CELEBRATION OF

SCHOLARSHIP & CREATIVITY

WORCESTER STATE UNIVERSITY

2022

2022 Panel Presentation Schedule

Time	Location	Presentation 1	Presentation 2	Presentation 3
8:30-9:05	Foster Room, Student Center, and by Zoom at https://worcester.zoom.us/j/98532249110	**Autism Support Programs in Higher Education: A Survey of New England Institutions** Jasmine A. McDonough *Faculty Advisor*: Kristina Curro, Ph.D.	**Worcester and I-290** Gurmitt S. Dhalliwal *Faculty Advisor*: Alexander R. Tarr, Ph.D.	
8:30-9:20	Fallon Room, Student Center, and by Zoom at https://worcester.zoom.us/j/93925062550	**A Meta-Analysis Examining Clinical Drug Trials Funded by Western Pharmaceutical Companies in the German Democratic Republic, 1980-90** Grace Van Kirk *Faculty Advisor*: Jeanne, Moore, Ph.D.	**Political Themes in the Fear Street Film Series** Vincent T. Pellegrino *Faculty Advisor*: Anthony Dell'Aera, Ph.D.	**The History of Secondary Education Studies at Worcester State University** Anita L. Faath *Faculty Advisor*: Lila Teeters
9:30-10:20	Foster Room, Student Center, and by Zoom at https://worcester.zoom.us/j/92022147900	**How Food Insecurity in Places of Poverty Within the United States Affects Obesity** Emma Elk, Michael Do, Jane Vongvirath, and Nathalie Gillis *Faculty Advisor*: Mariana Calle, Ph.D.		
9:30-10:20	Fallon Room, Student Center, and by Zoom at https://worcester.zoom.us/j/99325287453	**Clinton Savings Bank and Worcester State Public Relations Campaign Project** Allison M. Coppinger *Faculty Advisor*: Emanuel Nneji, Ph.D.	**Clinton Savings Bank Madison M. Sklar** *Faculty Advisor*: Emanuel Nneji, Ph.D.	**Repairing the Cracks in the Museum Industry** Robert Megerdichian *Faculty Advisor*: Shiko Gathuo, Ph.D.
10:30-11:05	Foster Room, Student Center, and by Zoom at https://worcester.zoom.us/j/95317393894	**Mathematics of Tetris** Tommy Thach *Faculty Advisor*: Michael Winders, Ph.D.	**Mortgage Lending: Are There Any Biases for a Mortgage Approval in New England?** Delice K. Ndaie *Faculty Advisors*: Elena Braynova, Ph.D., Cleve Wiese, Ph.D., and Mary Fowler, Ph.D.	

CELEBRATION OF

SCHOLARSHIP & CREATIVITY

Welcome to the fifteenth annual Worcester State University Celebration of Scholarship & Creativity. This is one of the highlights of the academic year at Worcester State University as we showcase the wonderful creative and scholarly work of our students. We are especially excited that this year's program will be back in person, after two years remote.

We are enormously proud of the opportunities our undergraduate and graduate students have to embrace active learning locally, nationally, and internationally in concert with outstanding faculty mentors who are exceptional leaders in their fields. The day is filled with a variety of oral presentations, posters, exhibitions, and performances across disciplines of study from the natural sciences, allied health, arts, humanities, and social sciences.

Please immerse yourself today in this culture of active learning and savor the abstracts here as a window into what happens every day at Worcester State University.

Lois A. Wims, Ph.D.
Provost and Vice President for Academic Affairs

BIOLOGY

Demonstrating Virtual Reality Game Development for Human Visual Perception Research

Abdulrazak Frederick, Eric Rockwood, Thomas Clifford, and Andres Ovalles
Faculty Advisor: Luis Rosado, Ph.D.
Funding Source: Worcester State Foundation Student Research, Scholarship, and Creative Activity Grant; Academic Affairs Faculty Scholarship/Creative Activity Grant; and WSU Summer Undergraduate Research Grant Exhibition

Immersion in Virtual Reality (VR) is a critical goal in visual perception research. Using Oculus Quest-2 head mounted display (HMD) headsets allows us to immerse a "player" in a realistic yet simulated visual world. The computer programs Blender and Unreal Engine allow us to replicate real-world environments in VR for our research. Our lack of prior experience working with VR technology made this endeavor challenging and time intensive, but we have learned a lot through hard work and via online forums from the UE4 community. We will demonstrate our progression to a fully immersive VR experience from early 3D modeling and ultraviolet (UV) mapping to indoor lighting and VR hands. We will use a laptop and two Oculus Quest-2 HMDs to showcase our work.

Investigations of Ifih1 in Early Development

Michaela R. Hippert
Faculty Advisor: Daron Barnard, Ph.D.
Poster Presentation

The Ifih1 gene plays an important role in innate immunity. We have shown this gene is expressed in *Xenopus laevis* (African clawed frog) oocytes. Using cloning experiments, we have begun the characterization of this gene and its role in early development. After isolating oocytes from mature specimens and determining viability, we isolated total mRNA and performed reverse transcription. Using the predicted sequences for Ifih1, we amplified the gene sequence using Polymerase Chain Reaction (PCR). We plan to clone this into an expression vector for further characterization.

A DNA Barcoding Survey of the Distribution of Three Cattails Species (*Typha latifolia*, *Typha angustifolia*, *Typha x Glauca*) in the Worcester State University Vicinity

Sang Lam
Faculty Advisor: Aleel Grennan, Ph.D.
Funding Source: Worcester State University Honors Program Research Grant
Commonwealth Honors Project
Poster Presentation

The broad-leaf cattail, *Typha latifolia*, is a native species to North America that inhabits shallow water bodies. Recently, an introduced species, *Typha angustifolia*, and a hybrid species, *Typha x Glauca*, were found in the current native habitats, driving out native vegetation through dense monospecies stands. While identification through morphological features, such as leaf size, was adequate, the introduction of the hybrid species poses identification difficulty due to broad range in leaf size. This study aims to survey the distribution of these three cattails species which inhabit surrounding water bodies in the Worcester State University vicinity through DNA barcoding of universal RbcL and MatK genes as a reliable method for accurate identification of distinct different species of cattails.

Investigation of the Effects of Chloroplast Size in a Shade Plant Model
Amanda M. Lo
Faculty Advisor: Aleel Grennan, Ph.D.
Poster Presentation
Photosynthesis (the process by which carbon dioxide, water, and sunlight are converted into glucose and oxygen) is essential to plant growth and development. One factor that can affect a plant's ability to photosynthesize is the size of its cellular chloroplasts. In this experiment, we hypothesize that the enlarged chloroplasts of mutant *Arabidopsis thaliana* plants will allow them to grow more efficiently in low-shade conditions compared to wild-type plants due to differences in the amount of light absorbed. To test this, mutant and wild-type *A. thaliana* were grown in identical high-light and low-shade conditions. Leaf size, leaf number, flowering dates, chloroplast size, chlorophyll density, and leaf spectroscopy were measured between the mutant line and wild-type plants.

Auranofin Repurposing: A New Cure for Soil-Transmitted Helminth Infection?
Minh Cong Luong
Faculty Advisor: Yan Hu, Ph.D.
Funding Source: WSU Summer Undergraduate Research Grant
Poster Presentation
Soil-transmitted helminths (STHs) are parasitic roundworms of the small and large intestine, affecting approximately 1–2 billion people worldwide. Due to the cost and time of developing new drugs, researchers have been working on repurposing FDA-approved drugs for new applications. Recently, auranofin, a gold complex, showed great potential to treat several parasitic infections, including amoebiasis, giardiasis, and lymphatic filariasis. Using the roundworm *Caenorhabditis elegans*, we demonstrated that auranofin inhibits growth and fertility, and the thioredoxin reductases (TrxR) knockout mutants are more resistant to auranofin than wild-type worms. The anti-parasitic activity of auranofin against roundworms is partially attributed to the inhibition of TrxR.

Macroinvertebrates of the Tatnuck Brook
Cori A. Malmquist
Faculty Advisor: Diana Sharpe, Ph.D.
Funding Source: WSU Summer Undergraduate Research Grant
Poster Presentation
Macroinvertebrates (macroscopic aquatic organisms without a backbone) serve as excellent indicators of water quality in freshwater ecosystems. The goal of our study was to estimate the abundance of macroinvertebrates in the Tatnuck Brook, and then use these data to calculate a biotic index (a proxy for water quality). We collected a total of 1,248 individual macroinvertebrates belonging to 22 genera from five sites along the brook and identified them to the lowest taxonomic level possible (typically Genus). The most common macroinvertebrates found were blackflies, caddisflies, and flatworms. Using the abundance and pollution tolerance level of each macroinvertebrate, we calculated an overall biotic index for the stream. This index suggested that the Tatnuck Brook had very good water quality at the time of sampling.

Using Heart Rate as a Measure of Immersion in Virtual Reality Simulations
Rebecca Moore, Hannah Foster, and Abdulrazak Fredrick
Faculty Advisor: Luis Rosado, Ph.D.
Poster Presentation
The Ecological Perspective describes the evolution of human perception through the organism to environment connection. Within this framework, humans develop their perceptive abilities by interacting with their environments, which permanently joins action with perception. Through Virtual Reality (VR) environments, we can manipulate perceived visual environments to explore action and visual perception coupling more robustly. VR allows us to simulate visual perception, but only insofar as the individual is immersed in what they see. Thus, immersion determines to what extent one is enveloped by, included in, and interacts with a VR while feeling as if it were real. This study utilizes physiological heart rate responses to a VR visual cliff and links increased heart rate with increased immersion in a simulated visual environment.

Immersive Tendencies and Physiological Immersion in a Simulated Virtual Reality (VR) Environment
Hannah Foster, Rebecca Moore, and Abdulrazak Frederick
Faculty Advisor: Luis Rosado, Ph.D.
Funding sources: Worcester State Foundation Student Research, Scholarship, and Creative Activity Grant; Academic Affairs Faculty Scholarship/Creative Activity Grant; and Summer Undergraduate Research Grant
Poster Presentation
The Ecological Perspective describes the evolution of human perception through the organism-to-environment connection. Within this framework, humans develop their perceptive abilities by interacting with their environments, which permanently joins action with perception. Through Virtual Reality (VR) environments, we can manipulate perceived visual environments to explore action and visual perception coupling more robustly. VR allows us to simulate visual perception but only insofar as the individual is immersed in what they see. Thus, immersion determines to what extent one is enveloped by, included in, and interacts with a virtual environment while feeling as if it is "real." Some individuals have a greater propensity toward immersion than others. This study correlates an immersive tendency with immersed physiological responses in a simulated VR environment.

