

Spring 2018 Capstone Abstracts

Pursuing an American Education: How the Migration Process Influences International Students Adapting to Life on an American Campus

Nikole Seay (Nana Arthur-Mensah)

International students have become a major part of American institutes of higher education. This has resulted in American Universities recruiting International Student by sending recruiters internationally to high school and colleges, through recruitment videos, and other means. This study addresses the migration and adaptation experiences of international female students attending an American mid-western University. Through qualitative interviews conducted with five participants based on their migration experiences and through analysis determining if those experiences had any effect on their adapting to life on an American campus. The findings suggest a connection between the migration process and adaptation on American Campuses for International Students.

Female Serial Killers in the United States

Sydney Renner (Marcos Misis)

Female serial killers, to the public, are a rarity. In the past century there have been sixty-two known female serial killers in the United States. Based on the information we do know, there are possibly numerous more who have gone undetected. Most research regarding female serial killers focuses on facts about each killers' career. Why are there so few female serial killers compared to their male counterparts? This research looks into why females commit serial killings. Several theories that are used to explain this type of behavior in females include mental health issues including antisocial personality disorder and the frustration-aggression theory, genetics, the Chicago School theory of socialization, and the social control theory stakes in conformity. Specific case examples were analyzed as support for each of the aforementioned theories. The stakes in conformity social control theory provided the most evidence to be a reason why females commit serial killings, though it does not explain why all female serial killers exist. Without more research, and case studies, one theory providing reason for all female serial killers cannot be given.

An Explanatory Exploration of the National School Lunch Program

Nicole Erb (Jessica Taylor)

There is a hidden issue in our community and in communities across the nation. That issue is food insecurity which refers to having a limited or uncertain access to adequate food. To combat this issue, students are utilizing a federally sponsored nutrition program aimed at providing nutritious foods to school-age children at a free or reduced cost. This program is known as the National School Lunch Program, or NSLP. While some research has been conducted on the effectiveness of the NSLP, little is known of the effectiveness through the eyes of the school faculty and staff members who interact with the students five out of seven days of the week. This research reports on elementary school faculty and staff perceptions of the NSLP using survey questions geared at providing a better insight into the program.

Bacteria Biofilms on Contact Lenses and a Health Informatics Solution

Keith Privé (Patrick Schultheis)

Reports of complications from bacterial infection of the cornea, including loss of vision increased exponentially in the 1970's, shortly after soft contact lenses became popular. Bacteria can form biofilms on the plastic polymers of contact lenses. Biofilms may consist of multiple bacterial types which work together resulting in resistance to antibiotics and disinfectants. The purpose of this research is to

identify the types of bacteria which grow on contact lenses under normal use and examining links between patterns of bacterial growth and lens care. Once patterns were identified, a health informatics system was designed to reduce infection rates of contact lens wearing patients.

A Comparison of Two Antipsychotic Drugs on Behavioral Development in Rats

Emily Baltes Thompson (Mark Bardgett)

The rates of atypical antipsychotic drug prescriptions in pediatric populations has risen over the last two decades, but little is known about the long-term consequences of these drugs on brain and behavioral development. In rats, developmental administration of risperidone, the most widely-used antipsychotic drug in children, elicits locomotor hyperactivity that can persist into adulthood. It is not known whether developmental risperidone administration can impact other behaviors later in life, and what the effects of other antipsychotics are on the same behavioral measures. The purpose of this study was to compare the effects of early-life risperidone administration on locomotor activity and reward sensitivity to similarly timed administration of aripiprazole, the second most commonly used antipsychotic drug in young children. Pups ($n = 12$ per group) received subcutaneous daily injections of 7.0 mg/kg aripiprazole, 21.0 mg/kg aripiprazole, 3.0 mg/kg risperidone, or vehicle between postnatal days 14-28. Acute risperidone administration during development suppressed activity immediately after injection, but was associated with elevated levels of spontaneous locomotor activity during adulthood. These effects were not observed in rats administered aripiprazole early in life. Neither drug affected locomotor responses to amphetamine or MK-801 during adulthood, but each drug slightly, but significantly, increased sucrose preference – a measure of reward sensitivity. These data suggest that the impact of early-life aripiprazole on brain development is less dramatic than the impact of early-life risperidone, but that both drugs modestly increase sensitivity to reward.

