



## *EMU McNair Scholar Research Abstracts*

Khadija Abbas | Faculty Mentor: Daniel Clemans

### "The Synergistic Effects of Probiotic Microorganisms on the Microbial Production of Butyrate In Vitro"

Butyrate producing microbiota perform a number of activities important in supporting the normal function of the human gastrointestinal tract. The goal of this study was to determine the synergistic effects of lactate- and butyrate-producing bacteria on butyrate production in vitro co-culture. PCR was used to detect the genes butyrate kinase and butyryl-CoA CoA transferase that contribute to butyrate production, in a panel of representative gut microbiota. Preliminary data suggested that two *Clostridium* sp. (ASF 500 and ASF 502) and one *Eubacterium* sp. (ASF492) possessed at least one of these genes for butyrate production. Co-culture experiments mixing a lactate-producer with a butyrate-producer showed an increase in butyrate production. Real-time quantitative PCR was used to estimate the number of bacteria in co-culture by targeting the 16S rDNA gene. Butyrate levels in the mixing experiment were analyzed using GC/MS. Preliminary results showed that butyrate genes are present in *Clostridium* sp. ASF 500 and ASF 502, however, assessment of butyrate production showed the butyrate levels do not correlate with the results from qPCR.

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Shahana Ahmed Chumki | Faculty Mentor: Anne Casper

### "Examination of Replication Dynamics in Fragile Sites Through Molecular Combing"

Chromosomal fragile sites are specific loci that exhibit instability visible as gaps and breaks on the chromosome following inhibition of DNA synthesis and are generally categorized into two main classes: rare fragile sites (RFSs) and common fragile sites (CFSs). Under standard conditions, CFSs are typically stable but are prone to breakage in cells subjected to replication stress. In recent years, their role in the generation of gross chromosome rearrangements has become increasingly evident, and fragile sites have now connected to chromosome instability in cancer cells. The connection between CFSs and cancer thus highlights the importance of the regulation of DNA replication to prevent cancer development. The study of fragile sites in the yeast model organism has provided insight into the mechanisms that lead to breakage and genome instability. Through the process of molecular combing, replication dynamics can be

observed at fragile sites to further understand the consequence of replication stress on DNA damage.

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Jennifer Alexander | Faculty Mentor: Deborah Harmon

"It is a peculiar feeling, this multiple-consciousness:' Putting the Multiracial Experience Into Multicultural Education"

"Alexis is the product of miscegenation. Her mother is White and her father is Black. Her appearance blends both races so that, at a glance, she might be described as light brown with slim, European facial features. Growing up, Alexis faced many stereotypical situations mixed race individuals face. She was constantly asked, "What are you?" and told she looked exotic. When others tried to guess her racial makeup, she was called Hispanic, Arabic, or Filipino, rarely ever identified with her correct racial ancestry. Even though Alexis may not be a living person, her experience is one to which many mixed-race individuals can relate. The year 2000 marked a milestone for the mixed-race population in the United States. This was the first year any person of mixed race was allowed to identify as such on the U.S. Census. As a result, the population of non-Hispanic, multiracial persons jumped from 0 in 1990 to 4,602,146 in 2000 ("Population by race," 2000). Where did all these people of mixed race come from? The simple answer: they were always here. Despite persons of mixed-race existing well before 2000, research on this portion of the United States' population is lacking. This literature review begins to connect mixed-race history and theory to educational theory and practice. The purpose of this connection is to examine the mixed-race experience in multicultural education and why it is under-reported in current research. Bridging the gap between multiracial experiences and multicultural education might possibly make education more inclusive, not just for mixed-race students but for all students, because it will bring to the forefront similarities and differences that students, parents, and teachers should understand."

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Kryn Ambs | Faculty Mentor: Philip Tartalone

"The Influence of Cockpit Weather Automation on Pilot Perception and Decision-Making in Severe Weather Conditions"

This research examines situations in which a pilot either chooses to use, or refrains from using weather-related automation systems, and how the presence of such systems influences a pilot's decision-making, performance and ability to perceive danger in severe weather conditions. Results indicate that the influence of automation on a pilot's perception and decision-making process is dependent upon the pilot's ability to perform manual flight tasks, independent of the automation. Pilots are more likely to continue flight into severe weather conditions and less likely to identify hazardous weather changes when an imbalance exists between a pilot's flight experience, confidence in ability to manually operate the aircraft, and reliance on automation systems.

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Mahogany Anderson | Faculty Mentor: Charles Graham

"Barriers to the Utilization of Mental Health Services on College Campuses by African-American Students"

African-American college students' under-utilization of mental health services is well-documented and has been found to be related, in part, to stigma (Masuda, Anderson, & Edmonds, 2012). However, literature indicates there may be additional reasons why Black students are disinclined to utilize mental health services on college campuses. Employing a confidential survey, this study of Black college students examined in more detail the exclusive, yet intersecting relationship that race, gender, and other social identity markers may have in determining individual comfort levels when discussing mental illness and receptiveness to accessing mental health services. The study hypothesized that both gender and other identity markers predict the comfort and willingness of African- Americans to utilize campus mental health services.

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Andrea Apel | Faculty Mentors: Emery Stephens, Kathleen Segar

"German Lieder: Songs for Women"

My research identifies German Lieder composed specifically for female singers. Female-specific songs were determined through textual analysis of the solo works from four influential composers of this era, Franz Schubert (1797–1828), Robert Schumann (1810–1856), Johannes Brahms (1833–1897), and Hugo Wolf (1860–1903). Research methods include existing data, biographical studies, sociological studies, and performance practice. Also, personal study and performance through a public solo recital of female-specific works gave me an opportunity to sing *Frauenliebe und-leben* by Robert Schumann, *Rat einer Alten* by Hugo Wolf, *Mädchenlied* by Johannes Brahms, and *Gretchen am Spinnrade* by Franz Schubert for the first time. These works are discussed in detail. For further reference, an appendix is provided of female-specific lieder from the selected composers, Schubert, Schumann, Brahms, and Wolf.

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Ashley Beals | Faculty Mentor: Jeffrey Schulz

"The Role of Prescription Trends in the Opioid Epidemic and the Factors that Affect Physician Prescriptions"

Every day, more than 90 Americans die as a result of opioid overdose (NIH, 2017a), and opioid overdoses have quadrupled since 1999 (CDC, 2016). Opioids are best described as a class of drug that includes synthetic versions, such as fentanyl, the commonly known illegal drug, heroin, and prescribed medications such as oxycodone (OxyContin®) and hydrocodone

(Vicodin®; NIH, 2017b). Opioids directly activate the analgesia, or pain relieving portion of the brain as well as the reward region (Volkow & McLellan, 2016). This makes the drug effective for reducing pain as well as giving the body a sense of reward. However, the drug manipulates the reward system by building a learned association between taking the drug and the satisfactory effect received from the drug (Volkow & McLellan, 2016). This learned association puts the patient or user at risk for misuse of the drug, making opioid prescribing difficult for physicians. Other factors affecting opioid prescribing are racial disparities, patient-physician mistrust, pain perception, and the difference between acute and chronic pain (Mathur, Richeson, Paice, Muzyka, & Chiao 2014; Volkow & McLellan, 2016). The purpose of this article is to explore the factors that affect physicians' decisions to prescribe opioids, and to examine how prescription trends influence the opioid epidemic.

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Latasha Becker | Mentor: Betty Brown-Chappell

"Identifying the disparities: A Detroit/Ann Arbor Study"

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Brandie Bentley | Faculty Mentor: Yvette Colón

"Unlocking Young Minds: An Examination of Minority Mental Health in the Juvenile Justice System"

A substantial number of minority youth in the juvenile justice system have mental health issues, and many do not have access to necessary mental health services and support. This paper is an extended review of literature that examines present racial disparities in the juvenile justice system and further, explores the disproportionate racial and ethnic differences in mental health service utilization prior to, during, and after involvement in the corrections system. Additionally, this paper will discuss contributing factors that influence minority youth interaction with mental health services, including federal policy, community resources, and socioeconomic status. Based on the findings of this research, recommendations for future research regarding young offenders from racial and ethnic minority backgrounds and their needs for mental health resources and support will be offered.

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Kerrie Boles | Faculty Mentors: Subhas Ghosh, Natalie Chipot

"Examination of Alternative Fabric Joining Techniques Compared to Traditional Sewing"

Ultrasonic seaming could soon replace the needle and thread technique with a safer, more efficient technology. In this designed experiment, the Chase FS-90 Ultrasonic Sewing Machine will be compared to the traditional sewing machine. The goal is to examine the sewing quality of textile fabric using ultrasonic methods by finding ideal parameters. The parameters are

amplitude, speed, and pressure by using materials, including one thermoplastic fabric, one natural fabric, and low-melting polymer tape. The ultrasonic seam with the best properties will then be compared to the traditional needle and thread seam. The final product will be a designed dress using all ultrasonic seams. The material found to have the best seam properties will be used for the design.

