

Neumann University



Neumann University Presents
the Eleventh Annual

LEAD Conference And Poster Symposium

"Leading the Way..."

Presented by the Neumann University
Honors Association in Cooperation with
the Office of Academic Affairs

April 27, 2023



Order of Events

2:30 PM

Check-In
(Outside Bachmann 315)

2:45 PM

Welcome and Overview
(Bachmann 315)

3:00 PM

Presentation Sessions
(Bachmann 315, 316, 317)

4:30 PM

Poster Symposium
(Bayada Atrium, Mirenda Center)

5:45 PM

**Presentation of Certificates
and Awards**
(Bayada Atrium, Mirenda Center)



Oral Presentations A

3:00 – 4:15 p.m.

Bachmann Main Building Room 315

Inclusivity and Exclusivity

Sarah Taddei

Integrated Professional Studies Program

Supervising Professor: Prof. Rina Keller

The Integrated Professional Studies (IPS) Program is a post-secondary inclusive education initiative to support individuals with intellectual disabilities in having a college experience and to be part of a campus community. The IPS program at Widener started as a two-year pilot, and officially launched in 2019. The program offers academic and social support, as well as opportunities for students to gain independence. This program also emphasizes the importance of self-advocacy and a strengths-based perspective. This presentation highlights my experience as an intern with this program as I finalize my bachelor's in social work. It also emphasizes social work theories such as social role valorization theory as well as ethical considerations within the National Association of Social Work Code of Ethics. As a social worker, it is important to consider the micro, mezzo, and macro systems that are connected to the program. This includes policies, communities, and families. The program offers various treatments and interventions to the students that come to campus including support plans, accommodations, and advocacy.

Anthony Hando

DEI and a Care for Creation: The Oakland Roots Sports Clubs

Supervising Professor: John V. Kruse, PhD

Based in Oakland, California, the Oakland Roots Sports Clubs are United Soccer League Championship and W League soccer clubs with a commitment for increased environmental and social change through its work with 6 purpose partners that assist with these goals. This organization “has climate pledges to decrease carbon emissions, as well as has begun instituting more environmentally friendly front-office practices to better the environment (employee carpooling, composting, recycling, tree planting in the Oakland community...and much more).” This presentation will discuss the benefits found by researching the implementation of what the Oakland Roots Sports Clubs have done for their community and making suggestions for direct implementations to the Neumann University campus based on what the Oakland Roots Sports Clubs have contributed to their mindset for caring for creation, the environment, and for the community. Furthermore, this presentation allows for an amplification of Neumann University’s current Laudato Si’s Goals, DEI initiatives, and community support programs through the understanding of Oakland’s historic and impactful achievements as it provides a basis and opportunistic viewpoint on just how much impact one small community can have on the entire world.

Peyton McPeak

Understanding the Implications of the Decision on Dobbs v. Jackson (2022) and LGBTQ+ Rights

Supervising Professor: Robert McMonagle, PhD

Following the majority opinion the Supreme Court issued on Dobbs v. Jackson Women's Health Organization, the Court disregarded abortion as a constitutional right granted under the Fourteenth Amendment. In the opinion, authored by Justice Samuel Alito, the Court finds the right to abortion "is not deeply rooted in the Nation's history and tradition" and the Fourteenth Amendment "clearly does not protect the right to an abortion." The majority opinion tries to assert that the decision does not interfere with previous decisions regarding LGBTQ+ civil rights. The Court, according to the majority opinion, argues that previous cases relating to same-sex relations and marriage will not be impacted by the Dobbs decision as they "do not destroy a 'potential life.'" However, in a concurring opinion authored by Justice Clarence Thomas, the Court must reexamine "substantive due process' cases, which include Obergefell v. Hodges (2015) and Lawrence v. Texas (2003), to 'correct the error in those precedents.'" Due to this opinion, LGBTQ+ advocates and lobbyist organizations have signaled this case as a rollback of previously gained civil rights. This research project aims to see if Dobbs v. Jackson Women's Health Organization would negatively impact LGBTQ+ rights. I will explore these claims in three specific areas: bodily autonomy in terms of gender-affirming healthcare, the legal recognition of same-sex marriages, and intimate same-sex relations.



Oral Presentations B

3:00 – 4:15 p.m.

Bachmann Main Building Room 316

Creating Change with a Basis of Human Dignity

Kylee Bowen and Joseph Kendrick

Living Like Francis: Caring for the Poor, the Vulnerable, and Creation

Supervising Professor: John V. Kruse, PhD

For our presentation, we will provide an overview of our experiences during our “Living Like Francis” event and address how our event relates to the life of St. Francis, as well as Pope Francis’s teachings in Laudato Si’. Specifically, our presentation will demonstrate how the service project allowed us to practice and gain a deeper understanding of the teachings of both St. Francis and Pope Francis by embracing all creatures as brothers and sisters of God, caring for creation, and respecting the human dignity of our fellow human beings. The presentation will portray the value of service and caring for the poor, vulnerable, and all creation.

