



MONMOUTH
UNIVERSITY

HONORS
SCHOOL

THE HONORS SCHOOL

RESEARCH CONFERENCE

FALL 2023

WITH GREAT PLEASURE, THE HONORS SCHOOL PRESENTS THE

FALL 2023

**RESEARCH
CONFERENCE**

FALL 2023

**HONORS SCHOOL
RESEARCH CONFERENCE
SCHEDULE**

Friday, December 8, 2023

Library 101


Opening Remarks:
Acting Dean Jennifer Ross

SESSION A: 8:20 - 9:15 AM

Noa Bass, *Biology (Molecular Cell Physiology)*
Abigail Eck, *Mathematics (Statistics)*
Olivia Hiers, *Chemistry (Biochemistry)*
Adriana Simancas, *Marine and Environmental Biology and Policy*

SESSION B: 9:35 - 10:30 AM

Rachel D. Soto, *Health Studies (Health Science)*
Sarah Godbout, *Health Studies (Health Science)*
Alyssa Gordon, *Nursing*
Hailey Brooke Louro, *Health Studies (Health Science)*

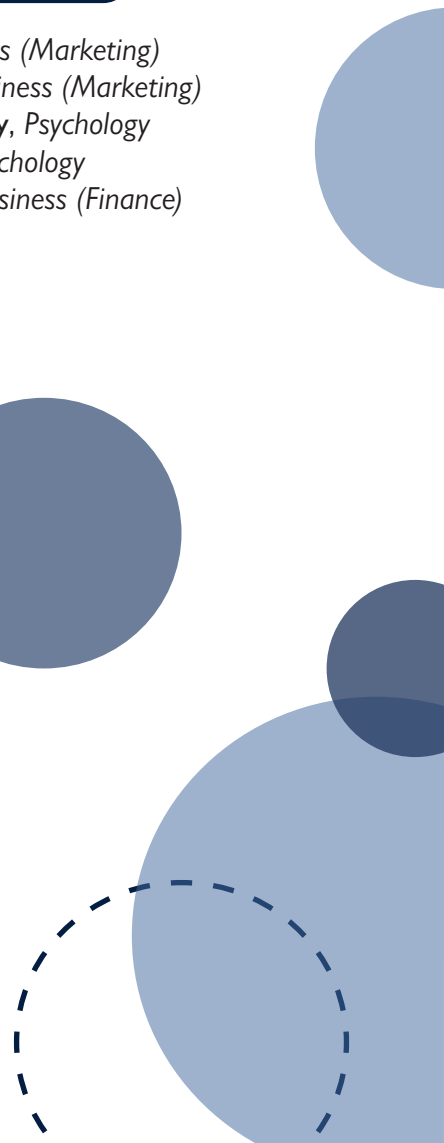


SESSION C: 11:40 AM -12:35 PM

Elena Worton, *Music (Music Industry)*
Charlotte Edwards, *English (Creative Writing)*
Hana Vozzo, *English*
Nicole Mautone, *English*

SESSION D: 12:55 - 2:00 PM

Carrissa Civitello, *Business (Marketing)*
Taylor Ann Charpentier, *Business (Marketing)*
Ariana L. Reyes-Connelly, *Psychology*
Connor Currie, *Psychology*
Joseph Dige, *History and Business (Finance)*



THESIS

ABSTRACTS

NOA BASS | FIRST READER: DR. DOROTHY LOBO

Manuka Essential Oil Decreases Proliferation and Causes Apoptosis in HT-1080 Fibrosarcoma Cells

Since research on the effects of essential oils on human cell lines is limited, the goal of this project is to treat cancer cell lines with manuka essential oil at different concentrations and ascertain the effects on cell proliferation on a variety of cell lines, including normal fibroblast (CUA-4) and fibrosarcoma (HT-1080) cells. Manuka oil is popular in many skincare products because of its antibacterial and anti-inflammatory properties that treat several skin conditions. However, manuka oil also contains an active ingredient that is commonly found in herbicides and is potentially toxic to human cells at certain concentrations. To study the effects of this essential oil on cultured cells, cell lines were grown on 24-well plates, and confluent cultures were treated with varying concentrations of manuka oil for 24 hours. The effect of the oil on proliferation and viability was measured through direct cell counting using trypan blue dye exclusion and through the use of an MTT assay. As the concentration of oil increased, viability of all cell lines tested decreased, which was reflected in the MTT assay results. To determine if the decrease in cell numbers observed from manuka oil treatment was the result of apoptosis, PARP cleavage assays via Western Blots were performed in HT-1080 cells. Furthermore, the role of JNK signaling in essential oil treatment was evaluated.