Contribution of NMDA NR2B Subunit to Methamphetamine Conditioned Place Preference

Hunter Campbell (Justin R. Yates)

Psychostimulant abuse has become a major issue in the United States. Methamphetamine, which has high abuse potential, has become especially problematic. With no current FDA certified pharmacotherapies for psychostimulant drugs, it is difficult for individuals to decrease their methamphetamine use. The goal of the current experiments was to determine if Ro 63-1908, a highly selective N-methyl-D-aspartate (NMDA) NR2B subunit antagonist, is capable of decreasing the conditioned rewarding effects of methamphetamine. Male Sprague-Dawley rats ($N = 36$) were tested in two conditioned place preference (CPP) procedures. The effects of Ro 63-1908 (0, 1.0, 3.0 mg/kg; s.c.) were tested on the acquisition (Experiment 1) or the expression (Experiment 2) of methamphetamine CPP. Ro 63-1908 (3.0 mg/kg) blocked the acquisition of methamphetamine CPP, as evidenced by a decrease in preference ratios. Although rats treated with Ro 63-1908 (3.0 mg/kg) did not show expression of methamphetamine CPP, preference ratios did not significantly differ from rats treated with vehicle; therefore, caution is needed when interpreting the effects of Ro 63-1908 on the expression of methamphetamine reward. Together, these findings suggest that the NR2B subunit is an important mediator of the acquisition, but not necessarily the expression, of the conditioned rewarding effects of methamphetamine.

Introduction to Geology

Noah Love (Sarah Johnson)

The goal of this project was to teach high school students about geology to spark their interest in getting a college degree in the subject. I developed a class aimed towards homeschoolers, as their class schedules are more open to change than most. The class itself covered the basics of geology; minerals, types of rocks, layers of the earth, and then got more into other topics, like plate tectonics, deformation,

geological mapping, and careers available in geology. The students seemed to enjoy the class and did well, with everything culminating to a day trip to mammoth cave the end of the semester. While I'll probably never know if they end up getting a geology degree, I do know I've planted the seed of knowledge in their minds, and I intend to continue teaching this class in order to inspire more students towards geology.

Art, Territories, and Tours through Optimization

Courtney Taylor(Lisa Holden)

Operations research is marked by its use of mathematical models to solve management problems. Linear and integer programming techniques are tools used in operations research to optimize a linear function subject to certain linear constraints. Depending on the number of variables, linear programming problems can be solved either graphically or algebraically using the simplex method. Integer programming problems, in which optimal solutions must have integer values, can be solved using techniques such as the branch-and-bound algorithm. Programs, such as MATLAB and Excel, can be used to automate these solution techniques. This paper outlines three projects that each involved the use of linear and integer programming methods: creating pointillistic renderings of digital images, redistributing territories to pharmaceutical sale representatives, and reimagining a summer band tour as a selective traveling salesperson problem.

The Effects of Music on Alzheimer's Disease Symptomatology

Catherine Tuttle (Justin Yates)

Music is commonly used to aid the memory of Alzheimer's patients. There have been several studies that have examined how Alzheimer's disease could potentially be cured, or at least how symptoms could be alleviated temporarily. In the current experiment, a total of seven patients, five women and two men, in the Alzheimer's and Dementia unit at Western Hills Retirement Village between the ages of 70 and 100 were recruited. All patients started out listening to swing-style music through the radio. Initially, the patients did not interact with the music. The patients were later given lyrics to music, and the CD was played. The patients were then encouraged to sing along with the music. Most sang along, some danced or participated in some sort of movements during the song, and some answered questions about the music when asked about different memories or emotions while the music was being played. Overall, the participants interacted with the music more when given sheets of music and when listening to music that they were more familiar with, as they reported that they knew the songs being played from when they were growing up. These findings show that Alzheimer's patients do have a tendency to interact with music in a positive way when prompted. Overall, music could potentially help treat symptoms in some Alzheimer's patients.

Constructing the State: How Myth Shapes Political Identities

Emily Ann Israelson (Jonathan McKenzie)

The concept of myth is generally associated with irrationality, falsehood, and religious practices. However, the purpose of myth is not merely to explain the world in which people live, but also to justify that world and ensure that it continues to exist indefinitely. Understood in this way, myth is ubiquitous; it is found not only in states but in every type of institution and every level of human organization and has evolved so closely with human associations that it is inextricable from both the personal and the political. Myth is defined here as a narrative, based on shared history and collective memory, that produces and reproduces political significance for a group. The extent to which political myth permeates societies is explored here as well as the ways in which it grows and changes. By defining myth, identifying its parameters of use, and dispelling the misconceptions that give myth a diminutive

connotation, this research intends to open the door for political psychology and political communications to conduct empirical research on a relatively untouched political phenomenon.