Haley Craft

The Link Between Occupational Therapy and Human Dignity/Care for Creation

Supervising Professor: John V. Kruse, PhD

Occupational therapy provides important skills that allow patients and students to be independent in their activities of daily living. However, occupational therapy is not equally accessible around the United States. Many students and patients go without this essential branch of healthcare because it is unavailable. This presentation will explore the link between equal access to occupational therapy and the respect for human dignity and care for creation. An in-depth explanation on occupational therapy services will be provided with relevant information on why the service is important. Laudato Si’ will also add information to further prove that equal access to occupational therapy promotes respect for human dignity and care for creation.

Joseph Kendrick

Utilizing Virtual Reality to Address the Needs of Learners with Intellectual Exceptionalities

Supervising Professor: Marisa A. Rauscher, PhD

Imagine having the opportunity to practice a skill without requiring the physical capabilities to promote the development of one’s skills. Virtual Reality (VR) brings real world experiences to life. VR provides an individual with the opportunity to immerse themselves in an interactive environment, where one encounters realistic experiences in a virtual setting. VR technology is commonly used for entertainment, but the benefits expand upon the realm of amusement and have more practical uses. In fact, VR has the potential to become a significant form of assistive technology in an educational setting. Educators must meet a variety of students’ necessities in their classrooms and assistive technology provides a solution to meeting the needs of

individuals with exceptionalities. My presentation will examine how VR technology is an effective tool to address the needs of learners with intellectual exceptionalities because VR simulates real-life situations to provide opportunities for learners to sharpen their life skills, practice social skills, and give them a sense of control and safety during their learning.



Oral Presentations C

3:00 – 4:15 p.m.

Bachmann Main Building Room 317

How Outcomes Can Be Influenced

Mercedes Echevarria

Proposing an Intervention Program to Reduce Perfectionistic Concern and Academic Anxiety for College Students

Supervising Professor: Etsuko Hoshino-Browne, PhD

Past research has indicated that perfectionism is not always negative. Adaptive perfectionism such as perfectionistic striving can be a good source of academic motivation. However, maladaptive perfectionism such as perfectionistic concern which is characterized as socially oriented evaluative concern (e.g., concern about how others view one's mistakes) has been shown to be positively correlated with academic anxiety. Some past studies tested the effectiveness of an intervention for maladaptive perfectionism. A frequently used intervention in these studies was cognitive behavioral intervention which focuses on self-reflection and anxiety management techniques. This intervention was shown to be helpful in reducing perfectionistic concern and academic anxiety. However, in these studies, the intervention program was often short, and the effectiveness was measured immediately after the intervention was completed. There is a strong need to examine not only how effective an intervention is but how long the positive effects of the intervention would last in reducing maladaptive perfectionism and academic anxiety. In this presentation, a plan to test the long-term effectiveness of an intervention for perfectionistic concern and academic anxiety is proposed.

Brandon Wiggins

Voter Suppression: Does It Work?

Supervising Professor: Richard Sayers, PhD

I will be exploring if certain laws that suppress the vote have an effect on voters and influence an election.

Darius Turner

How to Shift the Engagement of Professionalism for Minority Communities

Supervising Professor: Richard Sayers, PhD

I would like to speak about how professionalism should be more inclusive of different communities and cultures. To bring awareness of this I would like to speak on my accounts and what I think should be done to be more inclusive.



Poster Symposium

4:30 – 6:00 p.m.

Bayada Atrium, Mirenda Center

ART

Supervising Professor: Glenn Holmstrom

Kylie Fitchett

A01

My Photo Essay

The work that I am currently doing tells a story that is almost forgotten about. I was given an opportunity to do an independent study class and the objective for the class was to create a photo essay with the photos I take every week. I was able to choose anything to make a photo essay out of and I chose abandoned places. I chose this topic because capturing the abandoned places tells a story of what it once was and keeps the story of what it was, alive. Before I chose this topic, I never realized how many abandoned places/things were out there because you don't really pay attention to it. Since I have chosen this topic, I have become so interested in the stories, history, and what once was in abandoned places. It is difficult to describe the feeling, especially when you can explore inside or up close. One week I was able to go inside an abandoned farmhouse and the feeling was so creepy but so cool. There was syrup on the table, things on side tables next to the couches, dressers, beds that were made, and a whole lot of history and stories. The house has been sitting for decades. That is what is so interesting about my photo essay topic. You can explore the inside of a farmhouse that is deteriorating, but there was once everyday life there and you can picture it and create a story in your mind. What's even more beautiful is it can all be captured through photos, and the photos will tell the story or help you make out what once was.