IL9 Data Identification: Completing the Database
Emma J. Polak
Faculty Advisor: Daron Barnard, Ph.D.
Poster Presentation
The genetic data for the *Xenopus* immunogenome are not well annotated within the Xenbase database. In an effort to add greater accuracy, this study focused on annotating Interleukin 9 (il9), which previously did not have a gene page within the database. An il9 gene in *X. tropicalis* and an il9-like gene in *X. laevis* were located. Using BLAST software to help identify patterns in the genomes of various organisms, this study was able to demonstrate that the *X. tropicalis* gene was consistent with other il9 genes across other organisms that possess the gene. An update was then submitted to Xenbase, which will result in a new page reflecting these findings.

Investigation of Intraspecific Variation of *Mitchella repens* Populations in New England Through DNA Barcoding
Saniya Sayed
Faculty Advisor: Aleel Grennan, Ph.D.
Funding Source: Aisiku Interdisciplinary STEM Research Team Initiative
Poster Presentation
This research aims to compare the DNA of *Mitchella repens* plants collected in New England and examine intraspecific variation. Leaf samples were collected from plants across New England and genomic DNA was isolated for DNA barcoding analysis. DNA sequences of this plant species were then determined by gel electrophoresis, which is a process that separates mixtures of DNA. These sequences will be explored from a database, and the genomic and phenotypic diversity of *M. repens* will be used to explore relationships between plants from different populations. The differences in pollination and reproduction will be compared and examined in depth.

BIOTECHNOLOGY

Characterization of Secreted Compounds Produced by the Blue Oyster Mushroom, *Pleurotus ostreatus*
Tallia E. Annese
Faculty Advisors: Roger S. Greenwell, Ph.D., and Susan Mitroka-Batsford, Ph.D.
Funding Source: Worcester State Foundation Student Research, Scholarship, and Creative Activity Grant
Graduate Project
Commonwealth Honors Project
Poster Presentation
Fungi are important organisms in the environment, responsible for breaking down dead and decaying materials for nutrient recycling. Some are recognized for the bioactive compounds they produce, which can have anti-bacterial, anti-fungal, or anti-cancer activities. This project focuses on the fungus *Pleurotus ostreatus*, the blue oyster mushroom. These fungi are white rot fungi that break down lignin in wood samples. When grown on expanded wood pellets, *P. ostreatus* has been observed to secrete an orange, water-soluble compound mixture that has an unknown function. Our goal is to grow the *P. ostreatus* under conditions where they produce these compounds, then harvest, extract, and separate the compounds to test if there is any anti-microbial or anti-biofilm activity, and then determine the molecular structure of these compounds.

Instrumental Analysis Experiment Design
Quinn C. Bradley
Faculty Advisor: Kathleen Murphy, Ph.D.
Poster Presentation
Instrumental Analysis (CH 470) is a chemistry laboratory course dedicated to giving students hands-on practice using analytical instrumentation. The lecture component of the course explains how the instruments detect the analytes, and the laboratory activities allow students to perform real-world experiments. To enhance student interest, this semester all the laboratory activities are examining “evidence” from the backseat of a person pulled over for speeding. The students’ data will be used to support the verdict of guilty or not guilty. The laboratory activities for this new approach to the course have had to be tested and developed before being given to the students. This poster describes the development of the methods for some of these designed experiments.

The Influence of Secondary Metabolites on Biofilm Production in a *Pseudomonas* Isolate
Benjamin A. Enos
Faculty Advisor: Roger Greenwell, Ph.D.
Funding Source: Worcester State Foundation Student Research, Scholarship, and Creative Activity Grant
Graduate Project
Poster Presentation
Members of the bacterial genus *Pseudomonas* are known for the biofilm they produce, which are critical to their survival and placement in their niches. We are studying an environmental *Pseudomonas* isolate recovered from soil that has demonstrated an extraordinary level of biofilm production. The whole genome of this organism has been sequenced and is most closely related to *Pseudomonas chlororaphis*, a bacterium used as a biocontrol agent to prevent fungal infections in plants. A comparative genomic analysis was conducted to identify genes that may be involved in biofilm formation, and genetic knockout mutants are being generated to assess their contribution to biofilm formation in this organism.

Examining What Makes *Mitchella repens* Grow in Isolated Clusters Despite Seemingly Identical Conditions
Brian Le
Faculty Advisor: Aleel Greenan, Ph.D.
Funding Source: Aisiku Interdisciplinary STEM Research Team Initiative Activity Grant
Poster Presentation
Mitchella repens (partridgeberry) is an evergreen understory plant which forms loose mats on the forest floor; it generally prefers mildly acidic and well-drained mesic soils. On our study site, soil granularity between clusters of partridgeberry and areas outside the cluster were found to be homogenous. This study aims to answer the questions: (1) Why is *M. repens* found in small clusters with no growth in surrounding areas despite seemingly identical soil conditions and (2) Does the soil microbiome differ between the sites with or without *M. repens* contribute to this? To answer these questions soil samples will be collected from three locations, two with different populations of *M. repens* and one without. The culturable microbial profile will be compared between these sites.

Optimization of Glucose Concentration in Embryonic and Extraembryonic Tissue in Institute of Cancer Research Mouse Embryos
Dulce R. Rodriguez and Kim Tremblay
Faculty Advisor: Daron C. Barnard, Ph.D.
Graduate Project
Poster Presentation
Understanding the developmental process that would ultimately lead to the formation of organs and tissues remains an important question in developmental biology. Establishing acceptable culture conditions that will preserve the embryo and extraembryonic tissue for long-term studies remains challenging. Diverse embryo culture techniques have been established since 1930; however, anomalies in the embryo start to display as early as 24 hours after culture initiation. While most embryo tissue culture focuses only on the embryo, we redirected our focus to both embryonic and extraembryonic tissue. In this research, embryonic and extraembryonic tissues from Institute of Cancer Research mice at day 8.5 of development were grown in culture at different concentrations of glucose and removed from culture at 24, 60, and 72 hours.

BIOLOGY and CHEMISTRY

Creation of Novel Antibiotics Using Zinc(II) Imine Complexes
Bradley Montanez, Eric Merriam, and Elvis Njoki
Faculty Advisors: Margaret Kerr, Ph.D., and Maura Pavao, Ph.D.
Funding Source: Aisiku Interdisciplinary Grant
Poster Presentation
Imines have known anti-bacterial and anti-fungal properties and coordination of imines to metals is known to enhance these properties. In order to create a library of complexes to study, coordination of different imines to Zn(II) has been accomplished. The synthesis, purification, and spectral identification will be presented for each complex. These complexes have been evaluated against various bacteria to determine their anti-bacterial activity. Bacteria tested include *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Escherichia coli*, and *Mycobacterium phlei*.

Microwave Synthesis of Imines for the Creation of Novel Antibiotics
Olivia Wright, Sarah Infantino, Camarlin Franco, and Elvis Njoki
Faculty Advisors: Margaret Kerr, Ph.D., and Maura Pavao, Ph.D.
Funding Source: Aisiku Interdisciplinary Grant
Poster Presentation
Imines were synthesized in high yield from amines and aldehydes using microwave irradiation. Microwave synthesis is considered to be an effective and environmentally friendly system. Studies were conducted to determine whether a solvent-free system or water as the solvent produced a higher yield. All imines have been characterized by infrared spectroscopy, proton Nuclear Magnetic Resonance (NMR), and melting point. Imines have known anti-bacterial and anti-fungal properties. These complexes have been evaluated against various bacteria to determine their anti-bacterial activity. Bacteria tested include *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Escherichia coli*, and *Mycobacterium phlei*.

BUSINESS ADMINISTRATION

Grow Education Project
Mustapha Dukuly
Faculty Advisor: Elaine Vescio, Ph.D.
Electronic Poster Presentation
I am the CEO and founder of Grow Education. Grow Education is a nonprofit group that helps students, researchers, and institutions in Logan Town, Liberia, who do not have easy access to information. The project was conceived in the aftermath of a civil war that destroyed infrastructure, including schools and libraries, as well as lives and properties, from 1989 to 2003.

BUSINESS ADMINISTRATION and PSYCHOLOGY

Social Media and Memory
Devon Signorine and Makayla Frantz
Faculty Advisors: Lagnajita Chatterjee, Ph.D., and Brittany M. Jeye, Ph.D.
Poster Presentation
Building off prior work on how taking and viewing photos can shape memory, the current project investigates whether the ways in which people interact with photos on social media influence what they subsequently remember. Participants are first shown a series of photos and asked to either comment on the image, provide a hashtag for the image, or select an emoji for the image. Participants' memories for the photos are then tested using an old-new recognition paradigm. If participants remember seeing the images, follow-up questions about the photo details and how they interacted with the images are then asked. Analyses will examine whether memory for the details in the photos changes depending on how participants interact with them.

CHEMISTRY

Synthesis of Para-Substituted Pyridine Ligands and Their Transition Metal Complexes
Rida Amroze and Hamza Khan
Faculty Advisor: Jeremy Andreatta, Ph.D.
Poster Presentation
Commercially available chelidamic acid has been used as a starting material for the synthesis of a series of new ligands with varied electronic characteristics. Transition metal carbonyl complexes of these ligands have been synthesized and studied by infrared (IR) spectroscopy to better understand the effects of the para-substitution on the electronic environment about the metal and how that might affect the catalytic performance in a variety of applications.