Endophytic Fungi and its Potential Use in Antibiotic Drugs

Hannah Gilreath (John Carmen)

The discovery of novel antimicrobial products has become crucial due to the increasing number of drug resistance pathogens and fungal infections. The objective of this study was to discover and extract possible antimicrobial compounds from endophytic isolates. Plant samples were collected from the Greater Cincinnati Tri-State area and yielded a total of 70 isolates. Antimicrobial activity of the isolates was tested through co-culture assays using a variety of both bacterial (*E. coli*, *S. aureus*, *P. aeruginosa*, *K. pneumoniae*) and fungal (*C. albicans*, *C. glabrata*, *C. krusei*, *C. tropicalis*) agents. ITS gene sequencing was used to determine the identity of the active compounds. The active compounds were extracted using organic solvents and underwent a disk diffusion assay. Overall, the diversity and abundance of endophytes is a potential source for synthesis of new antimicrobial compounds.

Hydromorphone as an Alternative Medication-Assisted Treatment Option for Heroin Use Disorder

Regan Bales (Perilou Goddard)

Opioid use disorder has become a prevalent issue within the Tri-State and has specifically impacted many individuals in the greater Cincinnati area. Opioid use disorder affects individuals of all ages, races, and socioeconomic statuses. There is not one specific cause or reason for the disorder, but rather a combination of genetic and environmental factors. The current treatment options implemented locally for opioid use disorder are limited, and ultimately ineffective for many people long-term. This literature review highlights the benefits of medication-assisted treatment of opioid use disorder, particularly the use of full opioid agonists such as methadone and the use of heroin-assisted treatment in other countries. The use of hydromorphone, another opioid agonist, is discussed as an alternative for people who have not benefitted from other agonist treatments.

Mental Health: Hope through Education

Madison Overwein (Kayla Steltenkamp)

My capstone project entailed the exploration of mental health education within schools through the creation of a website. This website was proposed to teachers and faculty in local schools in order to test their knowledge and understanding of mental health topics. Specifically, my website incorporated information regarding the prevalence of mental illness in adolescents, 5 common mental illnesses recognized in adolescents and the symptoms associated with them, case studies involving a student displaying a mental illness, and the steps after identification of symptoms. As the website discusses, mental illness is often first recognized in adolescents. Therefore, my website focuses on educating teachers and faculty of this age group, who can then educate and support their students. The findings from my website indicated a lack of education regarding mental health topics in schools. Through their responses, teachers and faculty proved the demand and desire for better mental health education in schools.

Undergraduate Mindfulness Course Effects on Coping with Stress

Madison Cobb (Belle Zembrodt)

Mindfulness is defined as having awareness in the present moment within you and around you without passing judgment. Previous research has found that mindfulness techniques can be beneficial for anxiety, depression, and overall stress. However, previous studies have failed to apply these teachings to the undergraduate student population who are found to be in great need of stress intervention. The present study aims to analyze the effects of a structured undergraduate mindfulness course on overall

stress levels, coping with stress, and potential burnout. More specifically, this study uses a quantitative approach with pre-test and post-test scores to better understand how this mindfulness course effects students compared to a control classroom. Findings suggest that the students exposed to mindfulness teachings are more likely to improve in stress coping, burnout potential, and overall stress although larger scale testing is called for in future research to allow for statistically significant results all around.

A Walk through Geologic History

Daniel Martin (David Kime)

This project seeks to fulfill a twofold purpose. First, it seeks to engage students in the wildflower and community gardens next to the former Honors House by providing convenient walking access. The second intention this project seeks to accomplish is to reach the student body of Northern Kentucky University with a simplified geologic history of the greater Cincinnati area. To accomplish these tasks, a pathway was constructed from Parking Lot I through the wildflower garden to the former Honors House with four stations along the way. Each station has a central theme, with rock samples illustrating that theme and grant-funded signs explaining the theme and the rocks at each station. The four themes are the Cincinnati Arch, the formation of limestone, the effects of wet shale on construction, and the ways glaciers have shaped Cincinnati. The project was constructed using volunteer labor and funded by SURCA grant money. It attempts to help alleviate the lack of general geologic history among the general population of the area and perhaps serve as a model for future, more extensive projects.