BIOLOGY

Supervising Professors: Matt Mastropaolo, PhD; Patricia Strobl, PhD; Rachel Welicky, PhD

Jiline Barthelus

B01

Cranberry Extract Inhibits Candida albicans Growth

In the United States, 95% of vaginal yeast infections are caused by *Candida albicans* which can cause itchiness, redness, and severe inflammation. The infection is typically treated with an anti-fungal cream or oral medication. Based on previous research, the role of cranberries in the treatment of yeast infections was investigated with no conclusive evidence. This study investigated the role of cranberry extract in the growth of *Candida albicans*. Serial dilutions of cranberry extract were inoculated with *Candida albicans* in yeast malt broth. After placing the tubes in the shaker to incubate at 37C for 24 hours, The mixture was plated on

Sordaria crossing agar to record the growth of the yeast. Results showed that cranberry extract inhibits the growth of *Candida albicans* at final dilutions of $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{8}$ but not $\frac{1}{16}$ after 24 hours of incubation. These findings suggest that direct contact with cranberry extract may have the potential as a natural alternative or supplement to traditional anti-fungal treatments for yeast infections.

Tori Burgess

B02

Effectiveness of Chemical vs. Mineral Sunscreen on Lemnoideae Growth

Sunscreen is used to protect skin from UVA and UVB, the UV rays from the sun that penetrate our skin causing it to burn over time and can damage the DNA in skin cells. There are two different types of sunscreens available: chemical and mineral. Chemical sunscreens have active ingredients of avobenzone and homosalate that are able to absorb the UV light to protect the skin. Mineral sunscreen uses zinc oxide and titanium dioxide in order to reflect the light off of the skin to protect it. For this experiment, in order to test which sunscreen is more effective Lemnoideae was used. Dark brown glassware and watch glasses, the Lemnoideae, duckweed, was counted and sorted into each jar and the glass plate was covered with 1.5g of either the chemical or mineral sunscreens. The jars were placed under plant lights with continuous light exposure. The two controls used, one with nothing blocking the watch glass and the second was covered in aluminum foil to block out all light. The sunscreen was washed off and reapplied daily for several days. The results suggest that the Lemnoideae may be used as an indicator for effectiveness of sunscreen blockage of sun rays.

Brianna Butts

B03

The Increased Rate of Regeneration of Brown Planaria in Calcium Chloride

For many years scientists have been researching ways to increase the rate of regeneration. *Dugesia dorotocephala* is one of the model organisms with the ability to regenerate multiple times after being cut. This ability is due to the rapid accumulation of neoblasts to the source of wound site of the planaria. Both humans and planaria are sensitive to several factors that can affect the rate of wound healing. Recent research has shown that the rate of regeneration can be increased when planaria are in environments containing calcium chloride. In this experiment the rate of regeneration of planaria was examined in 0.385mM, 0.77mM, and 1.54mM of calcium chloride. This experiment was performed to determine which concentration of calcium chloride resulting in the fastest regeneration rate. Observations of the rate of regeneration of *D. dorotocephala* were made every 3-4 days for two weeks. The fastest regeneration rate with the planaria that had completely regenerated were observed in the group of 1.54mM of calcium chloride.

Najae Davis

B04

The Inhibition of Cranberry Extract on Bacteria Commonly Found in Urinary Tract Infections

Recent studies have uncovered an emerging problem when it comes to antibiotic treatment for patients. Bacteria are rapidly growing resistant to many of the common antibiotics physicians prescribe. This is an increasing issue for women who face a 50% chance of contracting a urinary tract infection (UTI). Untreated UTIs can later impede one's health as the infection continues to spread.

One of the newer therapeutic treatments being tested by scientists is the use of cranberries. Cranberries contain flavonoids and polyphenols that make it difficult for bacteria to stick to the urinary wall and inhibit the growth of bacteria. In this experiment cranberry extract was tested with two of the most common UTI bacteria: *E. Coli* and *K. pneumoniae*, using the Kirby Bauer disk diffusion method.

Plated bacteria showed noticeable zones of inhibition caused by the cranberry extract. The extract was able to inhibit the growth of both bacteria; however, *E. Coli* showed greater inhibition than *K. pneumoniae*. The results demonstrated direct inhibitory properties of cranberry extract on the growth of both these bacteria commonly found in urinary tract infections.

Kamryn Englert

B05

Instrument to Instrument Correlation of Therapeutic Drug Assays

In the clinical chemistry lab most of the tests can be completely automated. With automation comes instrumentation that can vary in how the tests are completed. Monitoring and validation of test performance is a routine task for quality assurance in clinical laboratories. The Beckman Coulter Au5800 is a clinical chemistry instrument capable of completing hundreds of different tests a day. A smaller, newer version of this instrument is called the Beckman Coulter Au700. These two instruments share the same reagents, and have the capability of running the same tests. In order to start performing tests on patient samples, validation of the new 700 is necessary.