Trace Metal Analysis Using ICP-OES
Margaret Grady and Joseph Keddy
Faculty Advisor: Kathleen Murphy, Ph.D.
Funding Source: Worcester State Foundation Student Research, Scholarship, and Creative Activity Grant
Poster Presentation
Lead, iron, and copper can be toxic in drinking water. Water samples were collected throughout the Worcester State University campus and analyzed via inductively coupled plasma-optical emission spectroscopy to determine the presence and concentration of heavy metals. Samples were acidified and introduced into the instrument's plasma, causing any heavy metals present to be excited. As the excited electrons return to lower energy levels, the intensity of light emitted is related to the concentration of the element in the sample. For most metals analyzed, detection limits were between 5 and 10 ppb. Magnesium and sodium had the highest concentrations of 600-900 ppb. Only copper and iron levels of 10-220 ppb were present at a significant concentration. All samples had concentrations below EPA limits for drinking water.

Pharmaceuticals in the Blackstone
Joseph Keddy and Margaret Grady
Faculty Advisor: Kathleen Murphy, Ph.D.
Funding Source: Worcester State Foundation Student Research, Scholarship, and Creative Activity Grant
Poster Presentation
Over-the-counter pharmaceuticals have the potential to enter public waterways and have negative effects on the ecosystem. Although waste water goes through treatment plants, some of these molecules might not be effectively broken down and removed. HPLC (High-performance liquid chromatography) is an effective method in detecting the presence of these molecules. The focus of this project is to develop a method to detect three common pain reliever molecules in the Blackstone River: acetaminophen, ibuprofen, and naproxen. HPLC utilizes the different physical and chemical properties of molecules. To do this, the instrument creates a response that is then used to determine whether the molecules are present in the water sample.

Nitroxyl and GAPDH: A Potential Cancer Target Examined
Alisha L. Papadakis
Faculty Advisor: Susan Mitroka-Batsford, Ph.D.
Funding Source: Worcester State Foundation Student Research, Scholarship, and Creative Activity Grant
Commonwealth Honors Project
Poster Presentation
The main goal of this research is to find out if the enzyme Glyceraldehyde-3-Phosphate Dehydrogenase (GAPDH) is an appropriate cancer target. GAPDH is a protein that is involved in glycolysis and it is an attractive target to cancer therapy. The small molecule nitroxyl (HNO) will be studied to see if it affects the reactivity of this enzyme, and whether the inhibitory effects that are preliminarily shown are permanent or reversible modifications. Angeli's salt has been used as a means to create HNO in situ to test the effect it has on the enzyme activity of GAPDH. This reaction, conducted at different pH values, has also been studied and does show differences overall.

Synthesis of Tetherable Pyridine Diimine Ligands
Samuel Satnick
Faculty Advisor: Jeremy Andreatta, Ph.D.
Poster Presentation
Using chelidamic acid as a starting material, we have synthesized a tetherable pyridine diimine ligand to allow the supporting of a single-site transition metal catalyst to surfaces such as silica or titanium dioxide. These studies will potentially allow for ease of isolation, stability, and recyclability of catalysts materials that are the hallmark of heterogeneous catalysts while maintaining the high activity and selectivity that are so desired in single-site catalysts.

COMMUNICATION

Clinton Savings Bank and Worcester State Public Relations Campaign Project
Allison M. Coppinger
Faculty Advisor: Emanuel Nneji, Ph.D.
Oral Presentation
The public relations campaign program for Clinton Savings Bank, created during fall 2021, focused on creating a relationship between the bank and Generation Z (18-25 years old) young adults. This program was designed to help the bank develop clear, specific, and measurable objectives to determine awareness, acceptance, and action by prospective Generation Z customers. Clinton Savings Bank is a local bank headquartered in Clinton, Massachusetts, that was established in 1851. The bank now has a total of 6 branches and 100+ employees. The bank wanted a new marketing approach, and the WSU public relations class responded. The WSU Student Public Relations Campaign Program is strategically created to target various demographics, collect data about the target audience, and convert the group into lifelong customers.

Clinton Savings Bank
Madison M. Sklar
Faculty Advisor: Emanuel Nneji, Ph.D.
Oral Presentation
Clinton Savings Bank is a community bank that has been providing loans and financial services to people for more than 168 years. Whether you are a student or young adult, Clinton Savings Bank is one you can trust for all your financial needs. The goal of Clinton Savings Bank and its campaign is to see an increase in opening of checking and savings accounts for students in the Worcester area. The goal is not for awareness of the bank because many individuals know it exists, but rather to boost profitability by gaining new customers in a growing demographic. Organizational performance was imperative for this program to be successful. Audience performance was also needed to reach the goal of 30 new accounts to be opened.

COMMUNICATION SCIENCES AND DISORDERS

Audiologic Stimulated Case Studies
Jillianne M. Chippendale and Caitlin M. Couture
Faculty Advisor: Keith Darrow, Ph.D.
Commonwealth Honors Project
Poster Presentation
Tinnitus, a phantom auditory sensation heard in the ears and/or head, plagues more than 50 million people in the United States with varying severity. This study involves 91 participants and analyzes the efficiency of hearing technology as a treatment for tinnitus during a 45-60 day window. Each participant was surveyed pre- and post-treatment to evaluate patient changes in perception of tinnitus experience and the changes' impact on daily life.

Autism Support Programs in Higher Education: A Survey of New England Institutions
Jasmine A. McDonough
Faculty Advisor: Kristina Curro, Ph.D.
Oral Presentation
Autistic college students report difficulty with managing social expectations of college (Kuder et al., 2017). A 2017 study reported that fewer than 40 percent of college students with autism complete their post-secondary degree (Kuder et al., 2017) and have a lower graduation rate than peers (Davis et al., 2021). To improve graduation rates, autistic students need support during their college experience. This study reports on 218 New England colleges and the types of support offered to autistic college students. The goal is to determine the feasibility of implementing a support program to improve WSU autistic students' quality of life on campus and to provide equitable access to a four-year college degree.

A Study of Patient Experience and Satisfaction with Hearing Aids That Contain Deep Neural Network (DNN) Technology
Julienette J. Rivera and Emily M. Dupont
Faculty Advisor: Keith Darrow, Ph.D.
Poster Presentation
Hearing loss is the number-one sensory disorder affecting more than 500 million people worldwide. This study, involving 75 adult hearing-impaired participants, analyzed the effect of new hearing aid technology on the ability to hear in a variety of listening situations during a 45-60 day period. Each participant was surveyed with pre- and post-treatment assessment to measure their experiences and the impact of the new technology on their daily life.

COMMUNICATION SCIENCES AND DISORDERS and SPEECH-LANGUAGE PATHOLOGY

Analyzing Social Media Trends in Adults Living with Communication Disorders and Their Caregivers
Samantha Dercole and Aubrie Kutil, B.S.
Faculty Advisor: Colleen Karow, Ph.D.
Combined Undergraduate and Graduate Project
Poster Presentation
This project identified patterns in social media content created by adults with communication disorders and their caregivers. Video content was selected from public personal accounts posted on Tiktok and YouTube. Forty videos from adults with five different types of communication disorders, including aphasia, traumatic brain injury, dementia, stuttering, and dysarthria, were analyzed. Systematic analysis of the videos revealed that many social media users with communication disorders create content to raise awareness about their lived experiences. Many of the individuals also search for community groups to connect to so they can share their experiences with others who are living with similar conditions. In this presentation creator characteristics, public responses to posts, and potential educational uses for social media content will be discussed.

COMPUTER SCIENCE

Patch Reservoir Water Quality
Jefferson B. Coutinho
Faculty Advisor: Elena Braynova, Ph.D.
Poster Presentation
The Patch Reservoir water body is located close to the Worcester State University campus, and it is a good sample of the hydrographical health of the University's immediate surroundings. Working with the Patch Reservoir water quality data set, we performed some cleaning and preprocessing steps to prepare data for further analysis. We used a variety of visualization techniques and statistical analysis methods to understand data better. One of the major goals of this project was to analyze all the parameters in the system and filter down to the most important ones such as temperature, dissolved oxygen, and pH-level. We have shown how each of the parameters is changing over time and looked at how they depend on one another.

COMPUTER SCIENCE, ENGLISH, and MATHEMATICS

Mortgage Lending: Are There Any Biases for a Mortgage Approval in New England?
Delice K. Ndaie
Faculty Advisors: Elena Braynova, Ph.D., Cleve Wiese, Ph.D., and Mary Fowler, Ph.D.
Commonwealth Honors Project
Oral Presentation
Within the past five years, there have been many claims that the U.S. housing market is racially biased, specifically that Black, Indigenous, and People of Color (BIPOC) individuals are less likely to get approved for a mortgage loan than others in a similar financial situation. This project examines the national Home Mortgage Disclosure Act data set for 2020. The data set provides information on all 50 states with more than 25 million instances and 99 attributes. This analysis focuses on five states in New England. The New England mortgage data is analyzed using a variety of classification models and algorithms as well as statistical methods to discover any bias tendencies for loan application decisions based on race and ethnicity.

EARTH, ENVIRONMENT, AND PHYSICS

Stormwater Drainage from Patch Reservoir
Emily Costa
Faculty Advisor: William Hansen, Ph.D.
Poster Presentation
This project focuses on Patch Reservoir in Worcester, Massachusetts. I will be looking at the stormwater drainage system that flows into Patch Reservoir and what the output looks like from Patch Reservoir. Specifically, I will be focusing on the pollution and runoff output. I predict that each season will have a different effect on Patch's output because of its urban location, roadways, and sediments/pollution rates that come with each season. I will get my data spatially and create maps that show the best and worst months from 2017-2021 where pollution and sediments affect Patch Reservoir. From this data, I will be able to see which months most affect Patch and know why it's happening.

Measuring Organic and Inorganic Carbon from a Coastal Lake in Washington State
Caitlin D. Dellert
Faculty Advisor: Laura Reynolds, Ph.D.
Funding Source: Worcester State Foundation Student Research, Scholarship, and Creative Activity Grant
Poster Presentation
Lake sediments can be used to interpret the environmental history of an area by analyzing the amount and type of carbon they contain. In coastal ponds, inorganic carbon often comes from marine sources, while organic carbon comes from inland sources. Changes in the carbon content result from changes in sea level, tsunamis, or human activity. I examined the carbon content of sediment cores from a coastal pond in Washington. In these cores, inorganic and organic carbon simultaneously decreased from 20 cm to the surface, potentially due to human activity. At 55 cm depth, there is a thin layer of sediment with high inorganic carbon, which may have resulted from a marine incursion. Future work will test these hypotheses by determining the timing of observed changes.