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Larry Borum | Faculty Mentor: Marshall Thomsen

"Study of Microclimate Temperature Distribution in an Artificial Structure"

This research investigated temperature distributions inside a parking structure across from the University Library on the campus of Eastern Michigan University. Using an infrared thermometer, we recorded temperature data at specific points on all floors of the structure. We will present the interpretation of our data in light of heat flow mechanisms to gain insight on how heat flow affects local climate. We will discuss how this analysis might be used to predict internal temperature based on external conditions. This technique is also applicable to other features, both natural and artificial, providing us with a tool to study microclimates in ecosystems and other technological advancements.

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Kayla Boyd | Faculty Mentor: Carol Schlagheck

"Democratizing Fashion: The Effects of the Evolution of Fashion Journalism From Print to Online Media"

Traditionally, women have turned to fashion magazines to know what is trending, how they should dress, and what beauty tips they should try. In our current generation, however, print magazines as a whole are becoming less relevant due to blogs, smartphone apps, social media, and other digital sources. "The web has made it possible for ordinary consumers to reach a mass audience" (McQuarrie, Miller, & Phillips, 2013); thus fashion influence no longer comes only from advertisers and models with unrealistic features—it now reflects the tastes and appearance of ordinary people. Through a literature review and content analysis, this research demonstrates how the evolution of fashion journalism from print to online media is creating a more diverse marketplace, in which young women are making uniquely individual fashion choices.

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Mariah Brito | Faculty Mentor: Jeffrey Guthrie

"Development of Biosensors for Small Environmental Target Molecules Using Ce-Selex"

Microcystin is a naturally occurring liver cyanotoxin that can be found in water bodies around the world. Cyanobacterial blooms occur worldwide and can potentially contaminate municipal drinking water supplies with various toxins. These events are hazardous, naturally occurring processes that can be worsened by anthropogenic activities. The past 50 years have shown notable changes in global climate, likely due to environmentally detrimental human activities. Our environmental impacts have increased the frequency and severity of these events in the past decade. Developments in water quality control and maintenance have greatly reduced exposure to contaminated water, but current methods to detect microcystin are expensive and take several hours to complete. Aptamers are single-stranded DNA sequences with a high affinity to bind to a specific target. A simple to use, aptamer-based method could reduce water quality testing time and cost and allow more frequent testing by quality technicians and consumers alike. Selection of aptamers can be done using an in vitro selection process, Systematic Evolution of Ligand Exchange, combined with capillary electrophoresis.

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Brandon Britt | Faculty Mentor: Toni Stokes Jones

"African-American Male Inclusion, Involvement, Perception and Achievement at Predominantly White Institutions"

African-American male achievement in higher education is an ongoing challenge in the United States. Many Black undergraduate men are less prepared for rigorous college-level work than their peers from other racial groups, resulting in low retention and graduation rates in higher education institutions (Bonner & Bailey, 2006; Palmer, Davis, & Hilton, 2009). African-American men also tend to be less engaged than others in institutional clubs/organizations, structured campus activities and enriching educational experiences outside the classroom (Harper, Carini, Bridges, & Hayek, 2004). African-American men often have difficulty graduating due to numerous factors at predominantly white institutions (PWI). The sense of being involved and included, the elimination of racial stigma and the creation of support services from the college or university all tend to have a positive influence on African-American male achievement (Bush & Bush, 2010). This paper will discuss the factors that contribute to African-American men matriculating successfully at predominantly white institutions, as well as what strategies such institutions are doing to promote academic success in this population.

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LaSonya Brown | Mentor: Christine Kashin

"A Preliminary Quantitative Investigation of African American College Students Attitudes, Behaviors and Knowledge about Sexual Health"

Purpose: To examine factors that influence African American college students' sexual health at Eastern Michigan University. Methodology A sample of 66 African American college students completed an online 32-item survey that measured sample demographics, attitudes, behaviors and knowledge about sexual health. Results: The results of this study showed that 40 percent of

participants reported using condoms all of the time. However, participants also reported risky sexual behavior patterns that led to unintended pregnancies (23%) and STI infection (35%). Conclusion: The sexual health practices of African American college students are not unlike the sexual health practices of college students in general. Age, gender, GPA and Greek affiliation were shown to impact one's overall sexual health.

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Tiffany Browne | Faculty Mentor: Ramona Caponegro

"You Can't Just Pick One Race and You Shouldn't Have To: Analyzing Biracial Protagonists in Young Adult Fiction"

In recent years, Children's Literature has seen a notable increase of texts involving racial diversity. One area that does not garner as much attention is Young Adult fiction with biracial protagonists. With the growing number of families in the United States identifying as biracial or multi-racial, it is important to examine the representations of biracial characters offered to readers. Poston has noted that biracial adolescents often experience crisis and alienation, as they are forced to choose an identity that does not fully encompass their complex racial background (Nuttgens 2010). Sarah Jamila Stevenson's *The Latte Rebellion* (2011), Joan Steinau Lester's *Black, White, Other* (2011), and Sandra Forrester's *Dust from Old Bones* (1999) work against the idea that people should have to choose a racial identity that alienates them from a part of themselves, arguing instead that the world is not divided into stark identity categories, though recognizing racial differences remains of the utmost importance. The characters in these novels are able to navigate the channels of being biracial, while developing a sense of what Lourdes India Ivory calls "biracial competency" and "biracial efficacy," allowing them to function successfully within both racial groups (Ivory 2010). This research analyzes authorial depictions of biracial characters, and the effect these depictions have on character identity development throughout the novels.

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Debreena Bruner | Mentor: Toni Stokes-Jones

"Identifying and Comparing Characteristics of Successful Minority and Majority Businesses"

What are the characteristics of a successful majority-owned business? Can these same characteristics be found in successful minority-owned businesses? It has been reported, "approximately half of new small businesses fail within the first five years of operation" (Stewart, 2004). In fact, "60% of [all] firms fail in the first six years" (Hayward et al, 2006). Many Variables may contribute to the success or failure of businesses, and these may vary from business to business. Education and training level, prior experiences in entrepreneurial start-ups, and geographic location are an example of these variables. Minority-owned businesses may have different variables that may contribute to, or be a barrier to, success. This research is relevant because it concentrates on those businesses that are successful as opposed to those which are unsuccessful. I propose if common characteristics of successful businesses can be identified in

both minority-owned and majority-owned businesses, the presence of those characteristics in other businesses may increase the probability of success.

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Jacinda Bunting | Faculty Mentor: Kenneth Rusiniak

"The Sensitivity in Methods of Measuring Conditioned Flavor Aversions and Conditioned Flavor Preferences"

This project investigated a multiple measurement procedure to assess conditioned flavor aversions (CFA) and conditioned flavor preferences (CFP) in male albino rats. Volume consumed is currently the most common and often the sole method used. Most studies employ group designs, whereas this study used a single-subject design to compare behavior patterns and responses between individual rats. Response measurements include: total licks, lick rate, lick patterns, volume (ml) consumed, volume (ml) per lick. Strong CFA showed consistent decreases in total licks, lick rate, total volume, and volume per lick. CFP was evident, although not consistent, in total licks, lick rate, total volume (ml), and volume (ml) per lick. Volume per lick measurement in CFP revealed that three of the four rats drank more per lick on the posttest flavor day after training. This measure may be a good indicator of CFP. This study provides normative data for evaluating the effects of drugs on neurotransmitters that modulate CFA and CFP.

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Shanilinin Calderon | Faculty Mentor: Richard Stahler-Sholk

"The Extent of Political Participation in the United States Among Latino Non-Citizens and Citizens"

In the United States, Hispanics, or Latino Americans, are individuals with Mexican, Puerto Rican, Cuban, or other Latin American origin. Undocumented and documented Latinos are two of the fastest growing populations in the United States. However, this demographic is still underrepresented in American politics today. The increase in this growing population is due to "push and pull" factors that attract immigrants; some of these factors include escaping from poverty in search for a better life, and better opportunities for employment. Factors contributing to lower voting turnouts include the belief that the Latino vote will not make a difference, mistrust in government, prior experiences in their native country and a lack of education. This literature review summarizes journal publications and various texts, as well as interviews with Latino elected officials, in order to identify the challenges and levels of political participation within the Latino community.

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Dominique Canning | Faculty Mentor: Eric Acton



### "Queering Asexuality: Asexual-Inclusion in Queer Spaces"

Discussions about emerging sexual identities are prevalent in today's society. As our recognition of the diversity of sexual identities grows, so does our need to define these identities and to better understand how they represent the human experience. One such identity is asexuality, which is defined by the Asexual Visibility and Education Network (AVEN) as a "person who experiences no sexual attraction" ("Overview" n.d.). In this research, I will analyze the debate over whether asexual individuals should be considered "queer." This analysis will examine previous research that focuses on identity, discourse, and boundaries between identities. The goal of this research is to enrich our understanding of how people use language to make identity statements, and to negotiate and navigate boundaries between identities by answering the following questions: 1.) Why might boundaries exist between identities? 2.) How does discourse vary, based on a group's status within a conversation? 3.) Why is the conversation surrounding asexual inclusion important?