Therapeutic drug monitoring, or TDM reagents can be very unstable. Originally these TDMs were only run on the 5800, however they needed to be moved to the 700. Five different TDM reagents were tested (valproic acid, gentamicin, phenobarbital, tobramycin, theophylline) on both analyzers with a combination of real patients, and proficiency samples. The five TDM tests performed well on both analyzers producing results within the expected ranges. They both ran stably, and therefore validated that the results the 700 produces are acceptable for patient samples.

Joshua Fields

B06

Bactericidal Capacity of Copper Surfaces on Staphylococcus Aureus

Sterile practices have become increasingly difficult to maintain as antibiotic and disinfectant-resistant microbes have become more prevalent. These microbes have acquired resistance to conventional sterile practices; as a result, more effective and progressive methods are necessary to maintain public health. Recent research reveals copper surfaces destroy a range of microbes such as viruses, bacteria, and fungi through a method called contact-killing. Contact-killing is the term used to describe copper's capacity to kill microbes through physical contact. Integration of copper onto frequently contacted surfaces could enhance sterile techniques and limit Healthcare-associated infections. This experiment investigated the efficacy of contact killing on *Staphylococcus aureus*, and whether copper antimicrobial properties can be harnessed to improve sterile techniques. *Staphylococcus aureus* was inoculated on copper and stainless-steel coupons for comparison. The coupons were incubated at room temperature for one hour, two hours, and 24 hours. The copper coupons at each time interval revealed a significant reduction in microbial growth when compared to steel coupons. Copper contact-killing capacity became increasingly effective as *Staphylococcus aureus* exposure time to copper increased. The results from this experiment suggest copper contact-killing is highly effective as a bactericide.

Jasimen Handy

B07

Antimicrobial Effects of Tea Tree and Lavender Oil

Treating facial acne often involves harsh chemicals that may damage the skin's natural protective barrier. Often, acne is treated with over-the-counter acne products or prescription medication from a dermatologist. This study will investigate natural remedies to treat facial acne. *Staphylococcus aureus* and *Pseudomonas aeruginosa* are two bacteria commonly found on the skin. Both strains may become opportunistic pathogens under certain conditions. Essential oils such as lavender and tea tree oil have been shown to have antibacterial properties. *S. aureus* and *P. aeruginosa* were treated with different dilutions of lavender oil and tea tree oil (diluted in 70% ethanol). The plates were grown at 37C for 24 hours and checked for zones of inhibitions. The results showed that the most concentrated samples will have the largest zone of inhibition. Lavender oil and tea tree oil can be used as a natural remedy to treat facial acne as well as other possible bacterial infections. Further research could investigate using essential oils as alternatives to treat bacterial infections and combat antibiotic resistance.

Tommy Jimenez

B08

Effects of Different Visible Light Wavelengths on Yeast Growth

Saccharomyces cerevisiae, a single-celled fungus, is used in baking and alcoholic fermentation worldwide. The aim of this study is to investigate the role of the visible wavelengths of light (380 nm blue -780nm red) on the growth of *Saccharomyces cerevisiae*. In order to test this, six groups in duplicate corresponding to white light were used. The six groups in duplicate include the wavelengths of light in red, yellow, green, blue and no light. The tubes were covered in foil and placed in a dark room with two light sources of 120v bulbs equidistant from a rack on a shaker. The absorbance of each tube was recorded every hour for four hours. The results depicted that blue light is most effective in inhibiting the growth of *S. cerevisiae*. Moderate yeast growth was observed at other visible wavelengths with yellow light being showing the highest rate of growth of *S. cerevisiae*. Thus, *S. cerevisiae* growth was affected by the different visible wavelengths of light with the highest growth increase under the yellow light. (Results are preliminary.)

Sarah Leyeh

B09

The Use of Ethanol Vapor Against Aspergillus

Bread mold growth has been a considerable problem for many centuries. Preservatives have been added to loaves of bread to expand their life span. The most common preservatives include propionic acid, potassium sorbate, sorbic acid, benzoates, and acetic acid. Many people believe ingestion of these preservatives add too many chemicals to our bodies. This has persuaded people to buy fresh baked bread that has no added preservatives, yet the life span is often very short. Fresh bread tends to last 4-5 days while bread with added preservatives tends to last for 7-10 days.

Scientists and bread factories have been trying to find an effective way to prevent mold growth without the use of so many chemicals. Many natural compounds have been tested and failed. However, alcohols have shown some promising results in bread. Applying ethanol to bread successfully prevents the mold growth. However, addition of liquid alcohol to bread is not a viable solution and conveys more added chemicals. Vapors of ethanol were tested and shown to prevent mold growth in a safer way. In this experiment, farm-style bread was exposed to vaporized 95% of ethanol. The ethanol vapor used prevents mold growth on bread that does not contain any added preservatives for at least 14 days.