Worcester and I-290
Gurmitt S. Dhalliwal
Faculty Advisor: Alexander R. Tarr, Ph.D.
Oral Presentation
The project will examine Interstate 290 within the area of Worcester, Massachusetts. By examining primary historical sources and applying urban geography theory, the project will take a look at the effects that I-290 has had on the city of Worcester. The methodology used for this project will include using historical maps from the U.S. Geological Survey and Sanborn maps and putting them into Geographic Information System (GIS) software to compare how the area has changed. One of the key questions that I will be trying to answer is who had control of the build and what was the desire behind its construction?

Crashes Pre- and Post-Pandemic on MBTA Green Line
Gurmitt S. Dhalliwal and Timothy O'Leary
Faculty Advisor: William Hansen, Ph.D.
Electronic Poster Presentation
The project we are working on looks at accidents that have happened around the Green Line of the Boston MBTA subway system pre- and post-pandemic. The focus is on the Green Line because it is the largest of the lines in the system at 23 miles or 37 km. It also goes west from Boston, which is toward Worcester, the second-largest city in the state. The Green Line is also the oldest line out of all of the MBTA system, first being opened on September 1, 1897.

Crash Comparison from Kelley Square Before and After the New Construction
Chloe V. Dimarzio and Shannon M. Quinlan
Faculty Advisor: William Hansen, Ph.D.
Electronic Poster Presentation
Vehicle crashes have always been one of the worst issues that cities face. In 2016, Worcester's famous Kelley Square was ranked the eighth crash-prone area in the state with about 150 crashes within two years. In an attempt to address this problem, Kelley Square changed their dangerous and unorganized intersection into a large, peanut-shaped rotary. Data sets from the MassDOT crash portal were obtained and analyzed for the Kelley Square area. Using these data sets in Arc Pro, we will compare crashes from the years 2016 and 2021 to evaluate the difference in the number of crashes before and after the construction.

Using Foraminifera to Track Environmental Changes to Lemon Creek Salt Marsh
Maureen Grady
Faculty Advisor: Laura Reynolds, Ph.D.
Funding Source: Worcester State Foundation Student Research, Scholarship, and Creative Activity Grant
Poster Presentation
Foraminifera colonize the tidal ecosystems of salt marshes. The species of foraminifera present depend on both a marsh's salinity and elevation relative to sea level. Sediment under the marsh surface contains fossil foraminifera that record how the marsh evolved and can help determine how the marsh will respond to future changes. While the foraminifera of many marshes in eastern North America have been previously studied, those of Lemon Creek Marsh on Staten Island, New York, have not. In this project, we examine the foraminifera species in several meters of sediment under Lemon Creek Marsh and show that at least four species are present. Future work will focus on analyzing how these species vary throughout the core to determine how this site has changed through time.

Animal Pathways and Car Accidents
Abigail J. Hainsworth
Faculty Advisor: William Hansen, Ph.D.
Poster Presentation
Car accidents involving animals can be physically dangerous for both the humans and animals involved. High occurrence rates can also be detrimental to population levels, especially for at-risk species. This study examines the pattern between car crashes involving animals and migratory patterns of animals in Massachusetts. Using vehicle crash data and animal pathway data, an analysis was done to determine if occurrences of crashes involving animals were more likely on roads that intersected pathways during seasons of migrations. Results suggest that crashes involving animals are more likely during these periods. Wildlife highway crossings can be implemented in the future to limit crashes.

Asian Longhorn Beetles in Worcester
Billy Lemay
Faculty Advisor: William Hansen, Ph.D.
Poster Presentation
The Asian Longhorn Beetle was first detected in Massachusetts in 2008 and immediately started destroying hardwood trees in Worcester County. The beetles burrow deep into the heartwood of the trees and kill them from the inside out. The only way to get rid of the beetles is to remove the tree. By using high-definition Light Detection and Ranging (LiDAR) photos of Worcester County, this project aims to look at tree canopy cover before and after the beetles were found in Worcester.

Analysis of Sediment Cores on Patch Reservoir for Flooding and Land Use Change
Kari Mickunas
Faculty Advisor: Laura Reynolds, Ph.D.
Funding Source: Worcester State Foundation Student Research, Scholarship, and Creative
Poster Presentation
Reservoirs provide habitats for organisms, drinking water, and recreation space. Reservoirs are impacted by a variety of human and natural changes, which are recorded in sediments that accumulate in them. Patch Reservoir, in Worcester, Massachusetts, was created in the late 1800s and is an important local water body. Patch Reservoir has experienced significant challenges recently due to sediment infilling. It is not well understood what has caused this infilling, but recent construction in the watershed may have played a role. In this project, we use magnetic susceptibility and sediment grain size measurements from several sediment cores from Patch Reservoir to determine how flooding and land use change has impacted the reservoir over time.

Environmental Justice and Shootings in Boston
Kari Mickunas and Emily Maynard
Faculty Advisor: William Hansen, Ph.D.
Poster Presentation
Environmental justice is the fair treatment and meaningful involvement of all people regardless of race or socioeconomic status with respect to environmental laws, regulations, and policies. This project reviews the impact of crime in environmental justice neighborhoods in Boston, Massachusetts. Crime data from data.boston.gov and environmental justice data from MassGIS were added to ArcGIS Pro. Analysis was carried out to find correlations between the type of crimes committed and the category of environmental justice each neighborhood falls into. The MassGIS crime data was sorted into a number of categories, including white collar, violent, etc. We chose to focus on shootings. We predict that there will be some correlation between rates of shootings and what type of environmental justice category the neighborhood falls into.

Putting Local Farms on the Map
Shawn R. Seeley
Faculty Advisor: William Hansen, Ph.D.
Poster Presentation
My research poster will examine the complexities of the global food supply chain and the associated health and sustainability concerns. It will explore localizing food production and distribution networks using a synthesis of cutting-edge geospatial analysis techniques. I will present several Geographic Information System (GIS) layouts that apply these techniques to regions in Massachusetts. My research aims to propose a modern and community-based approach to establishing local and sustainable food networks.

Solar Farms and Forest Loss
Emi Suzuki and Jung Hyo Batino
Faculty Advisor: William Hansen, Ph.D.
Electronic Poster Presentation
With the rise of sustainable energy, there is incentive and a need to build solar farms. It is common to cut down forests in order to create space for solar farms. We hypothesize that too much forest is being cut down for these projects, resulting in negative consequences. In this project, we will map the solar farms and forest cover in a Massachusetts town to calculate the acres of forest lost between 2005 and 2021 using Geographic Information System (GIS) data and analysis. Solar farm data will come from MassDEP. 2021 Aerial Imagery, Land Use 2005, and Land Use/Land Cover 2016 will come from MassGIS layers.

Invasive Aquatic Vegetation in Patch Reservoir
Lauren B. Vigneault
Faculty Advisor: William Hansen, Ph.D.
Poster Presentation
This presentation will consider the problem of aquatic invasive species in the Patch Reservoir water body, aiming to answer the question of how it has expanded over the years. Historical drone and aerial imagery was used to track the changing amount of aquatic vegetation over an approximately 35-year timespan. Using these images, the aquatic vegetation was digitized in a Geographic Information System and a vegetation index was calculated to assess the yearly expansion of invasive species.

ENGLISH and WORLD LANGUAGES

A Meta-Analysis Examining Clinical Drug Trials Funded by Western Pharmaceutical Companies in the German Democratic Republic, 1980-90
Grace Van Kirk
Faculty Advisor: Jeanne Moore, Ph.D.
Commonwealth Honors Project
Oral Presentation
Applying modern bioethical standards to government-sponsored clinical trials in East Germany between the years of 1980-1990 would deem these trials unethical and illegal. Many of these trials were conducted without the patients' informed consent, sometimes with fatal consequences. To date, the pharmaceutical companies involved in producing drugs used in the trials have denied or ignored such allegations. By studying the trials and the drugs used in them, better insight can be gained into the modern legality and pharmaceutical history of the medications. A meta-analysis was performed, using databases from the Food and Drug Administration and a German government-commissioned analysis. Of the drugs involved, 51.63 percent require a prescription and 22.83 percent have been unapproved or banned in America.

HEALTH SCIENCES

Diets and Obesity
Payton Collins, Lily Gendron, Samantha Montalban, and Simone Fiore
Faculty advisor: Mariana Calle, Ph.D.
Electronic Poster Presentation
Obesity is a disease and public health threat that is determined by a calculated Body Mass Index (BMI) and acts as a screening tool to indicate a healthy relationship between height and weight. Obesity in the United States increased from 30.5 percent in 2000 to 42.4 percent in 2018 while severe obesity increased from 4.7 percent to 9.2 percent. A vegan diet incorporates plant-based foods in their unprocessed form, which are high in nutrients, but low in calories compared to the Standard American Diet which is high in calories, fat, and processed foods. Our research will examine how a vegan diet could help these individuals with obesity. Obese individuals/adults who switch to a vegan diet will have improvements in their overall health and wellness.

How Food Insecurity in Places of Poverty Within the United States Affects Obesity
Emma Elk, Michael Do, Jane Vongvirath, and Nathalie Gillis
Faculty advisor: Mariana Calle, Ph.D.
Panel
Food insecurity is a global and U.S. public health issue. Food insecurity is the lack of consistent access to enough nutritious food to sustain an active healthy life. In 2020, 38.3 million people lived in food-insecure households in the United States. Additionally, 39.8 percent of adults and 18.5 percent of children and adolescents are obese. According to the American Diabetes Association, U.S. counties with poverty rates of 35 percent have obesity rates 145 percent greater than wealthy counties. When people do not have access to fresh produce, such as in places deemed food deserts, they rely on fast and processed food because it is accessible. This analysis reviews the literature to better understand the relationship between food insecurity and obesity in lower-income areas in the United States.

Low-Carb, High-Fat Diets and Their Effects on Obesity in Adults
Alexa Faysal, Sophia Mavrikis, Addie Bouten, and Jess Rancourt
Faculty advisor: Mariana Calle, Ph.D.
Commonwealth Honors Project
Electronic Poster Presentation
In Massachusetts, the prevalence of obesity is 25 percent, which is approximately 1,728,059 people that are struggling with their weight loss. There are several factors that may lead to obesity in adults such as environmental causes, genetics, and diet, which is the main focus of this study. Obesity can lead to a multitude of consequences; however, research suggests that a low-carbohydrate and high-fat diet may be able to not only combat obesity and aid in weight loss in adults, but to also be able to help those who struggle with insulin sensitivity. The purpose of this review is to see how the manipulation of macronutrients, specifically, lowering the carbohydrates and increasing fat in a diet, can promote weight loss in adults.