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Samuel Carano | Collaborator: David Yudowin | Faculty Mentor: Éric Paradis

### "Developing an Electronically Controlled External Cavity Diode Laser System for use in Atomic Spectroscopy"

The purpose of this research project is to implement and test an electronic control system for an external cavity diode laser (ECDL). ECDLs can be used in atomic and molecular spectroscopy to provide a precise frequency probe of the atomic level structure. [1] More specifically, our ECDL will allow us to excite the valence electron of rubidium atoms. Rubidium is desired because it is an alkali grouped element [2], can be contained easily in a vapor cell [3], and has an excitation wavelength close to that of standardized diode lasers. [4] In order to obtain successful results, a strong focus on the theory, design process, and testing procedures must be incorporated into this project. Current progress shows stable results in controlling internal EDCL temperature and in producing laser output feedback.

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Lianna Cecil | Faculty Mentor: Lois Mahoney

### "Corporate Social Responsibility Reporting In The United States"

This study documents and reviews the current state of corporate social responsibility (CSR) reporting in the United States. Prior accounting research examining CSR reporting mostly analyzes annual reports. However, recent evidence suggests that with the increase in companies using standalone CSR reports, the level of disclosure of environmental information within the annual report has decreased (Frost, 2007). Results suggest that despite the lack of regulations requiring U.S. companies to publish CSR reports, the number of companies doing so has grown each year. According to Mathews (1997), "continuing the tradition of empirical research aimed at documenting [the practice] of social and environmental accounting...is

valuable as a record of the current state of organizational disclosure and, therefore, of the distance that remains to be traveled along the path to full accountability by economic actors" (p. 504). Consequently this research seeks to document the current status of standalone CSR reporting in the United States. My findings suggest that there is a growth trend in U.S. companies issuing standalone CSR reports, however, there are very few reports that are audited or assured in the United States.

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Cherese Colston | Faculty Mentor: Regina Luttrell

"An Exploration into the Reality of Media Perceptions: The Depictions of Women Public Relations Practitioners in Reality Television"

Reality television is a media staple for this generation. Reality programs including Jersey Shore, Keeping Up with the Kardashians, and Teen Mom 2 are among the most watched programs in the United States. In the last five years, reality television has highlighted professions including Public Relations. However, these new reality shows depict an unrealistic image of female practitioners in the PR field. These negative portrayals have been analyzed in film, yet there is a lack of research in regards to reality television. The purpose of this study is to analyze the portrayal of women in the Public Relations profession as seen on reality television. This study examines two reality shows pertaining to the field of Public Relations: Kell on Earth and The Spin Crowd. These programs will be analyzed through a coding system that identifies the positive and negative images of female Public Relations professionals as portrayed in reality television.

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Nikki Cosmo | Faculty Mentors: Ed Rutherford, Richard Sambrook

"Revision of a Gis-Based Decision Support Tool (DST) for Evaluating Lakebed Alterations to Michigan's Coastal Habitats for Wind Turbine Siting "

During 2008 and 2009 a decision support tool (DST) was produced by the Institute for Fisheries Research to aide decision makers in evaluating permits for lakebed development. The tool produces maps that identify areas as suitable or not suitable for development. This tool was created for use in the Michigan waters of Lake Michigan, but has been expanded to include all the waters of the Great Lakes. This project will focus on one criteria, specifically fish spawning data, and how it will impact the availability of lakebed for the implementation of offshore wind turbines.

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Caprisha Curry | Faculty Mentor:Dennis Patrick

"Online Profiles of Same-Sex Couples Hoping to Adopt: A Communication Analysis"

The number of same-sex couples who are parents has increased dramatically in the last decade (Goldberg & Kinkler 2011). Data from the U.S. Census indicates that approximately 1 in 5 same-sex male couples and 1 in 3 same-sex female couples are raising children (Goldberg & Kinkler, 2011), and many other gays and lesbians are hoping and/or waiting to adopt. This study examines selected online profiles of same-sex couples hoping to adopt. Specifically, I am interested in analyzing how these couples portray themselves online to appeal to pregnant women seeking adoptive families. Same-sex couples must find the means to address the stigmas and stereotypes against gays and lesbians adopting, as well as compete with and stand out from the numerous heterosexual couples also hoping to adopt. This research examines specific communication strategies used by same-sex couples to depict themselves as excellent future parents.

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Janan Daniel | Faculty Mentor: Valerie Howells

"African-American Women's Journey to Academia and their Experiences as Occupational Therapy Professors"

The 2004 National Study of Post Secondary Faculty reported that in the fall of 2003 African-American female faculty made up only 6.4% of full time faculty at colleges and universities offering doctoral degrees and 7.4% at non-doctoral four-year institutions (Zimble, 2004). These figures indicated that African-American female faculty composed significantly less than half of the full-time faculty population at all four-year institutions in the US. This percentage reflects the situation that African-American women faculty members find themselves in at predominately white universities: a minority culture in the academic world. It is no surprise then that women faculty of color experience cultural issues when working in predominately white institutions (Turner, 2002). The cultural issues that may arise due to being a minority faculty member in a predominately white institution can be experienced in combination with the traditional pressures of being a professor in academia, which can lead to a triad of stress and pressures: balancing work demands and long work weeks, social issues, and cultural matters specific to being an African-American female professor.

Note: Janan Daniel also published a second paper in the same journal, under the mentorship of Dr. Stinear and Dr. Madhavan. This research was done during the Summer Internship of Neural Engineering program which is affiliated with the Rehabilitation Institute of Chicago and the Biomedical Engineering program at Northwestern University. The paper is titled "Demonstrating Ipsilateral Cortical Connectivity with Lower-Limb Spinal Motor Neurons".

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Isra Daraiseh | Mentor: David Victor

"Effects of Arab American Discrimination Post 9/11 in the Contexts of the Workplace and Education"

What is an Arab? What is an Arab American? Are these ethnicities subject to negative treatment by others? Why is it important to recognize these differences in the treatment of Arab Americans and, in particular, in the realm of the workplace and in education? When preparing this literature review, I found little research on the effects of such discrimination on Arab American students. The research I did find indicates that it leads to poor academic performance and self-fulfilling prophecies. With regards to workplace discrimination, and particularly its effect on earnings, I found a decrease in earnings for Arab men and those perceived to be Arab. This major decrease in wages was short-lived, however, and seemed to be an immediate reaction to national political events. Many factors contribute to the mistreatment of Arabs in the United States, but particular events have occurred in America that increased and enraged these feelings in many. Within the realm of higher education, knowing how students of different ethnicities feel about their college experience is vital to building trust, understanding and respect amongst each other in an ever-changing world with regard to diversity. Discrimination primarily stems from lack of understanding of a particular culture or group. If there is more awareness, not just about Arab Americans, but about different cultures in general, then we can prosper and become an even stronger nation. With better understanding by all Americans, students might benefit by having a voice, and worry less about defending their identities, ancestries, cultures or traditions and focus more on their academics. The second area I will discuss is the effect of discrimination on Arab Americans in the workplace. Discrimination in the workplace occurred in the aftermath of September 11th and, as with college students' experiences with discrimination, trying to understand it and build better relationships with our co-workers, regardless of their ethnicity, is vital. I will also summarize several articles that discuss earnings of Arab Americans post 9/11, and what factors played a role in determining these earnings.

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Kristal Davis | Faculty Mentor: Joesph Ohren

### Governmental Fragmentation in Metropolitan Detroit

At its population peak in the 1950's, Detroit, Michigan was inhabited by almost two million residents and served as the car capital of the country. Today, however, the population has dropped by more than fifty percent. With the loss of Detroit residents to surrounding cities and counties, the wedge between Detroit and the suburbs has grown wider. Detroit, once considered the crown jewel of the state of Michigan, is now treated as an immovable stain by its surrounding municipalities. What this means for the metro Detroit area is a high level of governmental fragmentation, preventing economic opportunities for both the city and its suburbs. This is especially unfortunate for the economy of the metro Detroit area because of the current economic crisis in the state of Michigan. With the state's long tradition of home rule and pride in autonomous, municipal decision-making, municipalities in the metro Detroit area might better realize economic opportunities and the relief they can bring to their own local economies by not only collaborating with the city of Detroit, but with neighboring cities as well.

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Gwendolyn Dean | Faculty Mentor: Barbara Patrick

"Learning is Not Child's Play: Assessing the No Child Left Behind Act"

This research examines the implementation and impact of the 2001 No Child Left Behind Act (NCLB) on education quality. More specifically, it outlines how states defined NCLB provisions, including trajectory selection, reporting techniques, confidence interval use, and methods used to inform the public of outcomes. It also discusses NCLB's impact on education outcomes by assessing changes in fourth grade reading scores under NCLB. This qualitative study includes several demographic variables that will allow the study to control for the impact that NCLB's implementations has caused and its effect on school districts that have taken on this process.

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Tray Denskins | Faculty Mentor: Rusty McIntyre

"Stereotypes in Video Games and How They Perpetuate Prejudice"

Systemic research has only recently begun to examine the psychological effects of video games on users. To date, only two studies have examined how the exaggerated stereotypes of minorities in these games affect those who play them. During both studies, game play was found to bring about increases of prejudice, even in users who in screening initially rated low in prejudicial thinking. Taking the theories of how learning and stereotypes work, this paper integrates theoretical approaches into existing research on video games in order to bring about more awareness of the effect of racist images of minorities in the video game industry.