Ulises Nunez Rodriguez

B10

Brown Planaria Regeneration Effect on Phototaxis and Chemotaxis

Brown planaria (*Dugesia dorotocephala*) are predominantly freshwater flatworms that possess regenerative abilities. They are widely used for scientific research on regeneration, aging, and memory retention. Despite their extensive participation in stem cell research, there is very little known about planaria's capacity to effortlessly regenerate their head and tail. While incredibly adaptive, planaria prefer to live in dark environments and are known to be carnivores; they feed on smaller invertebrates. This experiment seeks to understand if there are any significant behavioral differences between non-regenerated and regenerated brown planaria. Essentially, the focus is to observe any distinctive changes in brown planaria's reaction to different lights and chemicals. Both non-regenerated and regenerated planaria were cultured under the same conditions. To conduct the experiment, both groups of planaria were exposed to varying colored films and food sources. Preliminary results have shown that both non-regenerated and regenerated planaria seem to have no particular preference over egg yolk or beef. In addition, non-regenerated planaria seem to prefer yellow light, while regenerated planaria show an inclination to red light. Ultimately, both groups have shown an aversion to natural light.

CLINICAL CHEMISTRY/MOLECULAR DIAGNOSTICS, MS

Supervising Professor: Jude Okoyeh, PhD

Abenet Addisu

C01

The comprehensive evaluation of BioFire FilmArray multiplex PCR respiratory panel for detection of pathogens in hospitalized patients

Respiratory tract infections are one of the most common diseases in children and adults. Routine detection methods have frequently failed to identify infectious diseases accurately, especially for viruses. The FilmArray respiratory panel was designed to test for a comprehensive set of 21 respiratory pathogens that are commonly associated with respiratory infections. The FilmArray respiratory panel 2.1 (RP2.1) is increasingly becoming the gold standard in hospital healthcare systems due to its fast and comprehensive testing capability. It offers a run time of about 45 minutes which enables high efficiency and throughput while providing clinicians vital information to make better-informed diagnosis and treatments for patients in small time periods. The panel menu includes popular viruses such as coronaviruses, influenza viruses, and a number of different viruses that cause the common cold such as rhinovirus, parainfluenza, and adenovirus. It has an overall 97.1% sensitivity and 99.3% specificity to related organisms and can also provide information about patients with co-infections with overlapping symptoms. In some reports, there have been as many as 20% of COVID-19 patients that have co-infections with another respiratory virus. Most importantly, the BioFire FilmArray respiratory panel has been shown to significantly reduce the duration of ICU stays by 30% as well as the duration of antibiotic usage by about 15%. This review is a comprehensive evaluation on the FilmArray multiplex PCR respiratory panel and the impact it has in the hospital acute care setting.

rakshitha balajee

C02

Evaluating the Most Accurate and Reliable Methodology for Detecting Methicillin Resistant Staphylococcus aureus (MRSA)

The rise in antibiotic resistant microorganisms has created a global crisis due to the increase in susceptibility to humans to these organisms. The annual incidence of *Staphylococcus aureus bacteremia* in the United States is 38.2 to 45.7 per 100,000 persons, and it is the major cause of hospital-acquired infection worldwide. The virulence factors such as the presence of enterotoxin B in *Staphylococcus aureus* has made the detection of the bacteria much simpler, as this aids in early detection which affords the patient a chance to receive early treatment thereby providing better prognosis. Methicillin-resistant *Staphylococcus aureus* is a group of gram-positive bacteria which are resistant to common antibiotics. A method that is rapid, specific and has a high sensitivity is regarded as the most effective method for detecting early infection by MRSA. Methods that have been evaluated in this study include mass spectrometry, detection of enterotoxin B by PCR methods, use of CHROMagar and the use of enhanced raman spectroscopy.

Brielle Flynn

C03

Cepheid GeneXpert System

The Cepheid GeneXpert System uses advanced technology to detect the nucleic acids of various pathogenic microorganisms in patient samples. The Cepheid GeneXpert System uses a form of polymerase chain reaction (PCR) called reverse transcriptase polymerase chain reaction (RT-PCR). Reverse transcriptase converts RNA into a complementary DNA strand allowing for the detection of colonization/infection caused by RNA viruses. It is also capable of using PCR methods to detect bacteria. The GeneXpert performs a multitude of tests, including SARS-CoV-2, Methicillin-Resistant Staphylococcus aureus (MRSA), Clostridium difficile (C. diff), Group B Streptococcus (GBS), etc. These tests cannot establish whether the infection is active in the body, only that the infection is present qualitatively (not numerically). The only portion that is quantitative is the cycle threshold for the viral load. It is possible to use other methods to accurately identify the presence of infection; however, RT-PCR is a rapid method that is very accurate, with 98-99% sensitivity and 80% specificity. Additional that can accurately identify these pathogenic microorganisms include the Hologic Panther (SARS-CoV-2), PBP2a (MRSA), Complete Chek (C. diff), and the Aries (GBS). In all, the Cepheid GeneXpert is a crucial tool to have in the lab due to its ability to detect an infection in a short amount of time.