Evaluating the Dietary Patterns and Food Environment Perceptions in College Students
Kallie Tavano
Faculty advisor: Mariana Calle, Ph.D.
Funding Source: Worcester State Foundation Student Research, Scholarship, and Creative Activity Grant
Electronic Poster Presentation
The COVID-19 epidemic uprooted students' normal lifestyle habits. Universities across the country moved to a remote learning format, limiting students' availability to resources. According to a study conducted at the Texas Woman's University using Healthy Eating Index (HEI) scores, nearly every student reported a change in their food environment following the pandemic. In order to evaluate student perceptions of the food environment at Worcester State University, data will be collected using a survey. This cross-sectional study will evaluate students' current eating habits, their opinions on the availability of healthy food options at WSU, and possible ways COVID-19 has impacted their health behaviors (if any). The data collected from this study can be used to recommend changes in the current food environment at WSU.

Comparing Healthy and Obese Individuals, and How Detrimental COVID-19 Was to Them
Hailey F. White, Karalyn N. Jones, Brett Pfeiffer, and Andrew Gerr
Faculty Advisor: Mariana Calle, Ph.D.
Commonwealth Honors Project
Electronic Poster Presentation
According to the CDC, the obesity rate in the United States is 42.4 percent. Obesity can be detrimental to an individual's health status, especially in the presence of another illness. COVID-19 is a virus and an ongoing pandemic that is being studied by many people. A narrative review method will be used to compare the general health (e.g., nutrition status, sleep status, comorbidities, etc.) of individuals infected with the COVID-19 virus that fall into different weight classifications. The weight classifications included in the review will be healthy weight, overweight, and obese. Health status after infection with the virus is expected to be different/worse as individuals' weight increases.

HISTORY AND POLITICAL SCIENCE

The History of Secondary Education Studies at Worcester State University
Anita L. Faath
Faculty Advisor: Lila Teeters
Oral Presentation
My presentation breaks down Worcester State's secondary education minor and how it has changed from the years 1932 to 2022. I will explain the many different ways the secondary education minor has progressed, including how the increased standardization of secondary education professionalized the field of teaching high school. The presentation also covers the creation of the American Association of Teachers Colleges and Massachusetts Tests for Educator Licensure, provides examples of the different classes secondary education minors took in the years 1932 to 2022, and evaluates the creation of the English Language Learners programs in curriculums. My project is based on primary sources from Worcester State University's archive as well as secondary sources.

Political Themes in the Fear Street Film Series
Vincent T. Pellegrino
Faculty Advisor: Anthony Dell'Aera, Ph.D.
Commonwealth Honors Project
Oral Presentation
Horror films have a long history of incorporating political themes or messages. A recent series of horror films, the Fear Street trilogy, contains many such themes. This research seeks to identify and discuss said themes, as well as compare how the series approaches incorporating such themes to how other politically charged horror films have done so. Analyzing this series can provide valuable insight to political discourse in our entertainment media, as well as contribute to current literature documenting such topics in horror films.

MATHEMATICS

Gödel's First Incompleteness Theorem and Mathematical Truth
Joseph Clark
Faculty Advisor: Maria Fung, Ph.D.
Poster Presentation
Gödel's first incompleteness theorem is considered one of the most important results in modern logic and mathematics. Concerning the limits of provability in formalized axiomatic systems, it has a profound impact on the concept of mathematical truth and the nature of abstract objects. This project's scope involves understanding the philosophical content behind the idea of mathematics and discussion of Gödel's first incompleteness theorem. The goal of this project is to provide a general understanding of the philosophy of mathematics and truth, prove Gödel's first incompleteness theorem, and discuss the relevant meaning incompleteness has on the ideas of mathematical truth and the nature of abstract objects.

Optimizing a Convolutional Neural Network to Detect Melanoma in Images
Christian Shadis
Faculty Advisor: Maria Fung, Ph.D.
Electronic Poster Presentation
Convolutional neural networks are the machine learning industry standard for computer vision, and they generally excel at image recognition. The operations performed in a convolutional neural network are mathematical in nature, yet the inner layers of the neural networks are often referred to as a "black box" due to their complex inner workings. Melanoma, a rare but deadly form of skin cancer, is visible in images and differentiable from other skin lesions, implying the possibility of image recognition using a convolutional neural network. This project aims to develop the convolutional neural network and use its mathematical properties to optimize its performance.

Mathematics of Tetris
Tommy Thach
Faculty Advisor: Michael Winders, Ph.D.
Oral Presentation
Tetris is a popular geometric game featuring falling four-block shapes that can clear lines. We first introduce the general concept of a polyomino. Then, narrowing our focus to tetrominos, we begin to analyze both classic and modern Tetris through the lens of abstract algebra and combinatorial geometry. Delving even further, we introduce the concept of "perfect clears" (any configuration of pieces that completely empties the board) and show how mathematical parity and powerful solution algorithms can be used to calculate the probability that a given perfect clear setup will be successful.

NONPROFIT MANAGEMENT

Repairing the Cracks in the Museum Industry
Robert Megerdichian
Faculty Advisor: Shiko Gathuo, Ph.D.
Funding Source: Worcester State Foundation Student Research, Scholarship, and Creative Activity Grant
Graduate Project
Oral Presentation
During the last few years, the museum industry has had to cope with declining patrons due to the COVID-19 pandemic, competition with social media and other Internet-based entertainment, and a lack of general enthusiasm for what the industry offers. This presentation involves the findings from my master's thesis, "Repairing the Cracks in the Museum Industry." My thesis involved an extensive review of museum websites and interviews with museum directors. Through a mix of video and oral presentation, I will describe the strategies that museums have adopted to try and remake themselves as viable, sustainable, and relevant institutions, as well as the barriers to establishing new museums. The presentation will also touch on findings related to the opportunities for temporary exhibits of existing art collections.

NURSING

The Effects of Screen Time on the Pediatric Population During the COVID-19 Pandemic
Jessica R. Brady
Faculty Advisor: Angela M. Latter, M.S.
Electronic Poster Presentation
During the COVID-19 pandemic, public health recommendations included multiple interventions to prevent the spread of the virus. The interventions implemented included vaccinations, lockdown, and quarantine. As a result of lockdown and quarantine across the country and globally, it became necessary to increase the use of screen time among the pediatric population for academic and recreational purposes. A literature review was conducted to identify specific health concerns which may have impacted physical and psychosocial health among the pediatric population. Current research indicates new public health concerns surrounding the altered state of pediatric health. This review reveals health concerns related to increased screen time via smartphone, gaming systems, televisions, and computer usage among the pediatric population.

Effective Leadership to Prevent New Nurse Burnout
Ashley Nicole Cotting
Faculty Advisor: William Chadbourne, Ph.D.
Commonwealth Honors Project
Poster Presentation
Nursing is a high-stakes environment where the patient's life falls into nurses' hands. Combined with staffing shortages, unsafe assignments, and emotional exhaustion, this environment frequently leads to burnout. The problem is further perpetuated with new graduate nurses, who have little experience to deal with the stress. There is also a common saying that "nurses eat their young," referring to the bullying behaviors toward new nurses. As a result, new graduates leave the field early on in their careers. However, effective leadership can give these new nurses the resources and support needed to succeed, ultimately leading to an increase in the job retention rate and an improvement in job satisfaction. This literature review will explore which leadership methods are effective in keeping new nurses in the field.

How the COVID-19 Pandemic Affected Nursing Leadership
Hannah A. Crandall
Faculty Advisor: William Chadbourne, Ph.D.
Electronic Poster Presentation
The coronavirus pandemic has reached all aspects of life, including health care and especially nursing. Understaffing, supply shortages, and increased casualties resulted from the pandemic and changed the way in which nursing leaders function. This study identifies the effects of the COVID-19 pandemic on leaders in the nursing community and how they had to adapt during this time. To explain this phenomenon, a variety of peer-reviewed sources were analyzed. The main findings of the study pointed to the importance of enhancing decision-making skills, increasing interdisciplinary collaboration, and advocating for staff and patients to ensure the best patient-care outcomes are still being met. These results demonstrate the adaptability of nurse leaders and provide information vital to the success of future nurse leaders in a crisis.

The Effect of Mental Health Assessment on The Undergraduate Nursing Population
Bryan M. Escobar and Kimberly-Ann V. Lang
Faculty Advisor: Julia McNeil
Funding Source: Worcester State Foundation Student Research, Scholarship, and Creative Activity Grant
Graduate Project
Commonwealth Honors Project
Poster Presentation
Research teams have conducted qualitative and quantitative studies to assess the psychosocial factors that may make it harder for nursing students to cope with the uniquely structured nursing curriculum. There is an important conversation to be held to analyze studies that have been conducted to better understand mental health in the nursing school population, particularly the prevalence of mental health conditions such as depression and anxiety. In this literature review, we discuss the historical context of mental health status in the nursing student population. We compare how mental health has been assessed in nursing students, and any potential interventions that have been used. We examine how these tools can be impactful in getting students the mental health resources they need to succeed.

Leadership Tactics: Reducing Burnout in Nurses Among COVID-19 Pandemic
Leah Fitzgerald
Faculty Advisor: William Chadbourne, Ph.D.
Poster Presentation
A high turnover rate, accelerated by the COVID-19 pandemic, has continuously affected the nursing profession. Leaders within the nursing field find it harder to manage excess burnout and lack of resources. This research explores leadership dynamics that aid successful work environments and decrease the effects of burnout among RNs. Through research of six evidenced-based papers exploring topics of leadership styles and communication within the hospital setting, results show leadership roles that encourage interaction theory, empathy, proactive management, and respect for staff perspectives are more successful in retaining nurses and providing a well-rounded workplace environment. Leadership that maintains appreciation and fosters positivity are effective ways of reducing burnout and increasing retention of nurses in the workforce.