Handling Sparse Data Sets in Statistics

In certain cases, many studies analyzed in statistics are limited to a small sample size. This then makes it difficult to meet the assumptions of certain statistical tests because the sample size is not big enough to represent the population as a whole. The question of what alternative tests are best to use is therefore of great interest. For example, cystine urolithiasis is an uncommon genetic disease in canines. The rarity of urolithiasis makes it difficult for veterinarians to gather large data sets for this type of disease. Using data provided by the Red Bank Veterinary Hospital, multiple nonparametric statistical methods including Fisher's Exact Test, permutations, and bootstrapping will be used to answer the question, "Does surgical intervention, medical management, or both play a role in the recurrence of urolithiasis?" Power calculations will be used to figure out which of these three nonparametric tests is the best to use on this data. The results of the test with the highest power will then be given to Red Bank Veterinary Hospital. This will help understand which method is best to use when data that is being analyzed has a small sample size.

Line-shape Fitting Analysis of Dynamic NMR Spectroscopy in Rhenium Polyhydride Complexes

This project looks to prepare a rhenium polyhydride complex that is supported by a chiral nitrile ligand. The purpose for the nitrile ligand on the complex was to reduce the symmetry of the complex so that all rhenium-bound phosphorus atoms and hydride ligands become unique by NMR spectroscopy. Variable temperature NMR spectroscopy of such a complex should allow for determination of both rearrangement mechanisms for the various rhenium-bound atoms and for activation energies of the various rearrangements. After several attempts, the target complex was successfully prepared by removing a hydride ligand from a precursor molecule by the use of trityl tetrafluoroborate and coordination of the chiral nitrile molecule to rhenium. Room temperature NMR spectroscopy demonstrated that the complex was successfully prepared. Variable temperature NMR spectroscopy successfully observed all four individual hydride ligands and all three phosphorus atoms in the complex at low temperatures. Line-shape fitting of the variable temperature NMR spectra helped to both elucidate mechanisms for the rearrangements of rhenium-bound atoms and determine the activation parameters for the rearrangements. Results of the line-shape fitting will be presented.

Estimating Population Density of Eastern Box Turtles (*Terrapene carolina carolina*) in Suburban Monmouth County, New Jersey

Due to the global decline in turtle populations globally, there is an increased need for rapidly determining the status and change in populations to inform conservation and management plans. The Eastern box turtle (EBT) is a highly vulnerable species that inhabits a variety of forested areas in the Eastern United States, including New Jersey, but is at risk due to anthropogenic pressures, such as road mortality, habitat loss and poaching, especially in suburban environments. EBT is particularly cryptic (hard to see) and seasonally elusive (behaviorally hard to find), making detection challenging. Traditionally, capture mark-recapture (CMR) has been used to estimate population rates and states. In this study, I used human- and canine-based sampling for four plots in a NJ suburban park to understand EBT populations. A total of 71 individuals were captured 99 times over 10 surveys. The Schnabel Method was used to estimate population density, and density was applied to the entirety of the site, as well as the two main habitat types studied (old field and forested). The grand population density estimate across the four plots is 83.06 ± 66.18 turtles per hectare, yielding an estimated population size of 5680.63 EBT in the entirety of the study site.