Jeremiah Serad

C04

Three-Dimensional Serum Protein Electrophoresis & Immunofixation Technologies

When reading serum protein electrophoresis (SPE), what information do you gain from it? Yes, you can obtain your protein levels, and you can also obtain what the ailment could possibly be, but are you getting all the information you need? Is it possible that the technologist and the pathologist are missing key information? By adding a third dimension to the SPE, more data will be revealed to aid you in your interpretation of the data.

By adding a Z-axis to the serum protein electrophoresis, more data becomes accessible and able to be utilized. Gamma spikes are of particular interest as that area contains information on Monoclonal Gammopathy of Unknown Significance (MGUS). Mostly associated with cancers, this is why it is of such vital importance. By being able to see behind the spike and quantify which immunoglobulins are present, a detailed diagnosis can be determined. After all, patient care is of the utmost priority. With this new axis added, new information will become available to doctors that can help save patients and improve their quality of life.

HONORS PROGRAM

HNR 220 – Sophomore University Honors Seminar

Supervising Professor: Janis Chakars, PhD

Dane Crilly

H01

Picture of Health: An Investigation of Direct to Consumer Pharmaceutical Advertisements

This study examines pharmaceutical advertisements in discussion with the impact of pharmacologic treatments on some of the world's top economically burdening diseases. One of the great downfalls of healthcare is its focus on the illness rather than the promotion of wellness; problems are addressed upon appearance rather than being avoided through early prevention and improvement. Most of these economically burdening diseases are preventable and, in some cases, reversible by non-pharmacologic means or lifestyle alterations. Pharmaceutical advertisements pose an interesting example of the resources expended on glorifying the treatment of disease in stark contrast with the lack thereof on preventative measures like dietary or lifestyle changes. The nobility of pharmacological therapies is in no way in question through this study, as the necessity is clear. Though this study focused primarily on the pharmaceutical advertisements, the implications point to a future of successful preventative measures employing the same measures that the uniquely profitable pharmaceutical industry has mastered in direct to consumer advertisements in the United States

HNR 420 – Senior University Honors Seminar

Supervising Professor: Richard Sayers, PhD

Angelina Marone

H02

How to Address Health Disparities Within the Transgender Community

According to the CDC, health disparities are inequitable results from health care experienced by socially disadvantaged populations (CDC, 2019). People within the transgender community are those who do not identify with the gender assigned to them at birth. This impacts them tremendously on a daily basis, and even more so in a healthcare setting. Most of the mental health disorders faced by the transgender community such as anxiety, depression, and suicide are preventable or highly manageable. Because of the health disparity they face, they are often reluctant to seek care thus resulting in poorer health outcomes. To help any community, it is imperative to ask them of their needs and meet them where they are. I intend to connect with students within the transgender community, in the Delaware Valley Region of Pennsylvania, to better understand their concerns within healthcare. In hearing those worries, I will further my research to help promote comfort and access to healthcare for this population.

Leanna Nguyen & Lelah Tehmeh

H03

The Outdoor Pantry Project

Change often starts with one person, but with this project, it starts with two. Now more than ever, studies show that over half a million people in this country are homeless or home insecure (Security.org, 2023). More

specifically, the percentage of Persons in Poverty in Aston Township currently stands at 5.7% when compared to the county average of approximately 10.1% (Census.gov). As a result, basic necessities are often difficult to afford or attain, across the country, and in Aston, PA. With our approach, an outdoor pantry will be implemented to address these key issues plaguing the American people... or so we thought. This journey has been unlike any other. We started off with an idea to build an outdoor pantry and to address a need but ended up with something much more. Throughout our journey, we were consecutively rejected by institutions, churches, and even the local government. Through every rejection, we gained more grit and even better opportunities. Through this we learned that it is difficult to build something out of nothing, and like Rep. Krueger stated, "Social change is never as easy as it seems." Although we could not build a physical pantry in this story... this project is still developing.

Sophia Parrish

H04

Vital Need for Mental Health Focus in Rehabilitation of Injured NCAA Athletes

As the level of competition rises heavily among collegiate athletes with each generation, so too do the pressures, both physically and mentally, with being an athlete. By record of the National Collegiate Athletic Association (NCAA), one of the most pressured populations in athletics who make up a heavy portion of the total athletic population each year is injured athletes. Not only do injured athletes go through the most common athletic pressures including performance, time management, etc., but they must also endure additional mental challenges such as fear of reinjury, isolation, and emotional overload. This research focuses on examining the rehabilitation journey for an athlete through the lens of a mental health focused perspective. Secondly, it also aims to outline how promoting various aspects of psychological and emotional health during injury rehabilitation leads to a better, more efficient overall recovery along with quality of life.