OCCUPATIONAL THERAPY

Occupational Challenges in Older Adults with Osteoarthritis
Camryn M. Barry
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation
The purpose of this study was to determine the impact of osteoarthritis (OA) on occupations among older adults and examine the treatment strategies available. The study utilized a convenience sampling method to recruit six participants who were over the age of 50 and had been diagnosed with knee, hip, or hand OA. They engaged in semi-structured interviews through Zoom. The interviews were audio recorded with consent and analyzed using the NVIVO computer software. The findings revealed that OA caused difficulty with daily occupations and led to adaptations of their lifestyles to manage OA and improve their quality of life. Overall, the findings suggest that a diagnosis of OA in older adults causes many occupational challenges in both personal and professional aspects.

The Association Between Food Insecurity and Participation in Sleep, Participation in Leisure, and Academic Performance

Alivia K. Burns
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation

The purpose of this study was to determine any possible associations between food insecurity and sleep, leisure, and academic performance in college students. A Google Form was used to access the two surveys, the Participation in Sleep, Leisure, and Academic Performance questionnaire and the U.S. Household Food Security Survey: Six Item Short Form (Adapted for Self-Administration). The results suggest that food insecurity may be associated with leisure participation. The more food-secure a student is, the more likely the student is to have a balanced schedule, the ability to relax throughout the week, adequate free time, and the will to pursue their interests throughout the week. This study is one of the first to investigate how leisure may be associated with food insecurity in college students.

Older Adults' Perception of Active Games in Assisted Living Facilities

Devin Burns
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation

This study investigated the perceived health benefits of older adults living in assisted living facilities (ALF) participating in active games. An active game is a recreational game or sport that requires players to weight-bear. A Likert-scale survey was distributed to 39 participants aged 65 and above and living in an ALF, to measure how much participants agreed or disagreed with statements related to active games benefiting different aspects of well-being. The findings showed that participants perceived active games to benefit physical, cognitive, or social-emotional health. Social-emotional health had the most perceived benefits, followed by physical health and then cognitive health. These findings support the literature in identifying active games as a promising intervention for maintaining and/or enhancing the well-being of older adults living in ALF.

Parents' Perspectives on the Impact of Gymnastics: Autism Spectrum Disorder

Madison M. Cuozzi
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation

The number of children diagnosed with Autism Spectrum Disorder (ASD) has continued to grow; therefore, discovering intervention tools that support these children during development is consequential. Research suggests that sports, such as artistic gymnastics, help physical and mental development. This qualitative study utilized semi-structured interviews, conducted virtually with six parents of children with ASD. The goal of these interviews was to explore physical performance, sensory sensitivities, and/or participation differences in children with ASD since enrolling in gymnastics. The transcripts from these interviews were analyzed in order to assess for common themes. The results of this study identified benefits of gymnastics, including an increased sense of confidence, participation, and individualization, which have a positive effect for children diagnosed with ASD.

Demographic Influences on Health Care Services Delivered to Children with Autism Spectrum Disorder (ASD)

Deanna A. Dalli
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Poster Presentation

This study examined the influence of demographic factors on health care services delivered to children with ASD. The aim was to determine which demographic factors influenced diagnosis and health outcomes, care coordination, and family-centered care received for children with ASD. This quantitative study involved a survey completed by the caregivers of these children. Results showed that care coordination was most impacted by demographic factors. Ethnicity and home location were two demographic factors with significant impacts. Other results of the study implicated targeted efforts of health care providers to provide culturally sensitive care, stronger communication, and build trust with minority families. Improvements in care coordination, providing referrals in rural areas, and prioritizing family-centered care are warranted.

The Impact of Alcoholics Anonymous on Occupational Performance

Anna R. Dee
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation

The purpose of this research study was to determine whether participation in Alcoholics Anonymous (AA) has an impact on occupational performance outcomes related to activities of daily living (ADL), instrumental activities of daily living (IADL), health management, and rest and sleep. The Activity and Task Performance Survey was given to AA participants to determine their occupational performance outcomes before and after participation in AA. A paired samples t-test was used to analyze the data. The analysis found that participants had a significant improvement in occupational performance for all activities surveyed related to ADLs, IADLs, health management, and rest and sleep. More research is needed on this topic to determine if improved occupational performance outcomes are due to AA participation or other extrinsic factors.

Student Athletes' Use of Campus Support Services

Lauren M. Fleming
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation

This study considered whether student athletes use the campus support services offered and if this use impacts their ability to manage both roles — as student and as athlete. Three research questions were asked to guide this study: (1) How satisfied are student athletes with their time management skills? (2) How satisfied do student athletes feel with their academic success? and (3) Do student athletes have concerns about their mental health? The study was conducted using a Likert scale and analyzed using a Spearman rho correlation coefficient. Results showed student athletes are not using the services, yet feel satisfied with their time management, academic performance, and mental health. In conclusion, the non-use of campus support services did not cause any consequences for student athletes' satisfaction in either role.

Comparing Personality Traits in Occupational Therapists
Hannah E. Joyner
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation
The purpose of this study was to identify commonalities and differences in the personality traits of occupational therapists (OT) and to determine whether an OT's workplace has any effect on these traits. A survey to current OTs was conducted, inquiring about their individual personalities. Participants were OTs who came from a variety of work settings with a variety of experience. The researcher found that while their workplace does not have any significant effect on their personalities, OTs do have many traits in common. Common traits include empathy, sympathy, attention to detail, reflection, and an interest in people.

The Impact of a Spinal Cord Injury on Employment
Courtney Lamothe
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation
The prevalence of spinal cord injuries (SCI) is rising. Despite the disproportionate unemployment rate in this population, there is a dearth of research on the topic. The goal of this study was to understand and identify supports and barriers to seeking, establishing, and maintaining employment for individuals who have experienced a SCI. The student researcher gathered qualitative data in virtual, semi-structured interviews and analyzed the transcripts for common themes. This study identified some common facilitators and challenges regarding employment, including but not limited to education, personal disposition, psychosocial aspects, networks, and secondary complications. The results of this study suggest that supports and barriers are commonly related to contextual factors and performance skills.

The Impact of Telehealth on Occupational Therapy Services for Older Adults During the COVID-19 Pandemic
Victoria Lemire
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation
At the beginning of the COVID-19 pandemic, occupational therapy practitioners had to utilize telehealth services in order to continue working with clients while social distancing guidelines were in place. This study examined the impact of telehealth on occupational therapy services with an older adult population in order to see how telehealth affected service quality and accessibility. Results were obtained through a survey and suggested that, while practitioners were still able to provide high-quality services to clients, technological problems were often a barrier to providing service.

Quality of Life of Correctional Officers
Jessica Lutz
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation
This study gathered data from correctional officers to determine if their quality of life is an area of concern. The study looked at their psychosocial health, satisfaction level in completing daily occupations, and environmental factors that may be influencing their quality of life. It included 36 participants actively working as correctional officers with at least one year of experience. Each participant completed a 26-question survey regarding their quality of life in areas including physical health, psychological, social relationships, and environment. The results of this study showed that the amount of time spent as a correctional officer had negative effects on the participants' sleep patterns, moods/feelings on a day-to-day basis, and satisfaction of themselves and their personal relationships. Further research is needed.

Physical and Social Factors Influencing Aging in Place
Brittany E. Marchetti
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Poster Presentation
The purpose of this study was to analyze the physical and social needs of older adults to age in place (AIP) in an urban or suburban setting and to get a better understanding of how each impacts quality of life. In this qualitative study, seven older adults participated in semi-structured interviews about their experience regarding AIP. Three themes were identified: (1) home layout, (2) community participation, and (3) independence and freedom. Home layout contained one subtheme: home modifications. Community participation contained two subthemes: (1) access to transportation and (2) amount of social supports. The findings indicate the importance of addressing each of these areas in order to understand what is needed to facilitate safe and meaningful AIP for as long as possible.

Unresolved Sports Injuries and Their Impact on Participation in Daily Occupations
Erin M. McCormack
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation
Despite the holistic benefits sports have on health, the risk of injury is great and can have chronic effects. The purpose of this study was to determine how unresolved sports injuries impact overall participation in daily occupations, and if changes in performance stem from symptoms or from fear of pain or reinjury. It also examined the extent to which receiving treatment reduces the severity of ongoing symptoms. A survey was distributed, and statistical tests were conducted. The results showed that unresolved sports injuries impact participation in daily occupations. Symptoms were the main cause of that decline, but fear of reinjury or pain did play a role. Based on the results, it was not possible to determine if receiving treatment reduces the severity of ongoing symptoms.

Caregiving for a Spouse with a Disability
Elena M. Mouradian
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation
The purpose of this study was to learn about the occupational challenges faced by individuals who are caregivers to a spouse with a disability. The research study investigated the impact caregiving had on occupations, performance patterns, performance skills, and client factors. An 18-question semi-structured interview was used to collect qualitative data on six subjects. Findings revealed that transitioning to a caregiver role caused a lack of leisure and socialization, interrupted sleep, a decline in mental and physical health, lifestyle adjustment, disconnected relationships, and a desire for better communication with physicians. As this population continues to grow, this study yielded information on the impact caregiving for a spouse has on an individual and where health care professionals can focus their support.

Impact of Personal Protective Equipment on the Therapeutic Relationship
Jessica T. Muise
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation
The purpose of this study was to investigate the impact of personal protective equipment on the patient-therapist relationship from the occupational therapist perspective. Other topics that were investigated included the important components of the patient-therapist relationship as well as how personal protective equipment impacted person-level service delivery and occupational therapists' physiological and physical well-being. This was a qualitative research study with one-on-one semi-structured interviews taking place virtually. Interview scripts were created at the conclusion of the interviews and examined using data analysis software that identified common topics and ideas. Findings indicated that personal protective equipment had a negative impact on the therapeutic relationship and therapists' physiological and physical well-being.

The Experiences of Parents of Children with Disabilities in Navigating Health Care Systems
Rosemarie Murray
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation
The goal of this study was to understand the parents' experience accepting their child's diagnosis of a disability, their experience navigating through the health care system, and how medical teams helped in this process. Research questions examined how parents' demographic information compares with barriers and utilization of resources, parents' satisfaction/experience with medical teams overall, and which specific health care professionals helped the parents of children with disabilities the most. Participants were recruited through Facebook posts and snowballing to complete a Google Form survey. Results showed that parents found the health care systems were difficult to navigate, there were differences between men and women and educational level on utilization of supports, and that pediatricians were found to be the most empathetic, caring, approachable, and helpful with allocating resources.