Student Experiences with Pre-Class Videos in the Flipped General Chemistry Classroom

The flipped classroom approach is becoming increasingly popular in higher education STEM classrooms. As time progresses, new literature on the course structure emerges. The flipped classroom can be broken up into three main components: pre-class activities, in-class activities, and post-class activities. Pre-class videos are a shared resource utilized in the pre-class component of the course structure. Cognitive load theory supports using pre-class videos to reduce cognitive load on students. This study investigated student experiences and cognitive load in pre-class videos through interviews of 10 participants in flipped General Chemistry 1 and 2 classrooms at Monmouth University. Coding analysis of interview data revealed a majority of themes related to extraneous load. Future research can work to develop methods to increase the benefits of the flipped classroom while decreasing the extraneous load and determine the impact of the flipped classroom through quantifiable variables.

The Efficacy of Aphasia Support Groups on Patients and Their Families

Those who are diagnosed with aphasia, commonly caused by a stroke, are said to experience a loss in their quality of life. One way in which this is significantly improved is through aphasia support groups. Aphasia support groups establish a community that normalizes said language disorders and provides attendees advice that might crucially be of service to them, thus creating an environment that is successful at generating a positive emotional response for an individual with aphasia as well as their loved ones. Without aphasia support groups there is an increase in rates of depression and anxiety among these individuals, as well as self-isolation from society, revealing how critical aphasia support groups are to the rehabilitation process. After conducting an initial systematic review focusing on aphasia treatments and the impact of support groups, an observational paper was drafted to verify the hypothesis that being in an aphasia support group elicits a positive emotional response in its members. The evidence contained in this paper includes observations made while viewing two types of aphasia support groups that took place on July 31, 2023, and August 16, 2023. The findings support the argument that support groups are very effective in eliciting position responses from members and their families.

Influences of Social Media Use on Adolescent and Youth Mental Health

With the progression of society, technology has immensely influenced individuals' daily practices. Adolescents and the youth have particularly become accustomed to communicating on social media. Although social media facilitates connectivity between individuals, it can negatively alter individuals' mental status. Without an awareness of the potential impacts of social media use, these individuals are vulnerable to mental health conditions, especially due to their stage of life. Both the prevalent use of social media and the appearance of mental illnesses have become public concerns. The social comparison theory further establishes this notion. One's mental status can significantly influence their quality of life. Thus, it is necessary to investigate this phenomenon in order to minimize the risk factors that can result in the development of mental illness. This paper utilized studies from scholarly database sources to collect information on factors that determine how social media use impacts youth mental health as well as interventions to approach this matter. Some of the results suggested social media as merely being a threat to youth mental health, whereas other studies depicted potential positive outcomes of social media use. Although there is uncertainty regarding this matter, the literature proposed several interventions that can possibly optimize social media use.

Course Proposal: Introduction to Aerospace Medicine

Space exploration has been of growing interest over the previous years. With the addition of the U.S. Space Force and increased interest in space travel, health conditions in regards to aerospace advancements will become a topic of interest for undergraduate students in the years to come. Aerospace Medicine is important to study in connection with space travel because these advancements will one day be able to provide citizens with the liberty of traveling via space. An introductory course in Aerospace Medicine at my four year institution will interest students from various majors and allow them to unite. Offering a course in Aerospace Medicine will enhance course options and provide students with unique experiences to note in their postgraduate applications which can be beneficial considering more schools are utilizing a holistic review approach. Humanity has been shown to have a growing interest in space travel and, consequentially, the health conditions that come with it must begin to be taught in undergraduate universities. Students from all backgrounds, degrees, and goals can benefit from this course and can find a topic of interest for them in relation to their future careers. Some topics that will be incorporated into developing this course will include how radiation impacts the body, microgravity circulation changes, muscle atrophy, and decreased bone densities in astronauts.

Enriching the Music Education Experience

Between personal experiences, lifestyles and opinions, there are multiple factors that may affect the amount of student participation in a music program. When music programs see declines in engagement, how can the interest in learning music be restored? Within this research, tactics were explored in which music programs can most effectively be strengthened. Through the analysis of three major themes – well-being, motivation, and relevance – it is demonstrated that focusing on these areas can create more meaningful music education experiences. By knowing what can improve a music program's effectiveness, more students may have their lives impacted by music education. Therefore, this capstone project has culminated in two parts: a booklet intended to be a resource for music educators and an accompanying overview video. The booklet is based on the themes explored in the literature review, and it offers examples in which music educators can work towards increasing student involvement or leaving a more prominent effect on students. The goal of this research and project was to illuminate what educational approaches prove effective in music education. I hope to offer a resource that inspires music educators with methods to make music education a more unique, memorable, and impactful experience for students.