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Lisa Denys | Faculty Mentor: Kristi Judd

"Incomplete Spring Turnover in Small Deep Lakes in SE Michigan"

While temperate lakes are commonly thought to turnover twice annually, in the fall and the spring, there are several factors that can reduce the probability of turnover. Whether or not a lake turns over has important implications for nutrient dynamics and food webs. In this study, we investigated several small deep lakes in SE Michigan to determine whether spring turnover had occurred. One factor affected by lake turnover is the distribution of oxygen in the lake. Lakes receive oxygen from the atmosphere at their surface and from small plant-like organisms called phytoplankton within the body of the lake. Photosynthesizing phytoplankton are typically more productive in the in the upper water layers because light is extinguished with depth. Oxygen is consumed over winter by bacteria in sediments at the bottom of the lake, which respire as they decompose debris, releasing nutrients. Wind forces and temperature changes in the spring and fall drive the water layers to mix. This process helps maintain a balance by circulating oxygen from the epilimnion (upper water layer) to the hypolimnion (bottom water layer) and nutrients from the hypolimnion to the upper layers. Factors that could affect whether a lake mixes include higher densities (from salinity), depth, temperature, and the shape of the lake in relation to wind

direction. If a lake does not mix, we expect to find anoxic (oxygen depleted) conditions in the hypolimnion and lower nutrient concentrations in the epilimnion, resulting in a change in the distribution and productivity of phytoplankton. Whether spring mixing events are occurring in small deep lakes in SE Michigan was the focus of this study. The results of the research show that complete mixing in spring occurred in only 2 of 5 lakes surveyed. In lakes with incomplete mixing, we found anoxic conditions in the hypolimnion and higher phytoplankton productivity in the metalimnion (middle layer) instead of the epilimnion. While the importance of monitoring lakes is acknowledged by the state of Michigan, annual surveys are rare due to budget constraints. More frequent monitoring would allow us to determine whether lack of turnover varies annually and what combination of factors increases the probability of turnover in small deep lakes.

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Kyana Dixie | Faculty Mentor: Pamela Landau

### "Defining Consent as a Factor in Sexual Assault Prevention"

One in five women and one in sixteen men are sexually assaulted while attending college (Krebs et al., 2007; White House Task Force to Protect Students from Sexual Assault, 2014). The inconsistencies in the definition of "sexual consent" may determine which behaviors constitute sexual assault and rape and, in turn, affect victims' rights as well as conviction and sentencing rates. Insufficient standard definitions of sexual consent or consensual sexual behaviors have resulted in many aggressors serving little to no time in jail (Kahan, 2010). Specifically defining consent and educating college students about its meaning could affect the prevalence of sexual assault. Previous studies focusing on sexual consent have stressed the importance of this, but research is limited. The purpose of this review is to investigate the effects of operationally defining and understanding consent and consensual sexual behaviors on the behaviors and attitudes of college students as a deterrent for sexual assault.

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Mikael Dunn | Faculty Mentor: Anne Casper

### "Accuracy of DNA Repair During Replication in *Saccharomyces Cerevisiae*"

DNA repair is a crucial part of organismal survival. The repair process is carried out by DNA polymerases and mismatch repair proteins. Things don't always go as planned in DNA repair, and sometimes DNA repair is inaccurate. Inaccurate DNA repair can potentially lead to the loss of the genes important for cell division and replication. There has been much research into the efficiency of these DNA polymerases, yet there has been no thorough research into how the accuracy of repair is distributed among all of the different types of homologous recombination. The goal of this article is to review the literature on the accuracy of DNA repair during replication in *Saccharomyces cerevisiae*.

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Ashley Durand | Faculty Mentor: Robert Winning

"Does Rac Gtpase Play A Role In Epha4 Signaling In Xenopus Embryos?"

In embryonic development, many cells migrate in order to correctly form new structures. One way that guidance of this migration occurs is via a repulsion mechanism involving the Eph family of receptors. Signaling through these receptors activates the repulsive mechanism that limits which tissues can interact with each other. The repulsion mechanism is not well understood, but involves the reorganization of the actin cytoskeleton and a loss of cell-cell adhesion. Activation of the EphA4 signaling pathway in *Xenopus laevis* embryos has been shown to cause the repulsion mechanism. The Rho family of GTPases consisting of Cdc42, Rho, and Rac, has been linked to the reorganization of the actin cytoskeleton and Rho has been demonstrated to be part of the EphA4 pathway. The hypothesis to be tested in this study is that activation of Rac is also part of the EphA4 pathway. To test this hypothesis, mutant Rac RNA coding for constitutively active Rac (caRac) was injected into *Xenopus laevis* embryos to determine if Rac activation can mimic EphA4 signaling. As the concentration of RNA coding for caRac increased, the degree of cellular dissociation also increased. While further experimentation must be done to make a conclusive determination, it is possible that the activation of Rac is a part of EphA4 signaling.

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Carly Evich | Faculty Mentor: Steven Huprich

"Evaluating the Relationship Between Malignant Self-Regard and Achievement Striving"

Clinical psychological research has identified an empirical and theoretical overlap among Masochistic (also known as Self-Defeating), Depressive, and Vulnerably Narcissistic forms of personality pathology. Together, these personalities have been found to possess many overlapping characteristics, which are proposed to be described through the Malignant Self-Regard personality construct (MSR; Huprich, in press). MSR is characterized by self-criticism, perfectionistic tendencies, frequent depression, desires for interrelatedness, feelings of inadequacy, shame, guilt, hypersensitivity to criticism, self-defeating actions, pessimism, and poor anger management. MSR captures the mind's self-destructive attack on one's sense of self, which signals concern about how the "self" is being viewed by others. This, in turn, affects one's self-representation, which consequently affects his/her interpersonal relationships and subsequent behavior. Some of the many dimensions requiring ongoing evaluation in the MSR construct are the observable personality characteristics and behaviors that are expressions of its underlying pathology. One observable characteristic particularly associated with MSR is achievement striving.

Thus, this study will examine the theoretical relationship between MSR and achievement striving. The following personality dimensions will then be evaluated for their relationship to MSR: perfectionism, effortful control, impression management, relationship satisfaction, and academic achievement. It is hypothesized that perfectionism, effortful control, positive

impression-management strategies, and academic achievement will be positively correlated with MSR, while relationship satisfaction will be negatively correlated. Results of this study will provide a richer understanding of the nature of MSR

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Victoria Fields | Faculty Mentor: Dennis O'Grady

"The Rhetorical Discourse Surrounding Female Intersex Athletes"

For decades, female intersex athletes have been ostracized by professional sport organizations due to their androgynous or masculine physiques. These athletes have experienced backlash from sports fans and competitors due to the assumption that they are men masquerading as women, or that they have gained unfair advantages in competition through the use of testosterone (Schweinbenz & Cronk, 2010). Negative media coverage has led to some of these athletes being required to undergo sex verification tests and/or suspensions by the International Olympic Committee (IOC; Elsas et al., 2000). This study explores the rhetorical discourse surrounding female intersex athletes in professional athletic settings, using a case study analysis of a number of professional athletes. The study will examine the derogatory and harmful rhetoric used against female intersex athletes and discuss how these messages have affected their professional image and impacted the public's perception of intersex athletes in international competition.

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Victoria Fisher | Faculty Mentors: Lois Mahoney, Joseph Scazzero

"A Study of How CSR Rankings are Affected in a Globalized Economy"

We are in a time of globalization, and as a result there is a "rapid growth in trade, financial transactions, and cross country ownership" of assets (Tengblad & Ohlsson, 2010, p. 653). As globalization has increased, the number of companies in different industries using corporate social responsibility (CSR) activities has grown. Increasingly, companies are communicating their activities through CSR reports that outline corporate initiatives to access and take responsibility for the company's effect on the global environment and its impact on social welfare. In this paper, we examined how a globalized economy affects Environmental, Social, Governance, and Total CSR rankings in six regions: (1) North America, (2) South America, (3) Latin America, (4) Asia- Pacific, (5) Africa, and (6) Europe. We collected CSR scores using Sustainalytics Global Platform (SGP) data for each region. Then we compared differences in Environmental, Social, Governance, and Total CSR scores between the regions. The results of the statistical analysis show that Africa and Europe consistently had the highest CSR scores, while Latin America and Asia-Pacific had the lowest.

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Brittany Galloway | Faculty Mentor: Tsai-Shen Shan



"The Glass Ceiling: Examining the Advancement of Women in the Domain of Athletic Administration"

The "glass ceiling" is a metaphor for examining gender disparities between men and women within the workplace. Such disparities are particularly visible in athletic administration. This literature review evaluates specific leadership characteristics and their relationship to gender stereotyping in Sport Management. Because athletic administration is a male dominated domain, there appears to be discrimination against women, creating a gender gap that prevents the advancement of women into top-level managerial positions.