All and Nothing: A Study of Asexuality Representation through Playwriting

Laurel Ellis (Kristin Hornsby)

All and Nothing: A Study of Asexuality Representation through Playwriting

All and Nothing is a play about a young man struggling between staying true to his newfound identity as asexual and giving in to blackmail to protect him and his family. There is very little positive asexual representation in the media, which can be very harmful for asexual people as positive portrayals provide reassurance to identity. To address this, I wrote an adaptation of Euripides' Hippias in modern times with two asexual characters as well as including a variety of representation within the play. One asexual character is affirmed in their identity from the beginning of the play and the other faces challenges throughout the play that eventually lead to security in his identity. Other important topics discussed within the play include teen suicide, mental illnesses, non-nuclear family relationships, and the delicate line of where to stop pushing people when you know something is wrong in their lives. This project increases positive portrayals of asexuality in media, helping to spread awareness of a lesser-known sexuality.

Making a Typeface: An Exploration of Type Design

Alysia Bauer (Hans Schellhaus)

For my capstone, I decided to explore my interest in typography by designing a typeface. During my time in the Visual Communication Design program at Northern Kentucky University, I have taken a variety of courses that target various aspects of design; typography has always been one of my favorite topics. In the final class, we explored type design and took a different direction to analyze letterforms. How are they constructed? What is their persona? Where would you use or see it used in application? I discovered that the technical side of typography is something I enjoy, so when it came time to choose a subject matter for my capstone, I knew exactly what I wanted to focus on. I wanted the typeface to be inspired by who I am as a designer and have a similar personality to myself. In the end, I created a display typeface that is light-hearted and quirky. I am satisfied with what I have accomplished while completing my capstone and look forward to using the knowledge gained in my future as a designer.

Swipswap: The Making of an RPG

Reva Short (Nicholas Brummer)

Role-playing games (or RPGs) are experiencing an increase in popularity, mostly due to pop culture references. However, the games themselves can be daunting to beginners as they are filled with unfamiliar terminology and gameplay rules. SwipSwap was created as a way for new RPG players to become acquainted with role-play terminology and mechanics. My capstone began when I studied abroad in Scotland. There I learned about game design and creation. When I returned to the US, I was able to use this knowledge to create, playtest, and refine SwipSwap. I was also able to ensure that the game was as family friendly as possible. In the end, I was able to take a simple idea and desire and turn it into a fully-fledged RPG.

How Schizophrenia Is Portrayed In Films Purportedly About Schizophrenia

Haley Day (Angela Lipsitz)

The portrayal of different aspects of psychology has been inconsistent in films for decades. Research illustrates that mental disorders have continuously been portrayed as violent and inaccurate. This project was a content analysis of the portrayal of schizophrenia in feature films released between 2001 and 2017. Two trained coders, blind to the specific purpose of the study, independently watched 23 films identified in popular sources as being about schizophrenia. Coders completed a 3-page coding sheet about each movie. Results of descriptive statistics indicated that most of the characters who supposedly had schizophrenia were Caucasian males between 25 and 50 years old and that 22% of the films that were purportedly about schizophrenia did not meet the criteria necessary for diagnosing schizophrenia. Also, in almost all of the films (95.7%) the characters exhibited some sort of violence or aggression. Over one-third (34.8%) of the characters with schizophrenia were depicted as having a special ability. Lastly, the biological causation of schizophrenia was only evident for 21.7% (5) films.

Inside NKYDC

Sabrina Anglin (Ali Godel)

For my honors capstone I did a service learning project using the PARC model by Campus Compact. I did an internship at the Northern Kentucky Youth Development Center (NKYDC). I spent one day a week there and I would blog about my experience. I did a lot of one on one work with the residents as well as helping out the staff. I worked with one resident from the time I started my internship until my last day. I will continue to volunteer there. It was an amazing experience that has shaped me into a woman who knows that she is in the right career field and who is confident. I am so happy to have done this capstone and I know that I got everything I was supposed to get out of it and more.