Maria Ramunno

H05

The Post-Pandemic Evolution of Mathematics Teaching: An Effective Teaching Pedagogy Using Traditional and Virtual Methods

Impacting every aspect of our daily lives, COVID-19 has forced us to adapt. Due to the government-issued lockdown during 2020, which included the closure of schools, the education system had to accommodate for students participating online. When schools reopened and ran fully in person, a learning loss was observed in students of most grade levels, impacting mathematics courses most prevalently. By exploring how the education of mathematics has changed due to COVID-19 and analyzing studies/surveys addressing the affected students and educators, advantages of learning mathematics online were noted, including beneficial recorded lectures, the ability to learn at one's own pace and refining skills in critical-thinking. However, because there was a learning loss observed, disadvantages were also guaranteed from online-learning. These included the overall effectiveness of online learning, the ability for academic dishonesty, the increase in math anxiety, as well as the exposure of the digital divide. Through the analysis, the following recommendations can be made to ensure mathematics learning becomes more effective: the utilization of video recorded lectures, using participation and practice to ensure student engagement, and implementing various software and platforms to further immerse the students in the material. The most successful teaching pedagogy for mathematics courses in a post-pandemic environment includes utilizing both traditional and technological teaching methods, which will increase effectiveness of face-to-face classes. Educators and schools can use this pedagogy to successfully teach their students mathematics.

PRE-PHYSICAL THERAPY

Supervising Professor: Kathleen Swanik, PhD

Morghan Stiles

PP01

Advances in Science Have Not Lowered the Incidence of ACL Injury

ACL tears are a prevalent injury among athletes, averaging about 100,000 to 200,000 per year. According to the NCAA in 2012, more than 2,000 collegiate athletes will tear their ACL in a given year. Moreover, there has been an increase in the incidence of injury in the NFL from 2013 to 2020. This is a season-ending injury that is devastating at any level, from high school to professional. However, there is data that suggests there are measures that can be done in order to decrease the risk of injury.

Substantial research has been done on what factors predispose someone to harm, such as the Q angle, quadriceps dominance, and hip strength. The Q angle refers to the angle formed by the iliac of the pelvis to the patella. The steeper this angle is, the greater the risk of injuries like patellofemoral syndrome, ACL injuries, stress fractures, etc. Quadriceps dominance refers to greater strength in the quadriceps than the hamstring muscles. The quadriceps increase stress on the ACL, while the hamstring works to decrease strain on the ligament. So, if there is an imbalance between these muscles, the ACL experiences greater force. Lastly, weakness of hip abductor can cause the lower extremities to fall into valgus position; the most common alignment in which the ACL gets torn.

All these circumstances are more common in females compared to males, therefore creating an overall greater risk for females. However, there are prevention programs that target individual risk factors, and if followed correctly, minimize incidence of injury. Although we know all this information, the number of ACL tears per year has not decreased.

PSYCHOLOGY

PSYCH 403 – Independent Research I

Supervising Professor: Etsuko Hoshino-Browne, PhD

Samantha Berry, Judith Colt, & Emily Elliott

PS01

College Students' Perfectionism, Procrastination, Anxiety, and Self-Compassion

Among college students, procrastination is pervasive. While some procrastination may be helpful for creativity and idea incubation, a number of past studies indicated that a frequent antecedent of procrastination is perfectionism and anxiety. For instance, some studies indicated a moderate positive correlation between perfectionism and anxiety, between procrastination and anxiety, and between perfectionism and procrastination. A few past studies also demonstrated a negative correlation between self-compassion and perfectionism and between self-compassion and procrastination. However, very few, if any, of the past studies examined all four variables together to determine the associations between perfectionism, procrastination, trait anxiety, and self-compassion. Therefore, we collected data from 108 Neumann students. As expected, we found that a moderate positive correlation between perfectionism and trait anxiety. The correlation between perfectionism and self-compassion and the correlation between procrastination and self-

compassion were both moderate and negative. Also, as predicted, we found a strong negative correlation between trait anxiety and self-compassion. The correlation between perfectionism and procrastination was positive but unexpectedly weak. Although we expected that the correlation between procrastination and anxiety would be positive and moderate, the result indicated that those variables associated strongly. Because the directionality of the strong positive correlation between procrastination and anxiety is unknown, future research needs to address it. The importance of having self-compassion in counteracting maladaptive perfectionism and procrastination is discussed.