The Effects of Social Isolation Due to COVID-19 in the Elderly Population
Alexis Nye
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation
This study investigated the potential effects of social isolation due to the COVID-19 pandemic throughout the past year on the elderly population. The target population included 30 individuals who are 65+ years old and who underwent social isolation in their homes for more than months due to the pandemic. They were given a survey by their physical therapist at an outpatient facility. This survey provided information on the physical, social, and emotional changes that this population experienced during this time. Overall, the social isolation that came with the COVID-19 pandemic caused a strain on the physical, social, and emotional well-being of these participants. Further research is needed in order to conclude the specific effects of the isolation.

The Transition from Independent to Assisted Living
Haley L. Sears
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation
The purpose of this qualitative research project was to examine how relocating to assisted living from independent living impacted performance patterns, client factors, and overall quality of life. The goal was to analyze themes that emerged from the data collected to understand how the transition from independent to assisted living impacted the residents' occupations in their everyday lives. A qualitative study was designed that used 14 semi-structured interview questions that all six participants were asked. The software NVIVO was used to analyze data and draw conclusions. Results of this study highlighted that transitioning to an assisted living facility from independent living can provide individuals with a safer living environment to participate in occupations, thus increasing their quality of life.

The Impact of Raising a Child with a Disability on Parents' Engagement in Leisure Activities
Julia M. Wolf
Faculty Advisor: Joanne Gallagher Worthley, Ed.D.
Graduate Project
Electronic Poster Presentation
The purpose of this study was to investigate how raising a child with a disability impacted the parents' ability to engage in leisure activities. The goal was to see how raising a child with a disability affected the parents' daily schedules and routines, physical and mental health, and social engagement and participation. The qualitative study employed a semi-structured 14-question interview over Zoom. The major findings/conclusions were that parents of children with a disability experienced: reduced work-life balance; decreased performance of self-care activities, which negatively affected their physical and mental health on occasion; and decreased social engagement and participation, which included time spent with their other children, with their spouse, or doing something for themselves.

PHILOSOPHY

Ethics in Data Mining
Abigail Frost
Faculty Advisor: Henry Theriault, Ph.D.
Poster Presentation
Data mining is the process of analyzing a set of data and discovering its patterns. This process is commonly used as a business tool to collect data about consumers and their interests. Data mining is used to determine which types of people are more interested in certain products or services; it can assist companies in making business or financial decisions. Though this process is helpful from a business point of view, there are disagreements as to whether this data is being collected through ethical means or if it is a violation of consumers' privacy. The purpose of this project is to view data mining through various ethical theories and determine its ethicality.

Feminism: Examining Sexist Oppression in Three Acts
Philip Kapitan
Faculty Advisor: Laura Kane, Ph.D.
Exhibition
This is a mixed media experience that aims to expose the notion of oppression as being a fundamental aspect of sexism, racism, and gender subordination. This is accomplished by a cinematic experience using still photos and poetic readings that draw inspiration from notable feminist theorists. The intention is to elicit an emotional response in the viewer while also highlighting the discomfort one can feel when they seek to explore, define, and grasp the concepts of race, sex, gender, and the concomitant oppression therein. It also is intended to entice the viewer to think more deeply about these concepts from varying perspectives—including their own implicit involvement.

Feminopoly
Ashley M. LeConti
Faculty Advisor: Laura Kane, Ph.D.
Poster Presentation
Feminopoly is a modified version of the classic Monopoly board game that demonstrates the obstacles that women face in society. The project incorporates quotes from feminist scholars such as bell hooks and Simone de Beauvoir to provide a feminist framework for understanding the goals of the game. The game systematically provides advantages for men in ways that mirror the advantages that men have in real life and includes obstacles that portray how women have to work harder to break through glass ceilings. Obstacles include being "dress-coded" at work or school, having a job application rejected along gender lines, having to pay more for similar items (the "pink tax"), and gendered expectations for child-rearing that limit career options.

Visually Representing the Armenian Genocide
Emily M. Milaszewski
Faculty Advisor: Henry Theriault, Ph.D.
Exhibition
The Armenian Genocide was a tragic event in history that is not recognized enough and is even denied being an act of genocide. During World War I, the Ottoman Empire subjected the Armenian people to death marches and concentration camps, exposed them to disease and starvation, separated children from their mothers, raped and beat women, and killed Armenians. By the end of World War I, at least 1.2 million Armenians had been killed in the genocide. In my art piece, I use inspiration from survivors' stories and symbols to express the damage and impact this genocide had and continues to have on the Armenian people. My goal with the piece is to bring awareness to the event and end the denial.

Feminist Theory Scrapbook
Anna Rembetsy-Brown
Faculty Advisor: Laura Kane, Ph.D.
Poster Presentation
The "Feminist Theory Scrapbook" project explores the thoughts and opinions of a diverse group of individuals. These anonymized individuals were provided questions about the feminist movement and quotes from texts supplied in my course on feminist theory that capture core feminist arguments. The participants provided written answers to many of the questions. The final product was produced as a scrapbook album, combining the questions and assorted answers of the individuals. The goal of this project was to visually conceptualize and understand the many perspectives and interpretations of feminism, epistemic oppression, sexism, and misogyny, distinguishing those who agree with feminist aims and those who do not. This project ultimately led to captivating conversations with participants and increased knowledge and awareness of feminist goals and movements.

Modern Technology and *Walden*
Matthew S. Weatherbee
Faculty Advisor: Henry Theriault, Ph.D.
Electronic Poster Presentation
This poster presentation focuses on the effects of modern technology on everyday life. Using Henry David Thoreau's *Walden* as a point of reference, this project considers whether those in the present-day United States could ever achieve the kind of simplicity Thoreau experienced and advocated for. The project considers consumption levels and the desires and real vs. apparent needs of consumers. It also considers whether the kind of self-dependence developed in *Walden* is possible in the present era. Thoreau offered a number of philosophical insights that I will test for applicability in the present. It is hoped that the presentation will offer practical tools that audience members can take with them for use in their own lives.

PSYCHOLOGY

Racism on Campus: Black Students' Experiences and Trust in the Reporting Process
Anita A. Asante and Daniella A. Frimpong
Faculty Advisor: Kathryn E. Frazier, Ph.D.
Commonwealth Honors Project
Electronic Poster Presentation
Black college students continue to experience marginalization while attending predominantly white institutions (PWI, Lewis & Shah, 2021). However, the perception that reports of racist incidents will not be adequately addressed or considered legitimate has the potential to reduce Black students' willingness to engage in the reporting process. We conducted focus groups with Black students attending a regional public university to explore students' experiences of racial discrimination that devalue their identity, as well as the reasons why these experiences go unreported. We were also interested in students' ideas and advice on how universities can display a more genuine anti-racism environment. We hypothesized that Black students would express a lack of comfort in exposing university racism and a lack of trust in their school to act on it.

Predictors of Parental Control
Diana C. Baez, Paige S. McNulty, and Katherine G. Ola (order determined by coin flip)
Faculty Advisor: Jacquelyn N. Raftery-Helmer, Ph.D.
Funding Source: Worcester State Foundation Student Research, Scholarship, and Creative Activity Grant
Electronic Poster Presentation
A great deal of research has shown that parental control is associated with negative child adjustment outcomes that may persist into adulthood (Marbell-Pierre et al., 2019). However, much of this research has looked at parental behavior globally, despite evidence suggesting that parenting may differ across contexts. In addition, little is known about what predicts parental control. Using an observational study, we assessed parental control during two dyadic interactions (an anxiety conversation and a conflict conversation) and examined child-level factors (child psychopathology) and parent-level factors (parent well-being, parent cognitions) that predict parental behavior during these conversations. This study will advance the parenting literature by contextualizing parental control and will inform disseminatable interventions that may target factors known to precede controlling behavior.

Exploring Parent Autonomy Support in Relation to Child Well-Being and Cultural Values
Kathryn E. Bohm, Alyson C. Langhorst, Joshua Halliday (order determined by coin flip)
Faculty Advisors: Jacquelyn N. Raftery-Helmer, Ph.D., and Nicole M. Rosa, Ph.D.
Funding Sources: Worcester State Foundation Student Research, Scholarship, and Creative Activity Grant and Academic Affairs Faculty Scholarship/Creative Activity Grant
Electronic Poster Presentation
Research has consistently shown that parental autonomy support is associated with positive child adjustment outcomes; however, much of this research has looked at global autonomy support and not its specific components. Using both a child and adult sample, we measured four components of autonomy support (open exchange, perspective taking, choice, and decision making) in relation to depression, self-esteem, and the internalization of collectivist values. Stepwise regressions (that included age, gender, and maternal education as covariates) showed that all four autonomy supportive components predicted lower depression and higher self-esteem. Interestingly, only open exchange and perspective taking predicted the internalization of collectivist values. Results are consistent with previous literature suggesting that open exchange and perspective taking are stronger predictors in collectivist cultures than decision making and choice.

The Role of Emotion in Inhibition in Long-Term Face Memory Specificity
Haley Brann and Amanda Chaires
Faculty Advisor: Brittany M. Jeye, Ph.D.
Poster Presentation
Research has shown that emotion can influence what we later remember. This study will evaluate the memory specificity for emotional faces (i.e., memory for the details of emotional faces). Participants will be asked to remember a series of angry male and female faces. They will then be shown old faces, related faces, and new faces and will indicate whether the faces are exactly the same as the originals. Analyses will investigate memory specificity to determine whether remembering the details of previously seen faces is enhanced by emotion and whether it depends on inhibition (i.e., suppressing highly similar details).

The Role of Confidence and Inhibition in Long-Term Color Memory Specificity
Giselle Castro and Isabella Quattrucci
Faculty Advisor: Brittany M. Jeye, Ph.D.
Poster Presentation
The current study evaluates the specificity of long-term color memories. Participants were asked to remember a series of colored shapes. Participants were then shown old colored shapes, similar colored shapes, and new colored shapes and participants indicated whether these items were exactly the same as the original shapes and their confidence. Preliminary analyses demonstrated that memory for color is not specific and that color memory specificity may depend on inhibition between distantly related color shapes.