Makeup and its Meanings

Hayley Emmerich (Andrea Lambert South)

In my capstone, which was a qualitative communications based research study, I explored the meanings that women attached to makeup looking at different aspects of their experiences with makeup, like how they first learned about makeup, who influenced their makeup journey, how important makeup is to them, what they use makeup for, etc. Participants were 10 women aged 18-23, who participated in semi-structured interviews regarding their experience with makeup. After transcribing the interviews with participants and analyzing and coding their responses three main themes were found: empowerment and expression, family versus social media influence, and overcoming past insecurities. I then looked at different communication theories and tactics as well as other secondary research that applied to these themes and how participants used makeup. A discussion of the results including limitations and directions for further research, was included in the research paper I created from the research study.

Love is Broken

Paige Coble (Paige Byam Soliday)

The title of my capstone is “Love is Broken,” and it takes the form of a half-day workshop for high school students to raise awareness regarding the toxicity of pornography on relationships. It initially was planned to be a thesis, a long paper about the research I conducted with my opinion strategically inserted as to persuade my audience. As I explored ways to narrow my topic, however, I felt deterred and discouraged because, to me, I felt as if I had nothing to contribute. A thesis would remain in the realm of academia, where I already found versions of what I had to say. Thus, I designed this workshop, Catholic high school students as my audience, though the content could be altered for public schools or other groups of people. Included in this project is an initial survey, a schedule, an introduction, two talks, discussion questions, and, of course, a resource page.

Looking at Human Compassion and Care through Art

Zulma Rosales (Lisa Jameson)

The project, “Looking at Human Compassion and Care Through Art,” is a project meant to serve as an exploration into the depths of what compassion can do for people when it is depicted in a work of art. It also served as a way for the artist to change her own mind about humanity and to help her believe that people have more reason to be compassionate than not. The method used to achieve this project was to first look into research centering around human compassion in order to have a better understanding of it. Then, sketches were made to explore what art style would fit best as well as what kinds of compassionate interactions were best to show. Quotes from the readings were added to give more meaning to the works. The results were four 17 inch by 14 inch posters and several sketch pages. The conclusion of the project was that the artist was able to start thinking differently about human compassion in everyday life and has gained and shared deeper knowledge of what compassion can do for humanity.

Increasing Parental Presence and Kangaroo Care in the Neonatal Intensive Care Unit

Maria Smal and Casey Pape (Debra Bryant)

The purpose of this project was to increase parental presence and Kangaroo Care in the Neonatal Intensive Care Unit (NICU). It was completed via a systemic literature review, a Likert Scale parent pre-and-post-survey, conduction of observational studies in the NICU, and implementation of a reward system. It was found that parental education, visual reminders, and reward systems increase parental presence, which increases skin-to-skin contact, or Kangaroo Care, and positive clinical outcomes. The strengths of this research include innovative practicality and clinical benefits. The limitations are the sample size and lack of staff participation. Future recommendations include observing other NICUs to determine practices and rates of parent presence and applying this project again, hopefully with more staff involvement.

Major Concerns: Why Did I do College?

McKenzie Eskridge (Joan Ferrante)

Major Concerns: Why did I do College? is a five-episode podcast series that explores and questions the purpose of public and higher education in the United States. Through the series, I briefly relay the development of higher education in the United States and invite the audience to follow my conversations with various guests on topics like the merits of a classical education, the responsibility of schools to prepare students for active citizenship, differences between schools for elite children and affordable/public education, what it's like navigating the work world as an adult without a college degree, and the radical conclusion I come away from this project with—that public and higher education currently serve to maintain the status quo.

Childhood Friendships and their Impact on Adulthood

Celeste Shearer (Andrea Lambert-South)

Childhood interpersonal relationships and the quantity and quality thereof has been found to impact mental health in adulthood. Bowlby and Ainsworth also conducted research in the mid-20th century regarding the impact of childhood caregivers on our intimate attachment patterns as adults. However, there is little research on how our childhood interpersonal relationships impact those in our adulthood. This study attempted to analyze participants' childhood friendships and adulthood relationships (particularly romantic in nature) in search of possible patterns or correlations. This study also explored cultural expectations of childhood friendships. Qualitative interviews were conducted with one British, two American, and three Dutch individuals. While few major differences were present, there was a trend which showed adolescence was a pivotal point in every person's development in interpersonal wellbeing. Developmental psychology research supports this idea as adolescence is when individuals develop their identity and their complex communication skills. This study was extremely limited in numbers, but there could be great potential for interpersonal research if conducted via detailed, cross-cultural, longitudinal studies.

