANGE IN PUBLIC COMPANIES' RISK AFTER SOX PRACTICES ARE ADOPTED?

My research question is, "Is there a change in public companies' risk after SOX practices are adopted?" The goal of the Sarbanes-Oxley Act (SOX) is to reduce insider trading and market manipulation. It was put in place by the Securities Exchange Commission (SEC), placing regulations and closely monitoring publicly traded firms accounting practices. My reasoning for selecting the topic is to understand if the risk of public companies would decrease when implementing SOX practices. Thus, by their risk diminishing, the confidence in the companies would increase, and investors would be more likely to participate in the stock market.

Furthermore, the risk of public companies was measured using pre-and post-SOX data. Additionally, the risk was analyzed by looking at the Weighted Average Cost of Capital (WACC) of the firm. Simply WACC tells us whether firms are adding value or losing value. And it indicates the risk firms might have. However, the results found that SOX regulation did not affect the WACC of publicly traded companies. And it supports the claim that SOX is burdensome to publicly traded companies because of compliance costs.

ABIGAIL BROOKS | FIRST READER: DR. MARINA VUJNOVIC

CLIMATE CHANGE IN THE ONLINE NEWS CYCLE

Climate change became the subject of an aggressive disinformation campaign in the 1990's, politicizing and polarizing what had previously been a widely accepted matter of science. Today, partisan media coverage of climate-related issues has contributed to this stark political divide – consumers often engage in selective exposure practices in order to find information that conforms to their partisan beliefs, regardless of its accuracy. My research examines how online versions of mainstream media outlets cover climate change by analyzing the frequency of coverage and framing techniques used in climate-related stories published on the websites of CNN, Fox, The Washington Post, The Wall Street Journal, and The New York Times from Monday, February 28 to Friday, March 4. The results of this content analysis highlight the fact that climate change is not a salient issue in today's mass media environment, regardless of the political slant of the media outlet. Although most stories accepted the existence of climate change, many employed an economic frame that belittled the need for mitigation and adaptation efforts. These findings pose important implications about how mainstream online news sites are covering climate change and the potential agenda-setting effects this may have on public perceptions of the climate crisis.

DIANA TURCIOS | FIRST READER: DR. STEPHEN CHAPMAN

THE IMPLICATIONS OF THE TERM "HISPANIC": OVERGENERALIZED AND MISREPRESENTED

The United States has always prided itself on its ability to be a melting pot or a salad bowl. Nevertheless, the idea is that cultures can integrate and assimilate into American society, therefore, creating a stronger and diversified unit. However, the Hispanic community is still perceived as being a separate entity, as opposed to a community that contributes and is part of American culture, society, and politics. The term Hispanic initially was created to identify a community of Spanish-speaking individuals. However, as time passed, this term became immensely overgeneralized to which I believe is the cause for most of the misrepresentation, misconception, and inability to assimilate for the Hispanic community. This in turn causes political ambiguity for the Hispanic community regarding where they stand, how they are represented, and what this holds for their future. In this thesis, I use prior scholarly literature to highlight different ways in which Hispanic identity can differ. I use sources like social media, podcasts, and blogs for uncontained perspectives from individuals of the Hispanic community to showcase their experience with integration and to reference how the Hispanic community is represented. I concluded that a lot of the issues that this community has regarding representation, identity, and assimilation have much more to do with the overgeneralization of the term Hispanic and what that means to the individuals in the community and how that translates into American political society.

CLIMATE POLICY & PUBLIC OPINION

Climate change is one of the most pressing issues facing the world in the present day. The most recent report published by the Intergovernmental Panel on Climate Change (IPCC) conveys the grim prediction that unless global carbon emissions are brought to net zero by 2055 and warming of the globe is limited to below 2°C above pre-industrial levels, disastrous consequences will result. Despite the urgency of addressing the climate change problem, levels of ambition in the passage of legislation aimed at mitigating the effects of climate change have varied internationally. As reported by the 2022 Climate Change Performance Index (CCPI) Report, all 27 EU member states currently sit higher on the ambition spectrum than the United States, which falls nearly at the bottom.