Behind the Mask: Memoirs

Separation and divorce are significant and highly stressful events that commonly affect and alter the lives of families, particularly for the lives of the children involved. Many parent roles tend to undergo some form of change during and following the process of divorce. These tense dynamics sometimes result in one parent becoming absent from their children's lives, which impacts the children's development in varied ways. Employing the running metaphor of Darth Vader's paternal role in George Lucas's *Star Wars* collection, and following a six-chapter sequence that covers the time span of 2011 to 2023, the memoir created for this project utilized personal accounts that focus on divorce and my experience in navigating my relationship with my distant father to explore and comprehend how these factors impact children's development into adulthood on a social and emotional level. The story also serves as a resource in helping readers across different age demographics to seek and achieve catharsis for the challenges and traumas they endure in these kinships. Upon reviewing different forms of scholarship and other published memoirs, I contend the importance in raising awareness towards the reality of separation and divorce on storytelling platforms as it helps individuals assimilate the occurrence of these events in society, and to find clarity and autonomy in their roles both in and out of complex parent-child relationships.

Analyzing the Intersectional Identities of Racially Gray Characters in *A Black and White World: A Literature Review Exploring Scholarship on Nella Larsen's Passing and Quicksand*

My thesis examines the themes of identity and belonging in Nella Larsen's novels *Passing* and *Quicksand* to answer the research question, "What can readers understand about the female protagonists when reading *Quicksand* and *Passing* through the lens of intersectionality?" To educate myself on the existing conversation regarding how the themes operate in the novels, I reviewed a substantial body of scholarship and found that many scholars, despite not directly naming the theory, touch on fundamental elements of intersectionality, discussing the intersections between race, class, gender, and sexuality to understand how the characters perform identity roles to ease internal dissonance. Reading this scholarship has led me to conclude that viewing these characters through a lens of intersectionality is integral to understanding the characters' experiences of oppression and discrimination. Thus, for future research, reading the novels through a lens of intersectionality informed by the principles of double consciousness and identity performance, I could argue that, although Irene, Clare, and Helga experience the world via different racial identities, they inhabit a racially gray space in a black and white world.

Expectations and Subversions: The Semiotics of Psychological Horror in Doki Doki Literature Club

A visual novel is an emergent genre that is a hybrid between a traditional novel and a videogame. Unlike them, a visual novel uses three sign systems--Auditory, Written Language and Typography, and Visual--to achieve effects that either cannot. A visual novel by Team Salvato, *Doki Doki Literature Club!* (DDLC), appears to begin as an anime-style dating simulation and continues that way for the first four hours, building expectations that create a false sense of security. However, something more sinister appears to be at work from act one, chapter six to the beginning of act two, chapter one, in the middle of which a major disturbance occurs, unsettling the reader and creating psychological horror. The familiar and comfortable sign systems now induce stress, fear, and uneasiness. This thesis semiotically analyzes each of the three sign systems to understand how each works independently, as well as examines how these three systems operate collaboratively to create the psychological horror. For example, for four hours, the player experiences static visual imagery and on-key music at a normal speed with dialogue in textboxes, but when the disturbance occurs, visual images become dynamic, music slows and goes off key, and written language is absent.

Catering to the Quiet and the Sociable: A Proposal of Introversion and Extraversion as Emerging Market Segments

Target marketing leverages a number of human characteristics to best persuade a specific consumer group. These characteristics may include demographic, geographic, and psychographic, as well as lifestyle traits. The psychographic factors considered in target marketing most commonly include an understanding of consumer values and behavior, not personality type. Few studies have analyzed how personality type, more specifically introversion and extraversion, might shape the outcome of a campaign. Introversion and extraversion have proven to have a pivotal role in other areas of business, such as the workplace, sales forces, and customer engagement. Drawing on that connection, this research hypothesized that these personality types might also impact consumer responses to a marketing campaign, particularly the promotional element. To answer these queries, multiple theories of personality were analyzed, including Jung's Theory of Personality, and applied to previous research in relation to introversion and extraversion in target marketing. Results reflected that there is considerable merit behind the pursuit of tailored advertisement campaigns that target introverts and extraverts respectively. Such strategies might produce increased metrics and create a more predictable and direct campaign. Subsequent research is suggested to further corroborate this conclusion.