The Detection of Harmful Algae Blooms

Sally Dufek (Michael Waters)

There has been an observed increase in the severity and frequency of toxic blue-green algal blooms in recent years. The ability to quickly and affordably differentiate between benign green algae and potentially toxic blue-green algae is of importance. A machine learning classifier, support vector machine, was developed to do just this. I worked to improve the accuracy of this algorithm by fine-tuning several algorithms and functions within the code. In addition, I developed code to automatically create histograms of the Hue-Saturation-Value contributions of each training set and used these graphs to justify the use of a linear classifier. I also examined how the Hue distribution at Lake Harsha fluctuated throughout the day.

A Philosophical Look at Mass Incarceration

Christian Carey (Jonathan McKenzie)

My final project was done in the form of a 25 page research paper, and focused on the philosophical history of mass incarceration and how it relates to the issue in contemporary United States. I found that there are a great deal of similarities between what Michel Foucault found in 1960's France, and what is currently going on in the United States prison system. There are inherent biases within the prison system that target a certain subset of the state, and that community is oppressed. Overall, my project found that the United States prison system is very flawed, and nearly impossible to correct because it is so ingrained in our society.

Impact of Dance on People with Disabilities

Heather Handrich (Tracey Bonner)

My capstone project focused on the impact dance can have on those with a mental or physical disability. The inspiration came three years ago when I began teaching a little girl with neurological brain damage from a swelled brain. Seeing her learn and thrive in our private lessons had me thinking, what kind of impact can dance have on people. Dance can be used as a therapy for many kinds of people, but for those children with a disability it can be seen as a time for having fun and dancing with those who are just like them. The bulk of this project was to observe a company in this area that offers classes for these kinds of students, and I was lucky to find that Cincinnati Ballet has just that program. I observed four separate times to see improvement in the students and to observe how the teacher taught them. I later researched companies in America that offer this as well both professional and pre-professional.

Three that were highlighted were NDEO, the Rollettes, and Axis Dance Company. Through all this research it proved to me that dance can have a lasting effect on anyone no matter what their circumstance may be.

Pop Cultural Exchange between the United States and Japan

Austin Mayfield (John Alberti)

“Japan-America: A Genealogy of Pop Culture” is an examination of Japanese-American pop cultural history. Stretching back to the 1940s, the paper follows several thematic elements through key works from both Japan and the United States to showcase the cross-cultural exchange between the two nations. First, the paper discusses how both countries have handled superhero stories, a major trend in current American pop culture, by looking at works like Max Fleischer’s 1941 Superman series, the Japanese series Super Sentai and its American adaptation Power Rangers, and the recent anime My Hero Academia. Then, to delve deep in to a shared genre mostly unique to the two countries, it explores the history of cyberpunk and the evolution of common themes in major works such as Blade Runner, Ghost in the Shell, and The Matrix, among others. The final major work discussed is the unique manga JoJo’s Bizarre Adventure, before concluding on a discussion of the similarities between American and Japanese meta-culture.

Teatro por el cambio

Grace Francomb (Kajsa Larson)

“Teatro por el cambio,” or “Theatre for Change,” is a project exploring Hispanic culture and the issues facing the Hispanic community through the lens of theatre. Reading plays from the Spanish-speaking world, it became apparent that theatre is especially suited to bringing awareness to these concerns. Storytelling through theatre can elicit emotional reactions in the audience, prompt discussion, and spark social change in a way that other media cannot. After reading other authors’ theatrical explorations of social concerns, the project continued with research and writing of a new play about the main concern facing the Hispanic population in this area, namely, immigration. The final result was a play called Mamá about the experiences and common humanity of four women: an American single mother, a pregnant immigrant woman from Mexico, Lady Liberty, and the Virgen de Guadalupe. Immigration is an enormous issue that cannot be solved in one sitting, but theatre is a great way to start the discussion and move hearts to take action.

Virgins, Victims and Victors: Exploring Women's Sexuality through Creative Nonfiction Writing

Elizabeth Martin (Jessica Hindman)

My capstone project was a creative interpretation of political, social and personal events regarding female sexuality. Upon starting this project, I had hoped that by writing about events of my past, I would be able to better deal with them and move on. While this did not happen completely, the project led to different kinds of enlightenment. Through the process of writing, reading creative nonfiction and fiction featuring female characters exploring or dealing with their sexuality, and talking to others who have had experiences similar to my own, concepts such as virginity, femininity, language and the power of story telling were explored. The final portfolio is comprised of 6 pieces in various stages of revision, totaling just over 42 pages.