Using a quantitative linear regression analysis and multiple single sample t-tests, this thesis aimed to identify the source of the effective climate policy gap between EU member states and the United States. The results of the analyses conducted refute the proposed hypothesis that political polarization is the major driving force behind this gap and identify two significant causal variables: the percentage of the national border occupied by coastline, and length of the national average work week.

CAN EXTREME VIOLENCE AGAINST WOMEN RESULTING IN FEMICIDE IN LATIN AMERICA BE REDUCED THROUGH LEGISLATIVE GENDER QUOTAS?

Violence against women is a global issue but Latin America has been particularly burdened given the prevalence of extreme gender-based violence, femicide, the killing of women because of their gender. In understanding the issue, previous literature finds that aspects of Latin American machismo culture combined with the poor socioeconomic status of women makes them vulnerable to gender-based violence which in extreme manifestation leads to femicide. Therefore, in seeking to reduce gender-based violence and femicide I examine the effects of legislative gender quotas within Latin American countries as they serve to improve the social status of women by affording them positions in government. To examine this potential correlation, I conducted a quantitative study using multivariate regression analysis to examine the statistical significance between the implementation of legislative gender quotas and socioeconomic variables including income inequality, education level, labor force participation, interfamilial discrimination, and fertility rates. The study found no statistical significance among any of the variables except in the level of education which reached slight significance with a p-value of 0.100. Given the data, legislative gender quotas may not prove to be an effective solution to improving the position of women in society leading to a reduction in gender-based violence and femicide.

ELISA C. RAMOS |

FIRST READER: DR. LINDSAY MEHRKAM

SECOND READER: PROFESSOR SHANNON HOKANSON

PILOTING A SURVEY TO ASSESS AND ANALYZE BREED STEREOTYPES AND BIASES

Currently certain dog breeds are shunned by communities in our society, but research has begun to show how human perception has influenced so-called “dangerous dogs” fit for discrimination in legislation. This thesis examined how people’s perceptions could influence and perpetuate dog breed stereotypes. It explained how citizens have cultivated belief in the need for Breed-Specific Legislation, or BSL, and the negative impact that laws have on the breeds named, such as the American Pit Bull and other Pit Bull-type dogs. Gathered in this research is scholarly literature to further explain and provide background on BSL enforcement, sociocultural breed exploitation, and comparison of other breeds to targeted breeds. With the theoretical framework of implicit association bias, subconscious associations involving previous mental representations were explained to analyze how implicit association with humans towards dog breeds could perpetuate discrimination. A total of eighty-five participants completed an online survey where they shared characteristics and reactions, chose an image they felt represented the breed’s behavior, and took a breed test assessing accuracy in identifying an American Pit Bull Terrier. The results indicated that overall, there was no significant associations between previous impact and stereotypes of targeted dog breeds and most participants were unable to accurately identify the American Pit Bull Terrier. By understanding personal experiences, dog breeds can be understood to propose legislation that encompasses all dogs rather than punishing specific breeds which is important from the perspective of breed advocacy.

JOSEPH DEMARCO |

FIRST READER: PROFESSOR JOHN BUZZA

COVID-19 IMPACT ON NEW YORK CITY RESTAURANTS FROM MARCH-JUNE 2020

COVID-19 is a virus that originated in Wuhan, China in December 2019. The coronavirus spread throughout the world from continent to continent. In March 2020, New York State quickly became the epicenter of the coronavirus pandemic in the US. The COVID-19 Pandemic forced thousands of New Yorkers to stay at home. Former NYS Governor Cuomo decided that a widespread quarantine or “pause” was necessary to “stop the spread”. In March 2020, no one could know how devastating the impact of this policy would be on the local and state economy, including the once vibrant restaurant industry. This thesis analyzes the economic and legal impact the COVID-19 Pandemic and the resulting Pause Orders had on NYC’s restaurants from March to June 2020. By studying economic statistics, using the quantitative research method, pertaining to restaurants both before and after March-June 2020, I found that the COVID-19 Pandemic Pause Orders had a crushing effect on the business of NYC restaurants. Overall restaurants’ revenue fell 94% from pre-pandemic March 2019 to March 2020 when the Pause Orders were mandated, and 4,500 NYC restaurants closed permanently. Restaurants filed lawsuits challenging the legalities of these Pause Orders, but none of these actions were ultimately successful.