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Lisa Ghigliazza | Faculty Mentor: Betty Brown-Chappell

"Children, Trauma, And The Troubles: Northern Ireland's Social Service Response"

Society in Northern Ireland has been wrought by sectarian conflict for decades. The conflict, punctuated by random acts of bloodshed and violence from paramilitary groups, police, and the British military, had been the predominant model for conflict resolution in Northern Ireland until the signing of the Good Friday Agreement in 1998. Neighbors and friends had become enemies because of religious and political ideologies which lead to death, injury, and a deeply divided society. There was also an unseen cost of the conflict known as the Troubles; the immeasurable toll the conflict had taken on the mental and emotional health of children who had lived their whole lives in turmoil. Northern Ireland's most vulnerable members of society are children and many have suffered from life-long psychological trauma of the violence. Children, however, have been the most under-served population in terms of psychological and social needs. The purpose of this study was to understand the body of research which has been produced on the response from the social service sector to children traumatized by the violence of the Troubles and to evaluate the effectiveness of those responses.

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David Gomez | Faculty Mentor: Elisabeth Daeumer

"The Media after 9/11: How They Interpret Honesty, Relevance, and Freedom of Speech in the New National Security State"

The press was intended to operate alongside the United States government. The Founders learned from their experiences that within the framework of the United States of America there should be a press to keep the people informed (1999 p. 1) Throughout the last 100 years the power of the press has been challenged, and in some more recent cases severely limited. The rise of the National Security State after World War II played a large part in neutralizing the press's ability to do its job. In the decades that followed World War II mainstream media became less independent as it integrated itself into the policymakers and government officials. The Founders had envisioned a republic where there would be a separation of interests between the press and the government, this wish is not being respected. This was painfully clear in the news

coverage that followed 9/11. The press, which has evolved into the entity the American people refer to as media, did not raise any serious questions about the Bush administration's policy on waging war in Afghanistan. There were also serious concerns about the legitimacy of the Bush administration's claims that Saddam Hussein was personally responsible for the 9/11 attacks. These concerns were not seen as legitimate, and anti-war view points were all but barred from the mainstream media.

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Carmen Grange | Faculty Mentor: Sylvia Norris Jones

"A Literature Review: How Language Parameter Deficits Impact Social Interaction in Children with Autism Spectrum Disorders during Middle Childhood, and Intervention Strategies"

Human growth is dependent upon social interactions, notably essential during the middle childhood years (ages 5-10). Although some children develop differently than others, all experience the same types of mental processes through which, due to a variety of factors, they may become typically achieving, or stunted in their development. Language is a key component of being human. Communication occurs through verbal and nonverbal behavior. People are able to understand what others are trying to encode through multiple processes of interpretation. Humans learn to use language through interaction with others, but are born with the ability to acquire language. Children with Autism spectrum disorders (ASD) acquire language the same way as typically developing children, however, they use a different system of communication. This paper will describe the difficulties in language usage in social situations faced by children with Autism, and will discuss how cognitive development and language acquisition shape the ways in which social interaction differs in typically developing children as compared to children with Autism in middle childhood. It will also illustrate multiple factors that may contribute to the deficiencies noted in ASD and what is being done to address those issues.

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Robert Green-Warren | Faculty Mentor: MacArthur Stewart

"An Experimental Investigation of Torque Loss in a Die Cast Aluminum Threaded Fastener Joint"

The intent of this study was to investigate experimentally the root cause of torque loss in a die-cast aluminum threaded fastener joint that is used to assemble an engine mount to the front cover of an automotive engine. The primary goal was to develop a practical experimental method to characterize threaded fastener joints in situ. Using installation torque measurements, hardness test results, and a DC nut runner, joint attributes were measured, and the data was evaluated. This investigation demonstrated that the incompatibility of the mechanical properties at the interface of the housing and fastener resulted in significant torque loss. Further investigations are planned to study cost effective design modifications.

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Chris Haskin | Faculty mentor: Gavin Edwards

"Determination of the Concentration of Atmospheric Gases By Gas Chromatography"

The study of common greenhouse gases such as Carbon Dioxide (CO<sub>2</sub>) and Methane (CH<sub>4</sub>) is important because the concentration can be linked to added absorption of emitted terrestrial radiation, leading to the warming of the atmosphere<sup>1</sup>. This research measures the concentrations of common greenhouse gases in the air surrounding Eastern Michigan University. The development of an auto-sampler system for long term use on the EMU campus will create a viable way to monitor greenhouse gas concentrations throughout the year. Samples were analyzed using an Agilent 6890 Gas Chromatograph and a Valco Industries Thermal Conductivity Detector fitted with a Restek 5A Molsieve column (part # 80440- 800) and a Varian poraPLOT column (part# CP7550) for proper molecular separation. Molecular data analysis is plotted using Peaksimple software by SRI Systems from Torrance, Ca. Although the experiment is ongoing, preliminary data suggest this methodology could be used to detect atmospheric methane.

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Alyssia Hence | Faculty Mentor: Celeste Hawkins

"Can You Hear Us Now? Engaging Young African American Voices in Urban Communities and Schools"

This qualitative study will examine the impact of zero tolerance policies and school discipline practices on the educational experience of African American students, with a concentration on students who reside in urban communities. The objective of this study is to engage the perspectives of African American students about the impact of school discipline on their educational experiences. This study will examine factors that contribute to African American students entering the "school-to-prison pipeline," and explore the role that suspensions and expulsions play in increasing the likelihood of students entering the juvenile justice system. The data collected in this study will identify the resources students believe should be available in their communities to support their future success. The data from this study will be used to analyze educational experiences and to discover effective intervention practices to attenuate the school-to-prison pipeline.

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James Hendee | Faculty Mentor: Morgan Milner

"Profitable Globalization And The Ethical Dilemma Of U.S. Job Loss"

In theory, profitable globalization practices in developed, industrialized countries share a symbiotic relationship with cheaper offshore human resources in third-world, poor, or

underdeveloped nations. A short case study of Wal-Mart Stores, Inc. is given, which examines Wal-mart's increased use of the cheaper Chinese workforce. By seeking out a lower cost labor force in a yet developing country, an ethical dilemma arises in that the business in the industrialized nation must ignore or disregard the job loss this decision creates within the borders of the home nation. Political and philosophical differences have led opponents to create an anti-thesis known as anti-globalization. The anti-globalization movement is apprehensive toward the cultural impact profitable globalization has on the poor and underdeveloped countries. This paper compares globalization versus Marxist thought in which some of the anti-globalization opinions are founded. By exploring a variety of sources and looking for matching patterns or ideas that give relevance to the topic, several sources were used in this study including the review of scholarly journals, engaging video documentaries, news reports, labor statistics, economic texts, and the concept of trade union impact on the work force. This paper establishes a theory that this profitable globalization through the offshore outsourcing of labor to foreign businesses is having a derogatory effect on the United States unemployment statistics.

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Rebecca Hodge | Faculty Mentor: Marion Dokes-Brown

"The Impact of Family Involvement on the Academic Success of African American Students in the Intermediate Grades"

An intensive literature review was undertaken to determine the influence of parental involvement on the academic success of African American students in the intermediate grades. Current studies indicate that parental involvement fosters a positive attitude toward school, improves homework habits, reduces absenteeism, reduces student's risk of dropping out of school, and enhances academic achievement which has a direct effect on student academic achievement. A qualitative and quantitative analysis of the parental questionnaires data will identify ways in which parents can be most useful in increasing student academic success. The results of this analysis will be used to create a Family Involvement Guide.

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Kimaya Hudgins | Faculty Mentor: John Palladino

"Creating a Collaborative and Inclusive Culture for Students with Special Education Needs"

Schools are mandated to effectively provide access to the general education curriculum, and specific instructional support necessary to all students with disabilities. Administrators must find a way to create both an accepting social and learning environment, in addition to crafting programs that successfully work toward creating academic success. This literature review will discuss (a) a school's culture as an integral aspect of the implementation of inclusion, (b) techniques and methods for further exploration in implementing inclusion, and creating a collaborative culture, and (c) challenges administrators encounter that arise from implementing inclusion and creating a collaborative, inclusive culture. Recommendations for conducting

qualitative research, and to further explore the topic with current school administrators, are also offered.

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Precious Humphrey | Faculty Mentor: Ruth Ann Armitage

"The Use of Mass Spectrometry to Differentiate Blue Dyes From Indigo and Woad"

Indigo has a long and prestigious history, from the ancient past to our blue jeans today. Indigotin is a dark blue colorant molecule that is produced from many plants, including indigo (*Indigofera*), woad (*Isatis*), and knotweed (*Polygonum*) when the leaves are crushed, fermented, and then reacted with oxygen. All of the indigo-producing plants undergo the same chemistry, so they are difficult to differentiate from each other in archaeological textiles. There are many analytical approaches to the characterization of blue dyes in conservation science, though few are able to reliably distinguish between blues obtained from the various plant sources. Archaeologists and conservators are interested in sourcing the colors that ancient people used, as this provides insight into their selection of materials and the chemical technology necessary to produce dyes. We present here the initial stages of work to use direct analysis in real time (DART) mass spectrometry (as well as other ionization methods) to differentiate blue dyes made from indigo, woad, and knotweed on a variety of fiber substrates. Based on the results for the lab-prepared materials, we will apply the best method to archaeological fibers previously shown to contain indigotin.