Gender Inequities of Elite Athletics: Media Coverage and Representation

As women's sports in the United States grow, the amount of coverage of elite women's sports remains low in comparison to men's elite sports, and the content of coverage - if it exists - is often sexualized or stereotyping in nature. This research aims to find answers as to why women's elite sports are underrepresented and misrepresented in the media, and how the issue can be fixed. Specific focuses of the research include gender inequality in media, gender inequality in sports media, gender inequality in professional sports, gender inequality in college athletics, the rise of social media, marketing strategies of college athletics, and how consumerism impacts the gender gap in media coverage of sports. The results of the literature research confirm that there are large discrepancies in media coverage of elite male and female athletes. Statistics also show that if women's sports are covered in a way that is analogous to men's coverage, people will watch or listen. Thus, the method of problem solving is to provide women's sports fans with a podcast devoted solely to women's sports. Created and hosted by female athletes, the podcast will be authentic and provide awareness of the inequalities female athletes experience while also contributing to providing more media coverage of elite women's sports.

The Pipeline Issue of Underrepresented Students in Institutes of Higher Education

This paper will examine why many minority students are leaving their science, technology, engineering, and mathematics (STEM) majors after matriculation to institutions of higher learning. Many of these student's attribute experiences of racism, microaggressions, and a lack of support to their decisions to move out of these areas of study. It has been shown through prior experimentation and research that there are certain programs that help minority students feel comfortable in their program of study. It is important to examine these patterns in order to support minority ethnic group students, additionally it is important to support our STEM workforce to maintain an influx of new ideas and innovations. To find these patterns, the PsycINFO database was used. The search revolved around the mental health and day-to-day experience of minority students and students of color and was limited to peer reviewed and full text only articles. The review of these studies demonstrated institutional shortcomings in the realm of faculty support, peer support, diversity, equity and inclusion training and mental health services that they provide to their students.

Pets and Isolation: How Does Animal Interaction Affect Loneliness?

This study evaluates how different interaction levels with a pet affects people's self-perceived level of loneliness. Past research indicates that owning a pet or interacting with a pet can in fact lower a person's level of loneliness, thus lessening their risk of developing adverse mental health effects. The significance behind this study can be related to ways in which pets act as a form of social support for people who live alone or in times of social isolation, which can prevent mental health from deteriorating. Participants of the study viewed different pieces of media, one where the puppy was licking the screen and trying to interact with the participant, one where the puppy was playing by itself, and one with no video acting as the control. The study hypothesizes that the low interaction group would rate their loneliness as higher than the moderate and high interaction groups, and the moderate interaction group would rate their loneliness as higher than the high interaction group. Results were found to not be significant in this study, however there is importance in noting that social interaction with pets, like people, cannot be replicated in a digital manner.

Experiencing the Past: What Do Visitors to New Jersey Historical Sites Hope to Experience?

The preservation of cultural and historical heritage in the form of objects and sites of significance forms an integral aspect of our society as we strive to ensure that these precious heirlooms continue to be passed down through the generations. In the pursuit of such stewardship, it is important to understand how the public seeks to interact with historical sites and how those desires can be catered to and complimented through management. It is the goal of this study to determine the value that the public gains from the continued preservation and use of historical sites. Through an understanding of the value which visitors seek from such sites the policies which govern their management and preservation may be adjusted to better serve the needs of the public. Such an understanding was gained through the responses of historical site patrons to a questionnaire. From these responses, connecting with the history of the site and education are the primary motivating factors of visitors.

OUR MISSION

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

PROGRAM DESIGN BY eina die