MAKAYLA LASTER | FIRST READER: DR. CHRIS HIRSCHLER

CARING FOR ANIMALS YET EATING THEM

Animals are treated differently depending on the social norms and culture of an area. In America, some are eaten while others are kept as companion animals. The purpose of this project is to bring awareness about the contradictory beliefs that some people hold about meat-eating. This problem is addressed because many people are not conscious of their inconsistent behavior of eating certain animals, while expressing love for other animals. This capstone project included a video demonstration of some defense mechanisms described by Dr. Melanie Joy. Major findings include that people choose to eat meat while neglecting the thought of animals being killed as a way to feel comfortable about their food choices. The social norm to eat certain animals could be changed if the world stopped using defense mechanisms and justification methods for their actions. This project is intended to cause people to reconsider their dietary choices after becoming aware of the meat paradox, which is caring for animals yet consuming them.

EMILY ADAMO | FIRST READER: DR. LILLY STEINER

PROMOTING MENTAL HEALTH AWARENESS THROUGH READ-ALOUDS

Social-emotional learning, or SEL, has become an important topic in the education field today, as teaching SEL skills in the classroom have been correlated with higher academic success and fewer behavioral issues. An effective SEL framework incorporates five core competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. Many social-emotional learning curricula incorporate the teaching of literacy. One primary approach is the use of storybook read-aloud. This capstone project draws upon previous literacy and social-emotional learning research to create a collection of read-aloud units, which teaches young students about mental health and the skills necessary for managing their thoughts and feelings. This read-aloud project consists of four reading units, centered around topics such as feeling identification, identifying and coping with feelings of anxiety and depression, and empathy. Each unit comprises two to three repeated interactive read-alouds and includes accompanying lessons and activities. This project has been designed to be taught at the first-grade level and aligns with NJ Student Learning Standards.

MEGAN CHASE |

FIRST READER: DR. LAURA MORIARTY

SECOND READER: DR. MICHAEL PHILLIPS-ANDERSON

THE POWER OF ELLE WOODS: INSPIRATIONAL OR DETRIMENTAL?

Women in legal careers have experienced much adversity and discrimination throughout history. Therefore, representation of females in legal careers in popular media such as the classic *Legally Blonde* can be very influential to those who experience such biases in real life. This thesis seeks to understand the extent to which women in legal careers have experienced harassment and inequality, while measuring the inspirational or detrimental effects that the film has on the women who are in the field. Through executing a qualitative content analysis of 14 media articles about the movie, which included content about harassment and inequality within the law profession, from interviews with 25 women in or pursuing legal careers, and including interviews from Reese Witherspoon, the lead actress in the film, this thesis found that the character of Elle Woods has a positive, influential effect on many through the creation of opportunity and message of staying true to oneself it imposed. However, there were about a quarter of interviewees who believed that Elle Woods and the film created a false sense of success, only represented those granted with multiple privileges, and did not align with feminist ideals.

WILLIAM DAILEY |

FIRST READER: DR. LAURA MORIARTY

POLICE MILITARIZATION AND USE OF FORCE IN NEW JERSEY

The 1033 Program is a federal program that allows police departments to acquire surplus military equipment at no cost. Many researchers have observed the 1033 Program contributes to the militarization of police. This study seeks to explore if there is a relationship between police militarization and the frequency of police use of force. Police militarization is measured by the number of 1033 Program acquisitions. Due to the unique position of police to use force against fellow citizens, and the ongoing debate on police militarization and police reform, it is critical that the potential relationship between use of force and militarization be explored. The study revealed that a group of six counties in New Jersey account for more than half of both 1033 Program acquisitions and incidents of use of force. Perhaps the most significant revelation of the study is the need for better collection and recording of data for 1033 Program acquisitions as well as the need for a more standardized manner police file use of force reports. The conclusions of the study are limited due to the data insufficient but point towards a relationship between police militarization and the frequency of use of force existing in New Jersey.