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Rachel Hutchins | Faculty Mentor: Daniel Clemans

"The Effects of Seasonality and Land Use on Microbe Populations in Three Ecological Areas"

The Huron River watershed is comprised of three primary land uses: agricultural, natural, and urban. Land usage affects the biological and chemical conditions within the watershed, therefore affecting water quality. Recent studies have provided evidence that water quality can be assessed by examining the composition of the microbial communities found in biofilms. In this study we analyzed and compared samples collected from a natural site and urban site over the course of three seasons; fall (August), winter (December), and spring (April). Microbial diversity was determined by isolating, amplifying, and genotyping the 16S rRNA gene. The results show that microbial community structure varies with seasons, material composition, and site location.

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Patricia Jackson | Faculty Mentor: Sylvia Gray

"African American Women With Traumatic Childhood History Seek Abusive Relationships."

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Diamond Jones | Faculty Mentor: Maria C. Milletti

"Computational Analysis of the Stereoselective Synthesis of Substituted Pyrrolidines"

In this work we use computational methods to study the aza-Cope-Mannich tandem reaction of a substituted oxazolidine to form a formyl pyrrolidine. Pyrrolidine structural motifs are found in natural products, pharmaceutical compounds, and chiral catalysts. Often only one stereoisomer of these compounds is active, while the others are inactive or toxic. Our goal is to determine reaction conditions and substrate characteristics that lead to one stereoisomer preferentially over the others. We focus on an oxazolidine starting material with an electron-withdrawing group at the nitrogen center and a bulky substituent at the alpha position. The long-term objective is to delineate the energy profile for the multi-step reaction of this starting material, to form a specific enantiomer of the pyrrolidine product. This will allow us to determine the effect of the electron-withdrawing group and the bulky substituent on the stereoselectivity of the reaction. The results will aid the experimental group of our collaborators in determining appropriate reaction conditions. Results to date indicate that the presence of the electron-withdrawing group at the nitrogen center increases the activation energy of the first step of the reaction. If this is in fact the rate-determining step, poor product stereoselectivity is expected, as stereochemistry is not established in this step.

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Demarco Johnson | Faculty Mentors: Kimberly L. Barrett, Tricia McTague

"The Status of Green Criminology in Victimology Research"

Every day, plants, animals, and ecosystems are subject to the dire consequences of anthropogenic environmental degradation. The damage caused by manufactured ecological destruction varies, and can be the result of ecological withdrawals (dangerous extraction of natural resources, such as fracking or deforestation), or ecological additions (dangerous introduction of environmental hazards into the environment, such as pollution). These practices result in millions of victims, and a small (but growing) group of criminologists has taken up the study of the victimization experiences associated with environmental crimes. Many of these criminologists identify as green criminologists, and in their works, argue that environmental crime victims, and research associated with environmental crime victim experience, remains on the periphery of mainstream criminology. This is a serious concern, as in order to (1) recognize the full scope and impact of environmental crime, (2) avoid victim blaming, and (3) generate a comprehensive victimology literature, criminologists must recognize environmental crime victims. This research explores the claims of green criminologists by exploring the representation of environmental crime victims in criminology's victimology research. Sources are examined for key themes, as well as information on the victim experience of those who have endured environmental crimes. Results, implications, and suggestions for future study will be

presented and discussed, in order to draw conclusions about the standing of environmental crime victims in criminology's victimology research.

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Samuel Karafotis | Faculty Mentor: Julie Stone

"The Composition and Performance Practice of the Cadenza in The Classical Era"

This research addresses cadenza composition in the classical style and improvisation for flutists and other woodwind performers. Classical concerti continue to be performed frequently, requiring performers to select or compose cadenzas for these concerti. This research discusses the background and purpose of classical cadenzas, and the qualities present in historically accurate classical cadenzas. The research also addresses issues relevant to modern performers composing and improvising cadenzas, culminating in cadenzas composed by the author for the Mozart Concerto in G Major, K. 313 for flute and orchestra.

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Sarah Killian | Faculty Mentor: David Kass

"Investigation of the Mys Element in Subgenera of Peromyscus"

Mys, a jumping gene referred to as a retrotransposon, was initially identified in the deer mouse genus *Peromyscus*. Previous studies via Southern blot analysis suggested that mys is found in related genera. In this study, mys was analyzed in species of *Peromyscus* using an intra-mys PCR strategy. We clearly demonstrate mys is found not only in representatives of the *Peromyscus* subgenus of the *Peromyscus* genus, but this is also the first study to identify the element within members of the subgenus *Haplomylomys*. Preliminary findings seem to provide evidence that mys originated in rodents that predate the ancestor of the *Peromyscus* species; mys subfamilies derived from different source genes were identified in *Peromyscus maniculatus*, and their origins will be evaluated in future testing. The application of retrotransposons in gene therapy and for phylogenetic analysis are numerous, therefore scrutiny of their form and function is necessary for a more in-depth understanding of these potential tools. The purpose of this study is to gain further insights regarding evolution of retrotransposons via the mys element.

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Julie Krupa | Faculty Mentor: Donna Selman

"Innocent Until Proven Guilty: The Representation of Wrongfully Convicted Women"

The Innocence Project has exonerated only four women out of their first 250 cases. Even with the increase in media attention, wrongfully convicted women are still underrepresented among exonerees. This study will examine the four cases of exonerated women with the help of the Innocence Project. First, utilizing official documents including court filings and rulings, the study

will identify commonalities and differences that led to a case being chosen by the Innocence Project. Characteristics to be considered are: the crime(s) the individuals were convicted of, the length of sentences, whether DNA testing was used to exonerate them, or if another type of error was exposed. Second, to understand the context in which the case was selected, an examination of the representation of the women by the media and in popular literature will be conducted, utilizing discourse analysis. Finally, this research will provide recommendations that suggest improvements to the case selection process.

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Danielle Lawson | Faculty Mentor: T. Daniel Seely

### "A Morpho-syntactic Analysis of Contraction in English"

*What's contraction?* Contraction is the process of taking two free morphemes and making one bound in order to create one morpheme. In short: two words are joined into one. To the native English speaker, contracted and non-contracted forms are semantically equivalent. However, there are certain instances where contraction is not permitted. For example, the sentence, "I'm happy, but she's not," is perfectly grammatical, but "\*I'm not happy, but she's," is ungrammatical. Why should this be? Although the contracted and non-contracted forms are semantically equivalent, they differ structurally. To answer the question of what conditions allow for contraction, existing arguments on the topic will be discussed. However, the problem with these arguments is that they are too broad or they do not cover all types of contraction. This proposal offers a solution by claiming that there are two procedures for contraction in English. In this proposal, the contracting morphemes determine which procedure is performed. In finite contraction, the morphemes bear tense. This means that the bound morphemes must contract and attach themselves, as prefixes, to hosts located on the right of the morphemes. However, in non-finite contraction, the morphemes are tenseless. As a result, they must contract and attach themselves, as suffixes, to hosts located on the left of the morphemes.

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Ivan LeBron | Faculty Mentor: Yvette Colón

### "Neighborhood Risk Factors for Obesity in the Detroit, Michigan Latino Community"

Latinos, or individuals from the Caribbean, South America, and Central America (Santiago, 1996), are affected by a wide variety of health issues, and in particular, obesity. In the United States alone, more than 40% of Latino adults are obese, and almost 23% of Latino children between the ages of 2 to 19 suffer from obesity (Trust for America's Health and the Robert Wood Johnson Foundation, 2014). Latinos are ranked second behind African Americans in obesity rates in the United States (Ogden et al., 2014). This literature review will examine the historical and socio-economic factors that contribute to the high obesity rates for Latinos in Detroit, Michigan, and discuss how living in low income areas can affect access to healthy food options.



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Jasmine Lee | Faculty Mentor: Lynn Nybell

"Mentorship: In Research, Practice, And Planning"

This research examines literature from 1995-2007 involving youth mentorships in America. Mentor/National Mentoring partnership defines youth mentorship as a "structured and trusting relationship that brings young people together with caring individuals who offer guidance, support and encouragement aimed at developing the competence and character of the mentee" (2003). Over the past decade there has been a resurgence of youth mentoring as a way to provide support and encouragement to "at-risk" youth in America. My study of the literature involved defining the word mentor and finding the best practices used by mentor Programs that create positive outcomes in youth and documenting the process of the mentor relationship. During my research I discovered that there is a lack of information specifically regarding African-American mentors matched with African-American mentees and the impacts that this has on the youth involved. In light of this gap in the research I have taken the information and created a model for a mentoring program based on researched "best practices" and recommendations from scholars concerning how to structure a mentor program. This program has been designed specifically for 25 African-American students, between the ages of 13-15 who will be paired with 25 African-American mentors who are undergraduates at Eastern Michigan University. This literature review and program design serves as the preliminary step for further research.