PSYCH 460 – Senior Psychology Seminar

Supervising Professor: Amanda Breen, PhD

Kathryn Collins, Katya Linton, & Anissa McNichols **PS02**

Can Authority Figures Influence Students to Use Their Manners?

The Knight's Café is a place for students to rest, mingle, and enjoy a quick meal in between classes. It is important to recognize how hard Knight's Café employees are working to keep the students feeling comfortable and cared for. Therefore, we conducted a study with the goal of increasing the use of manners toward the Knight's Café staff. For our study, we displayed posters around Knight's Café where they are visible to students, especially during the lunch rush. The poster consisted of a photo of Sister Linda DeCero saying "please and thank you costs nothing" to encourage students to take an authority figure's advice to show respect to the workers who serve them in the café. We observed how often students and staff said "please and thank you" to Knight's Café workers. We found that after we displayed the posters, the frequency of students saying "please and thank you" increased. This study showed that an authority figure had a significant effect on saying "please and thank you" in the food service setting.

Nick Cramer, Mercedes Echevarria, & Alana Lamplugh **PS03**

Increasing Commuter Students' Use of Knights' Pantry at Neumann University

The Knights' Pantry is a resource at Neumann University, designated to support food security, health and wellbeing for all students. Despite the accessibility of the Pantry, commuter students remain unaware and disconnected from the resource. To counter the lack of engagement and interaction amongst commuter students, a combined intervention approach is proposed. The present study investigates the effectiveness of a multidimensional intervention procedure: hosting a pop-up event and implementing social media tactics on increasing Neumann commuter students' use of Knights' Pantry. We used Knights' Pantry official Instagram platform, as well as our personal social media accounts as a means of promotion for the pop-up event. During the event, we gave away goodie bags provided by Knights' Pantry to commuter students, while simultaneously advertising the Pantry and its available resources. Data regarding commuter use of the Pantry prior to the intervention will be provided by Knights' Pantry directly. It is hypothesized that both the pop-up event and the use of social media will encourage Neumann commuter students to engage with Knights' Pantry more frequently. Further data collection will be presented at the LEAD conference.

Emily Elliott, Daniya Harris, & Jadera Jordan

PS04

Increasing the Number of NU Students Who Attending Daily Mass

The goal of this study is to increase NU student attendance at the daily mass in the chapel in Bachmann. Neumann University holds mass every day at 12pm which allows staff and students to come in for a short time to partake in worship, however very few students actually attend. With this knowledge, there was a desire to want to increase student attendance. This naturalistic observational study used the medium of different posters to show peer involvement in order to increase mass attendance. The data was collected 2 weeks prior to the intervention, 2 weeks during intervention (when posters were posted around campus), and 2 weeks after the intervention. The data collectors counted the number of students at mass approximately 3-4 times each week. It was hypothesized that with the increase of posters that show peer involvement, the number of students who attend daily mass would increase. The results of data collection will be analyzed and presented at the LEAD conference.

Linda Fernandez-White, Maura Kern, & Angela Quillen

PS05

Increasing Awareness and Usage of the University Campus Ministry Center

One open and welcoming space at Neumann is the Campus Ministry Center; unfortunately, many students are unaware of the center and the hospitality of Campus Ministry leadership. The purpose of this study was to increase student awareness of the Campus Ministry Center at Neumann University. We hypothesized that incorporating incentivization in poster advertisements would influence student behavior and increase foot traffic in the center. To increase the number of students who use the Campus Ministry Center, we placed posters offering a free prize for visiting the center in high-traffic areas around Bachmann Main Building. The results of the study will be presented at the LEAD conference.

Jordan Johnson, Alexis Rivera-Manning, & Lynnewood White

PS06

The Relationship Between Descriptive Social Norms and Positive Social Behaviors.

One of the biggest challenges that many eating establishments like the Knights Café face is how to maintain a clean environment. Past research has shown that one strategy that may be effective at increasing this type of cooperative behavior is appeal to descriptive social norms. The current study's purpose was to see if the use of descriptive norms around cleaning would increase how often people cleaned up after themselves at the Knights Café. We conducted an observational study to examine if an appeal to descriptive norms would increase self-cleaning, which we defined as throwing away their personal trash and wiping down their area with disinfecting wipes. We did this by posting a sign in the Knights Café that said, "Join your fellow NuKnights staff by participating in self-cleaning. More than 80% of NuKnights help the staff by wiping down your personal area!" We predicted that there would be an increase in self-cleaning after Knights Café customers were exposed to the descriptive social norm and they were provided with disinfectant wipes to clean their tables. The results of the study will be discussed at the LEAD conference.



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Our presentation and poster judges:

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Dr. Janis Chakars
Dr. Devon Ferguson
Sr. Pat Hutchison, OSF
Prof. Jim Kain**

**Dr. Geoff Karabin
Prof. Rina Keller
Dr. Claudia Kovach
Dr. John Kruse
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