MORGAN SIRACUSA |

FIRST READER: DR. KATHLEEN SCALER SCOTT
SECOND READER: PROFESSOR CATHLEEN GIVNEY

THE EFFECTS OF PARENT IMPLEMENTED EARLY INTERVENTION SPEECH THERAPY

Through a literature review and collecting data from speech-language pathologists (SLPs) throughout New Jersey, my thesis analyzed the efficacy of parent/caregiver based early intervention speech therapy and their perspectives of early intervention. Early intervention has been used for thirty five years, yet in that time, the rate of children receiving therapy only increased from 1.77% to 3.5%. Research concluded that parents and caregivers struggle to understand early intervention benefits or choose not to follow through with a referral because of a stigma that their child is not perfect, or their belief that they know what is best for their child. Another finding was that many SLPs do not know how to incorporate parents and caregivers in therapy because they have not received proper training for it. Included in the thesis is the theory of early intervention and how it developed into the theory that SLPs use today. The final conclusion indicated that parent and caregiver implemented early intervention is beneficial in the long run for typically and atypically developing children.

BRYAN DERR & DEREK REINA |

FIRST READER: DR. MATTHEW HARMON

PODCASTING: A DEEP DIVE INTO THE MEDIUM, ITS LISTENERS, AND ITS CREATION

Among the several different types of media in the world, podcasts have grown in popularity in recent years. A podcast is an audio or audiovisual file that is accessible on the internet via a computer or mobile device with internet capabilities that can be downloaded and enjoyed (Vogele & Gard, 2006). The small independent podcast, Festive Bird Podcast, has been running for over two years now and has not had the growth expected. In this study, we wanted to define what the ideal podcast looks like, especially within Festive Bird Podcast's conversational genre. The Uses and Gratifications Theory was used as a baseline of what is gratifying to a media user and applied to find an audience. In addition, autoethnography and statistical analysis was used to look at the current numbers such as trends, viewership, and social media interaction to then apply the findings to the Festive Bird Podcast. We found that a large social media presence, better technology, a mixture of topics between educational and entertaining, use of guests, and consistent uploads were all factors in the growth of an audience and providing the most gratifying product possible for media users.

THE IMPACT OF CULTURAL COMPETENCY AND CULTURAL SENSITIVITY ON MEDIATOR APPROACH AND EFFECTIVENESS

With alternative dispute resolution (ADR) growing in popularity across the United States, there is a need for better investigation in its process and potential. In particular, this research focuses on mediation as a form of ADR, and the role that cultural competency and sensitivity play in making it more effective. With a progressively diverse society and better awareness of such differences, mediators need to be prepared as to how these qualities impact the parties at conflict. At the same time training in such matters may not be required by many mediation training programs, nor law schools, within this research is also an exploration of what practices may help inform the longitudinal application of cultural competency in education and practice. Using the "What the Problem is Represented to be" theory by Carol Bacchi, I analyze how awareness and reduction of one's biases and prejudices can help inform the manner in which a mediator practices and the way they are received by the disputants. Results found that although disputants initially found more ease with a mediator that fit into their own culture, they also were better able to work with a mediator that was culturally competent and culturally sensitive than one that was not.