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Charae London-Terry | Faculty Mentors: Jeanne Thomas, Yvette Colón

"Examining Undergraduate Attitudes Towards Bisexuality and Bisexual Individuals"

Despite the great strides that the Lesbian and Gay (LG) community has made in the last four decades, bisexual individuals still "report a lack of validation, isolation and ostracism within both the heterosexual and homosexual communities" (Israel & Mohr, 2004, p. 119). This study focuses on undergraduate students' attitudes towards bisexuality and bisexual individuals at Eastern Michigan University by testing the hypothesis that homosexual and heterosexual students will have a significant bias towards bisexual persons, and that male students will demonstrate bias towards bisexual persons, regardless of their own sexual orientation. The survey instrument was an 18-item questionnaire revised from the Biphobia Scale, which presented Likert scale response options paired with statements describing stereotypical bisexual traits. An analysis of variance (ANOVA) was conducted to see significance between groups, followed by a Tukey post hoc test. Recommendations will include counseling techniques for social workers and other supporting professionals who counsel bisexual persons.

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Rebecca Luth | Faculty Mentor: Angie Mann-Williams

"The Intersection of American Indians/Alaskan Natives and the Child Welfare System: A Review of the Literature"

American Indians/Alaskan Natives (AI/AN) have historically been forcefully integrated into the child welfare system. Their relationship began before a formal child welfare system was established in the United States and continues to the present. It is critical to examine AI/AN history and the child welfare system in the United States to fully understand their difficult and often damaging interactions. This paper will review the literature on this topic in an effort to highlight the intersectionality of AI/ AN children and families, and the policies and practices of the American child welfare system.

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Rosalyn Maldonado Rosado | Faculty Mentor: Yvette Colon

"Dominicana de Pura Sepa": A Comparison of Dominican Women Across Cultures"

Latinos are one of the prevalent immigrant populations in the United States, and the number of immigrants from the Dominican Republic grows every year. Dominican women are faced with the process of acculturation, and as a result their traditional values and beliefs can be both challenged and changed. The purpose of this research is to compare Dominican women who reside in the United States (U.S.) to Dominican women who reside in the Dominican Republic. We will examine their relationships with men, with a focus on their (1) sexual practices, (2) independence, and (3) sexual health. We anticipate finding marked differences in both the values and practices, as conditioned by the process of acculturation, between the two groups.

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Mariano Marks | Faculty Mentor: James Carroll

"Comparing Langmuir Probe Traces of Different Debye Length-to-Probe Radius Ratios"

To study plasmas, like those found in semiconductor applications and in space, requires the use of Langmuir probes and an appropriate model for analyzing the data obtained. The choice of model depends on an important characteristic scale length in a plasma called the Debye length. Using a hollow-anode plasma source in the EMU Plasma Physics Laboratory, we built a quartz-tipped Langmuir probe with probes of different radii ranging from smaller than to much greater than the Debye length. The effects of the ratio of the probe radius to the Debye length on the probe data will be presented.

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Kelly Martin | Faculty Mentor: Sylvia Gray

"African American Single Mothers Living With HIV/AIDS: Should the Lack of Social Support Influence Isolation?"

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Colleen Marquis | Faculty Mentor: John McCurdy

"A History Of History: The Origins Of War Re-Enacting In America"

Americans remember history in many different ways. The Historical Re-enactment is the most controversial and bewildering event of public remembrance. Americans re-enact every war in American history from the French and Indian War down to the Vietnam War. My research set out to answer several questions about this custom of public history: why does it exist, what purpose does it serve, and who started it? My research led me to a shattered post-Civil War America. The true test of the unity of America had passed and people were left to make sense of the war that was experienced on the level of a national tragedy. The re-enactor, a veteran and an amateur historian, would begin to write his story and present it for the public. This form of public memory would be used to facilitate an idealistic and blind reunion of North and South. The history would be changed to make remembering safe.

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Mildred McClarty | Faculty Mentor: Richard Douglass

"An Empirical Assessment Of Administrative Skill Sets In The Health Care Delivery Systems Of Ghana"

In a country with 22 million people, Ghana faces inadequacies of staffing and on-site resources that are typical of sub-Saharan Africa. While the majority of the nation's populations still live in rural areas, health and human services are concentrated in the cities. These hospitals and clinics are in poor repair and maintenance is a challenge; managers need to cope with inadequate resources and nearly unlimited demands. Ghanaian health administrators are responsible for the general and medical administration of their facilities. The current training for such positions comes in the form of a master's degree and a one year placement in national service that leads to a certification. But there is no specificity of the training to the tasks that are required of administrators. There is no available systematic analysis of the skill sets that are required to do this work. Educational programs and specific, appropriate training for applications in Ghana, must be implemented to ensure quality management of the nation's health care facilities.

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Tanjare' McKay | Faculty Mentor: Karen Saules

"Female Self-Objectification: Causes, Consequences and Prevention"

Traditionally, social norms have dictated certain gender roles for men and women. Men have generally been regarded as dominant, masculine, and independent, whereas women are often depicted as weak, sensitive and dependent (Basow, 1986). In contemporary society, however,

women are free to adopt more flexible gender roles, ranging from those traditionally regarded as “masculine,” to those considered more “androgynous,” to the more stereotypical female gender roles. Some women, nonetheless, continue to adopt traditional gender roles in which self-objectification may persist. According to Calogero (2013), “self-objectification occurs when the objectifying gaze is turned inward, such that women view themselves through the perspective of an observer and engage in chronic self-surveillance” (p. 312). The literature suggests that certain factors may support women’s ability to adopt more varied gender roles and avoid self-objectification. This paper will review the literature on the factors that cause, prevent and protect women from self-objectification.

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Briana McKoy | Faculty Mentor: Melvin Peters

"Tyler Perry and The Weight of Misrepresentation"

Criticism of black film production often includes discussions of narrow typecasting and stereotypical role portrayal. Previous research shows that consumers of black films attest that such films are an accurate depiction of black culture. However, consequences of negative stereotypes presented in mainstream media are rarely discussed. The purpose of this study is to define and examine the stereotypes of African American women in film. By way of semiotic film content analysis this research will look at the relationship and function between specific historical stereotypes and the behaviors of female characters in Tyler Perry’s most popular films. This research examines role portrayals in relation to character traits that are historically classified as the “Mammy,” “Sapphire” and “Jezebel” stereotype classifications.

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Marcia Molett | Faculty Mentor: Sylvia Jones

"Academic And Cultural Bias In The Classroom: A Qualitative Examination of the Overrepresentation of African American Students in Special Education"

Almost forty percent of African American students are in special education programs, though they constitute only 17% of the general education population (Kunjufu, 2005). A conclusive explanation has yet to be reached as to why this disproportion exists, but multiple suggestions have been made. The ideas that will be presented in this literature review focus on factors such as race, teacher perception and preparation, cultural differences, biases in norm-referenced testing and culturally unresponsive curricula. The purpose of this research review is to gain an understanding of why these issues continue to occur, and what professionals can do to rectify this phenomenon.

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Courtnei Montgomery | Faculty Mentor: Karen Saules

### "Cognitive Functioning Outcomes after Binge Drinking and Cigarette Smoking Among a National Sample of U.S. Older Adults"

Although the effects of chronic substance use on both improvements and impairments in cognitive functioning have been widely studied, less is known about the interactive effect that two or more substances can have on different domains of cognitive functioning in aging adults. As the number of older adults continues to grow in the U.S., along with concomitant increases in substance use in this age group, it will be crucial to better understand the impact of their substance use over time. Information processing speed will be an imperative component to consider when studying substance use in this group because of the role it plays in reasoning, working memory, and cognitive aging. To explore this, we used processing speed and substance use data on older adults (60 years and older) from the 1999--2002 National Health and Nutrition Examination Surveys. A 2 (smoke now; yes/no) by 2 (ever binge drink; yes/no) ANOVA revealed a significant main effect for alcohol on processing speed, a trend for smoking on processing speed, but a non-significant interaction term. Processing speed among non-alcohol users was significantly higher than for alcohol users. Future research should study more complex interactions between substances on the processing speed of older adults.

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Deborah Munganga | Faculty Mentor: Richard Stahler-Sholk

### "The Effectiveness of U.S. Development Assistance in Fostering Sustainable Development in Sub-Saharan Africa"

The Sub-Saharan region of Africa is one of the most resource-rich continents in the world, but it lacks economic growth. One of the factors contributing to its low economic development is its historical legacy of colonization, authoritarian regimes, and interstate and intrastate conflicts (Ocheni & Nwankwo, 2012; Bayeh, 2015). As a consequence, this sub-region, along with South Asia, has one of the world's lowest levels of per-capita income. The existing research on Sub-Saharan Africa indicates that little to no development occurs, due to how donor agencies implement aid programs. This paper examines whether U.S. development assistance has fostered sustainable growth in Sub-Saharan Africa, with a specific focus on the Democratic Republic of the Congo. In addition, this research will explore the potential and limitations of U.S. foreign policy to enable sustained development within Sub-Saharan Africa.