Communication and College Preparedness
Brian C. Cerow and Cheryl K. Donahue
Faculty Advisor: Colleen J. Sullivan, Ph.D.
Poster Presentation
Communication plays a significant role in academic and professional performance. Teachers' and students' ability to communicate effectively allows for ideas to be expressed clearly and benefits the learning process. Less is known about how students' communication with teachers affects their preparedness for college (Slate et al., 2011). The satisfaction with support and communication from peer mentors and the instructor in a seven-week summer online college preparedness credit-bearing course was explored. Multiple forms of communication (i.e., Zoom meeting, email, discussion boards, GroupMe chat) were used between the instructor, peer mentors, and first-year students. Results indicated that satisfaction with communication positively related to college preparedness, including self-understanding, social skills, mental health, and university information. Implications for engaging and communicating with
first-year students will be discussed.

The Student Experience: Campus Climate, Consent, and Comfort
Caitlin M. Couture, Hannah E. Rose, and Rena Yaghmour
Faculty Advisor: Kathryn E. Frazier, Ph.D.
Poster Presentation
Students enroll in college to work toward a degree, but other aspects of the college experience are important as well, including those that relate to feelings of inclusivity and comfort on campus. This study involved focus groups with students enrolled at a regional public university and included questions on topics related to consent, behaviors in healthy relationships, where students feel welcome on campus, versus where they feel excluded or uncomfortable, and students' ideas about intervention. Data suggest that students generally regard consent as a core value and believe that the perception of others at their school is similar. In addition, students tend to feel comfortable on campus, though there may be some need for further inclusion work. Implications and recommendations will be discussed.

College Preparedness in First-Year Students Affected by COVID-19 Pandemic
Cheryl K. Donahue and Brian C. Cerow
Faculty Advisor: Colleen J. Sullivan, Ph.D.
Poster Presentation
The COVID-19 pandemic created an abrupt shift in academic and social experiences for high-school students, similar to college students (Madrigal & Blevins, 2021; Marler et al., 2021). Extra preparation was expected to benefit first-year college students' college readiness. Worcester State University offered an online summer course designed to better equip students for various aspects of college life, and hopefully reduce the stress that comes with college transition. Using a pre- and post-design, components of college preparedness were measured such as social and academic skills, motivation, and personal wellness. Results suggest the benefits of a curriculum designed to support college preparedness and transition prior to their first semester. Implications for how to support first-year students prior to and during the first
year in college will be highlighted.

Evaluative Concerns and Externalizing Disorders: The Mediating Role of Suppression and Irritability
Diadora Finley, Kathryn E. Bohm, and Michela Lopez
Faculty Advisors: Alexandra M. Burgess, Ph.D., Leonard Doerfler, Ph.D., and Jeanine Skorinko, Ph.D.
Funding Source: Worcester State Foundation Student Research, Scholarship, and Creative Activity Grant
Electronic Poster Presentation
Perfectionistic evaluative concerns are a transdiagnostic risk factor for internalizing psychopathology; however, the relationship between perfectionism and externalizing psychopathology has not been examined. Theoretical work suggests that concerns over mistake making and failure might create chronic negative affect, which might lead to aggressive, impulsive, or substance-related behaviors. One potential mediational pathway between evaluative concerns and externalizing psychopathology is through suppression and irritability (Malivoire et al., 2019). This study measured perfectionism, emotional regulation, and externalizing disorders in a large sample of undergraduate students (N = 900) across three institutions using online questionnaires. Results showed the pathway between perfectionism, irritability, and externalizing disorders fit well but there was no significant pathway between suppression and irritability. Though the initial hypotheses were not fully supported, further research is needed.

The Impact of Emotional Intelligence Training On Teens' Self-Esteem
Erica B. Hanlon
Faculty Advisor: Alexandra M. Burgess, Ph.D.
Poster Presentation
The purpose of this study was to empirically evaluate the effectiveness of the Torch Foundation's teen leadership and emotional intelligence training workshop. This training aims to improve teens' overall self-esteem, communication skills, and emotional intelligence. I analyzed the results of pre- and post-workshop surveys taken by 412 teens ages 13-18 who participated in the workshop. A paired-samples t-test revealed a significant difference in the mean scores of teens' self-esteem before and after participating in the workshop. This research provides notable and beneficial data that shows that workshops like the Torch Foundation training have a positive impact on teens' well-being in many areas, including communication, relationships with others, confidence, and effort toward school.

Sense of Belonging and Academic Engagement Among College Students: A Motivational Perspective
Taylor H. Hapenny and Erica B. Hanlon
Faculty Advisors: Kathryn E. Frazier, Ph.D., and Colleen J. Sullivan, Ph.D.
Funding Source: WSU Teaching and Learning Innovation Grant
Commonwealth Honors Project
Poster Presentation
Self Determination Theory (SDT) describes the psychological need for autonomy, competence, and relatedness among students (Ryan, Connell, & Grolnick, 1992). The current study investigated the relatedness factor of SDT, and the importance of the relationship between sense of belonging and motivation among college students. Seventy-two students completed an online survey which included measures of sense of belonging and academic attitude. Our analysis examined the associations between a sense of belonging (classroom and campus climate), psychological need satisfaction, and motivation. Demographic differences were considered. We hypothesized that a greater sense of belonging would be associated with higher motivation in the classroom with intention to persist. Results suggest that there was a significant positive correlation between belonging and several variables, including intrinsic value, autonomy support, and engagement.

Generational Status and Threat Predict Mindful Non-Judging and Perseverative Thinking
Rachel Marsh, Wendy Fernandes, and Nicholas Giovino
Faculty Advisor: Champika K. Soysa, Ph.D.
Poster Presentation
Our research investigates threat and generational status as predictors of mindful non-judging and perseverative thinking. In 233 undergraduates, we found that first-generation status and threat accounted for a statistically significant 41.4 percent of the variance in predicting perseverative thinking. In contrast, threat and continuing generation status accounted for a statistically significant 34.4 percent of the variance in predicting mindful non-judging. Our findings indicate that generational status differentially predicted perseverative thinking and mindful non-judging in undergraduates. This confirms the need to support first-generation students in their academic endeavors.

Dispositional Mindfulness Mediates the Dispositional Serenity and Stress/Well-Being Relationships
Benjamin Morin, Sarah Stewart, Ethan Guertin, Wendy Fernandes, and Rachel Marsh
Faculty Advisors: Champika K. Soysa, Ph.D., Fang Zhang, Ph.D., and Maria Parmley, Ph.D.
Poster Presentation
This study examined whether facets of dispositional mindfulness account for some of the relationship between both dispositional serenity and stress, as well as dispositional serenity and well-being. In a sample of 506 undergraduates, mindful nonjudging, awareness, and describing with words accounted for some of the relationship between serene gladness and well-being, as well as serene acceptance and well-being. Additionally, mindful nonjudging, awareness, and non-reacting accounted for some of the relationship between serene gladness and stress, as well as serene acceptance and stress. Our findings suggest that both dispositional mindfulness and dispositional serenity make unique contributions to increasing well-being and decreasing stress. These findings provide a rationale for using externally induced mindfulness-based interventions as well as serenity-based strategies, to reduce stress and increase well-being among undergraduates.

Reflective Thinking and Scientific Reasoning
Brianah Parker, Jared Pathiakis, and Julia DiMarzio
Faculty Advisor: Benjamin D. Jee, Ph.D.
Electronic Poster Presentation
People vary in their tendency to enlist rational/reflective thought processes in everyday reasoning. This project explores whether a person's tendency toward reflective thinking relates to their performance on simple scientific reasoning problems. Adult participants completed both a test of cognitive reflection and a test of scientific reasoning that covered a range of basic topics. Our prediction was that participants who perform well on the cognitive reflection test would be more likely to provide correct answers to scientific reasoning questions. In this poster presentation, we report results from our study and discuss implications for science learning and instruction.

The Role of Individual Differences in Face Recognition and Mental Imagery in Inhibition of Long-Term Face Memory Specificity
Aliana Rodriguez Acevedo
Faculty Advisor: Brittany M. Jeye, Ph.D.
Commonwealth Honors Project
Poster Presentation
The current study evaluates the role of individual differences in long-term face memory specificity. Participants first completed an old-new recognition task using face stimuli varying in similarity to assess inhibition in facial memory specificity. Participants also completed the Cambridge Face Memory Test (CFMT) and Vividness of Visual Imagery Questionnaire (VVIQ). Preliminary analyses demonstrated that inhibition in facial memory specificity does not depend on individual differences in performance on the CFMT and VVIQ.

The Effects of Age and Marital Status on Motherhood
Imane H. Samari and Arhum R. Rizvi
Faculty Advisor: Kathryn E. Frazier, Ph.D.
Funding Source: Worcester State Foundation Student Research, Scholarship, and Creative Activity Grant
Poster Presentation
The current study investigated correlates of intensive mothering beliefs, well-being, and parenting behaviors. Previous research suggests that a mother's age (Cox et al., 2021 & Fulco et al., 2019) and marital status (Liang, 2019 & Kim et al., 2020) might have significant impacts on these variables. This study's goal was to explore whether differences in beliefs, behaviors, and well-being are significantly impacted by age and marital status. One hundred and thirty-nine mothers participated in an online survey containing various measures of mental well-being and parenting beliefs and behaviors. Maternal age at first child was significantly correlated with parenting beliefs and well-being such that older mothers tended to have better well-being scores. Marital status was related to significant differences in parenting behaviors, but not well-being.

SOCIOLOGY

Socialization in the Midst of COVID-19
Catherine R. Forde
Faculty Advisor: Alex Briesacher, Ph.D.
Poster Presentation
Since the COVID-19 pandemic began, our interactions with others have shifted. This study argues that the way we present ourselves has shifted due to social and structural changes associated with the pandemic. Specifically, this study analyzes how the pandemic has affected the way Worcester State University students socialize with others through the dramaturgy of masking. Through structured interviews with 20 respondents, I analyze how masking has specifically impacted students' interactions with others inside the classroom and throughout their college experience.

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