GRASPING NAFTA'S RELATIONSHIP AMONG ECONOMIC AND WELFARE INDICATORS

The North American Free Trade Agreement, otherwise known as NAFTA, was an agreement signed by Mexico, the United States, and Canada. Its purpose was to reduce trading costs, foster business investment, and boost North America's competitiveness in a global market. Since its implementation in 1994, regional trade increased and so did the number of factories along the US-Mexican border. The question of this thesis is: what ways did NAFTA impact the economic and welfare conditions of its member countries? This thesis discusses the overall impact of NAFTA on poverty, income inequality, job markets, trade, and foreign direct investment. Using the Lewis two sectoral model, this study applies structural change growth theory to the North American context. It discusses how industrialization shifts labor from the agricultural sector to the modern sector and its relation to demand for workers and Foreign Direct Investment (FDI). The analysis also uses the Kuznets Hypothesis, which posits an inverted U curve for the association with income growth and inequality. Additionally, this thesis uses quantitative data as well as scholarly articles as evidence on the effect of NAFTA on the inequality, poverty, and other economic indicators. Results show that there is evidence showing the effect on inequality on both sides; decrease in poverty; and that NAFTA has had an overall positive effect on the economy from benefits on trade and improvements in labor market conditions.

EXCLUDED HISTORY REINTEGRATED

With the current state of the United States and the education system, there have been many bumps in the road to providing an enriching education to all students. One of these obstacles would be the lack of focus in subjects like social studies. A potential explanation for this lack of concentration on this subject can be attributed to the little amount of time dedicated to teaching it. According to academic scholar Phillip J VanFossen, in his study on the overall teaching of social studies in an elementary school, he discovered that K-3 grade teachers spent less than 20 minutes on social studies instruction out of a five-hour instructional day, while teachers in grades 4-5 spent less than 30 minutes (VanFossen, 2005). Recent studies show that other subjects, such as reading or math, are occupying up to, if not more than 90 minutes of a school day each (FastBridge, 2021). It also states that that is the time necessary to successfully teach said subjects. With that being said, why are social studies classes being neglected? This research is being conducted for the purpose of understanding social studies as an overlooked topic within school districts. Topics that will be covered include issues surrounding social studies as a subject, such as the stigma of it not mattering. What causes social studies to be the first subject to be removed when it cannot fit a course curriculum. How educators play a role in modeling social studies standards within their classroom as well as promoting inclusiveness. How to better incorporate social studies within an interdisciplinary curriculum that is online. Why it is important to correctly interpret and portray social studies and the standards that need to be met at the elementary level. This research will also present different strategies that teachers can begin implementing in their online classrooms to promote social studies standards in an interdisciplinary way.

ANTI-COVID MRNA THERAPY BLOCKS THE EXPRESSION OF THE SPIKE GENE OF SARS-COV-2

The purpose of performing this experiment was to develop a potential anti-COVID therapy that could be used to stop or slow the growth and development of SARS-CoV-2. SARS-CoV-2 is the respiratory virus that causes the respiratory disease COVID-19. This lethal respiratory disease has severely impacted millions of lives worldwide, resulting in cases of loss of taste or smell, respiratory defects, cardiovascular disease, and even death. Although mRNA vaccines have successfully been developed to build up immunity against this disease, a therapy or cure must still be developed to treat those who have been infected by SARS-CoV-2. In this experiment, a miRNA therapy was developed and utilized to target the spike gene of SARS-CoV-2, which is the gene that formulates the virus's spike protein, the protein responsible for penetrating and infecting the host's cells. The anti-COVID therapy was developed and ligated to DNA plasmids within competent cells for growth, and the newly grown therapy was analyzed and co-transfected alongside the spike gene to test its effectiveness. The results from the experiment displayed a significant decrease in the concentration of spike mRNA within the presence of the anti-COVID therapy, implying a potential therapy to be utilized in the future to combat SARS-CoV-2.

Notes

OUR MISSION

The Honors School promotes transformative learning in a collaborative community of student leaders and faculty mentors both inside and outside of the classroom. Students challenge one another to maintain the highest standards in their own discipline and across all fields of interest. Student scholars in the Honors School are expected to develop a great depth of understanding within their field of study, while appreciating intellectual inquiry in a broad context. Participants in the Honors School raise students' cultural, ethical, and social awareness as they develop into well-rounded scholars and citizens of a global community.