Intersections of Rhetoric and Place

Marisa Yerace (Jennifer Cellio)

This project seeks to apply rhetorical analysis to place and explore where questions of effective place appear in other disciplines. This is by no means a polished product; it instead was intended to let the author practice this kind of analysis, ground herself in rhetorical literature, and draw points from

rhetoric to other disciplines, such as behavioral science, architecture, public history, and sociology. The author wanted something she could use for further research. This project consists of a paper which briefly describes the project goals and literature and practices a case study, followed by an annotated bibliography of relevant works from a variety of fields.

FGF and RA Signaling Pathways Interact During Development of the *Xenopus* Pharynx

Sarah Kunkler (Emily Shifley)

The pharynx is a region in vertebrate embryos that gives rise to multiple organs including the cartilage of the head and neck, thymus and parathyroid glands. If the pharynx does not develop properly, it can cause birth defects. We hypothesized that the FGF signaling pathway plays an important role in the development of the *Xenopus* pharynx. We manipulated FGF signaling in *Xenopus* embryos at various stages of development. In situ hybridization of control and FGF manipulated embryos showed a change of RA pathway gene expression in manipulated embryos. These results suggest that FGF signaling plays a key role in *Xenopus* pharyngeal development at least partially by regulating RA signaling. Future work will determine the exact interactions of the FGF and RA signaling pathways. These results will aid in our understanding of the genetic cues that guide vertebrate pharyngeal development and how disruptions in these cues may result in birth defects.

Examining Modern Attempts of State Secession in the U.S.

Robert Davis (Shauna Reilly)

For my Honors Capstone, I formed a research paper that analyzed various aspects of the concept of secession and the possible consequences of a state attempting to secede from the United States in the modern era. The inspiration for researching and analyzing this topic began after the 2016 presidential election, where in California there was an increase in attention given to groups who advocated for greater independence from the federal government and used the election results to promote their cause to individuals who were dissatisfied with the electoral outcome. I generally am a proponent of greater state's rights over federal authority in areas not directly specified in the Constitution, but the idea of a state seceding to form their own independent state challenged those views. Given the increased amount of political conflict between the California state government and federal authorities, I wanted to explore the full range of perspectives on this very complicated concept, given our country's conflicted history with secession that ultimately led to the American Civil War. My paper analyzed the historical background, the legal arguments, the political & economic consequences, and the cultural factors of secession, ultimately showing that there is not any legal procedure for state secession and that public opinion as of this moment is generally against using such a drastic measure as a solution to any political or economic conflicts.

Cognitive Performance and Background Noise: The Effects of Pink Noise on Performance

Marissa Chitwood (Kalif Vaughn)

In the current experiment, participants were tested on their performance in reading comprehension while listening to sounds. Undergraduate students ($n = 70$) were asked to read a passage while listening to either pink noise (random noise), pop music (genre of popular music), or read in silence. After reading the passage and completing a brief distractor task, participants completed a final test to assess their performance. Afterwards, participants answered questions on their personal study habits. I hypothesized if listening to pink noise will improve cognitive performance compared to listening to pop music or studying in silence. In addition, I predicted that listening to pop music will impair performance relative to pink noise and studying in silence.

Synthesis of Novel Diarylhexanoids for Targeted Treatment of Inflammation

Benjamin Cecil (Amber Onorato)

Inflammation is a complex biological response to pain or damage that is meant to protect the body from further harm to its systems. Normally inflammation is beneficial, however when dysregulated and overexpressed inflammation can cause issues of chronic pain and contribute to further progression or formation of disease. Non-steroidal anti-inflammatory drugs (NSAIDS) are effective in the treatment of inflammation, however because of their lack of specificity they cause a number of side effects that pose risks to patients over the course of long term usage. Recently a Diaryl Heptanoid was isolated from *Plueranthodium racemigerum* and shown to have anti-inflammatory activity that avoids the dangerous side effects of NSAIDS. Analogues of this molecule were synthesized by the Onorato group at Northern Kentucky University, testing of these molecules has shown that Diaryl Hexanoids may have more promise as drug candidates over their heptanoid counterparts. In this work attempts to synthesize and test Diaryl Hexanoids for their potential as anti-inflammatory drug candidates were undertaken, though due laboratory accidents testing was unable to occur. Future work hopes to resynthesize and test the molecules while also looking into new drug candidates.