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Tayler Murphy | Faculty Mentor: Anne Casper

### "Review of Native Fragile Sites in *Saccharomyces Cerevisiae*: A Comparison to Human Fragile Sites"

*Saccharomyces cerevisiae* (*S. cerevisiae*) was the first eukaryote to have its full genome sequenced, which makes it one of the longest studied genomes. The scientific community has established that *S. cerevisiae* is a useful model in the study of human diseases due to the

homology that exists in numerous human and yeast genes. Yeast artificial chromosomes (YACs) have been developed that contain inserts of human DNA. These YACs can be used to study the mechanisms that cause DNA fragility in humans by placing a known human fragile site within a YAC. Though it is useful to study human DNA inserted into yeast to monitor the inherent fragility of the sequence, studying the nature of native yeast fragile sites may have benefits as well. The types of native fragile sites in *Saccharomyces cerevisiae* include Mec1 mutant, hydroxyurea, palindromic, ty-element and Pol1 mutant induced fragile sites. Many of the mechanisms of yeast DNA fragility are similar to those of human DNA. The purpose of this review is to compare and contrast the mechanisms of fragility in *S. cerevisiae* and human DNA. Though human and yeast fragile sites are not always caused by similar means, with further study of the native fragile sites in *S. cerevisiae*, more similarities may be found that can give further insight into the human fragile sites and diseases caused by them.

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Nyambura Njee | Faculty Mentor: Dyann Logwood

"Share Cropping Blackness: White Supremacy and the Hyper-Consumption of Black Popular Culture"

This qualitative study will explore the impact of the way that "Blackness" is constructed and commodified for consumption within a White supremacist culture, and examine the effects of this construct on the Black community. According to Leonard and King (2012), in their book *Commodified and Criminalized: New Racism and African Americans in Contemporary Sports*, "The process of commodification is not simply about selling an essentialized Black culture, but rather a particular construction of Blackness that has proven beneficial to White[s]" (p. 10). This paper will discuss some of the twenty-first century consequences of this phenomenon. The methodology will be conducted through a literature review and a content analysis of various cultural texts including films, interviews, and art that depict Blackness. My belief is that the popular consumption of commodified Black images is related to the maintenance of White supremacy, and thus the systemic oppression of Blacks in the United States.

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Kristin Neville | Faculty Mentor: Donna Selman

"Forgotten Children: Law Enforcement Agencies, Child Protective Services, And Children of Arrested Parents in Michigan"

When a child's sole caretaker is arrested, a number of different outcomes can happen depending on how a law enforcement agency handles the situation. There is no single set of guidelines that all police departments follow. In fact, many departments do not have a policy that dictates practice. This can cause children to "fall through the cracks," ranging from being left alone, to being turned over to unqualified caregivers, to being placed in the custody of someone they don't know. This is a problem because not only can it put the child/children in physically dangerous situations, but also it can have long lasting psychological effects. There are some

procedures and approaches that police departments have in place that can decrease the harm suffered by these children, their parents and the community when caregivers of minor children are arrested. However, more could be done in this important area. The goal of this research is to identify the possible gaps between law enforcement agencies and Child Protective Services in an effort to reduce harm and provide both agencies with a tool to aide in the development of more effective policies and practices.

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Josiah Osburn | Faculty Mentors: Brenda Doster and Linda Polter

"Individuals with Hearing Impairment in Positions of Leadership"

This investigation examines scholarly literature in the study of the deaf and hard of hearing. The purpose of this examination is to locate the literature that focuses on hearing impairments (HI), and to identify methods or procedures that focus on individuals with hearing impairments in positions of leadership. During this investigation it was found that there is no abundance of literature that specifically focused on the study of individuals with hearing impairments in the positions of leadership. The study then shifted its focus to related studies within the field of hearing impairment that were relevant to understanding the challenges that an individual with a hearing impairment encounter, benefits of new technology, implications of mainstreaming, and the importance of rehabilitative/habilitative intervention teams. When the following research investigation takes place, the hypothesis will be that there are correlations between leadership skills and extracurricular activities in which children with hearing impairments participate.

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Jenna Panozzo | Faculty Mentor: Cynthia Gabriel and Karen Sinclair

"The Emotional Aspect of the Surrogacy Process"

To consider surrogacy is to say that every other assisted reproductive technology has been exhausted. Intended parents must take several steps when considering surrogacy including, hormone and fertility medications, donor insemination, and in-vitro fertilization. There are numerous factors that have been researched surrounding surrogacy. The perspectives often considered in current research include legal, kinship, and financial aspects as well as media analysis. However, the research lacks depth into the emotional aspect. My research entails covering the literature surrounding the surrogate process and continuing further research involving ethnographic interviews with surrogate families and their personal emotional experiences throughout the surrogacy process.

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Jason Phillips | "Exploring the Functions of Overeating Behavior."

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Yasmeeen Prince | Faculty Mentor:Janet Okagbue-Reaves

"The Association Between Children with Autism and Gastrointestinal Symptoms"

Every day many thousands of children face the complications of Autism. According to Geraghty, Depasquale, and Lane (2010), Autism has become one of the most frequently diagnosed developmental disabilities, with one in one hundred children diagnosed with Autism in the United States every day. The etiology of Autism Spectrum Disorder (ASD) has not been determined. One of many questions researchers are asking is whether an association exists between gastrointestinal disorders and Autism. This literature review examines the relationship between GI symptoms and eating patterns in children with Autism, and assesses whether special diets reduce symptoms of Autism Spectrum Disorder.

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Courtney Raymond | Faculty Mentor:Heather Janisse

"Non-Suicidal Self-Injury: The Movie Industry's Influence on Its Stigma"

Non-Suicidal Self-Injury (NSSI) is a concerning behavior disproportionately affecting adolescents today. Rates of NSSI have increased, as have depictions of NSSI in the media. Therefore, some researchers believe that increased media exposure is contributing to increased rates of NSSI. Research has shown that NSSI is a coping mechanism and/or a cry for help among those who display such behaviors. However, studies also show that many adolescents with this behavior do not seek help. This may be because persons engaging in NSSI feel that their behavior, thoughts, or feelings are stigmatized by the general population. The purpose of this study is twofold: first, to describe the level of stigma that currently exists among a college population; and second, to examine the relationship between popular media exposure to NSSI and perceptions, or stigma, toward NSSI. Seventy-eight college students completed a survey including a stigma measure, an exposure measure, and reacted to a vignette describing a scene from Catherine Hardwicke's movie, Thirteen (2003). Analyses revealed the level of stigma was at a mid-level, and that it was not significantly related to reported level of movie media exposure.

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Walter Reggans | Faculty Mentor: Mehmet Yaya

"Culture the Underlying Determinant of Economic Growth"

Economists have historically focused on the rational individual pursuing self-interest as a "context-independent" agent (Togati, 1998). Contrasting this viewpoint was a consensus reached in Cultural Matters: How Values Shape Human Progress (Harrison, Huntington, 2000). The consensus reached was "attitudes, values, and beliefs shape culture, which in turn shapes human behavior and has a major impact on economic progress." Hence, I investigated the relationship between national culture and income per capita. I used culture to serve as a proxy



for institutional environment which determines a country's growth and income. My preliminary research indicates strong correlations exist between culture and economic growth.

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Melissa Redwood | Faculty Mentor: Marianne Laporte

"Detecting T7 Tagged NADP- Malic Enzyme Expressed From Escherichia Coli"

Plants bioengineered to over express NADP-dependent malic enzyme (ME) lose less water vapor through their stomata, reducing their need for irrigation. The ME gene was genetically fused to a T7 tag that can be detected by an antibody in a western blot. In order to confirm that the T7 tag does not interfere with ME activity, the tagged protein was expressed in Escherichia coli prior to expression in plants. Western blot confirmed strong expression of ME. In vitro assays will be completed to ensure that the T7 tag does not interfere with ME's ability to convert malate to pyruvate.

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Brialle Ringer | Faculty Mentor: Pamela Landau

"Innovative Sexually Transmitted Infection Prevention-Intervention for African-American Adolescent Girls"

The purpose of this study is to determine whether implementation of an innovative STI prevention intervention design affects participants' knowledge of sexually transmitted infections and sexual self-efficacy. The population this research focuses on is African-American adolescent girls. The participants included in this study are aged 13-19. This particular population is disproportionately infected by sexually transmitted diseases, so it is vital that intervention programs be tailored to fit their culture and gender-specific needs in order to achieve maximum results. However, current interventions for African-American girls could be improved. The researcher has designed an innovative STI prevention intervention that draws from current, best evidence interventions. The researcher has hypothesized that: (1) participants that complete the intervention will have increased STI knowledge; and, (2) upon completion of the intervention, participants will have greater sexual self-efficacy.

Faculty Mentor: Marcia Bombyk

"College Students Experiencing Homelessness: The Consequence of Failed Macro Policies"

Homelessness among college students is a growing trend, yet the problem is difficult to document due to the stigma associated with the circumstance. Flaws in policies related to jobs and wages, affordable housing, and affordable education interact to increase the risks faced by economically vulnerable students who enter college without secure housing, or who lose it during the course of their studies. A concerted institutional response is needed to mitigate both

the risks and the consequences of homelessness, and to reduce the numbers of U.S. college students whose educational attainment is compromised by housing insecurity.

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Mayra Rivas | Faculty Mentor: Heather Janisse

"The Relationship Between Exposure to Intimate Partner Violence, Behavior Problems and Weight Status in Preschool Age Children in Head Start Programs"

Intimate Partner Violence (IPV) is a growing public health concern disproportionately affecting children and their families. Researchers have reported that of 85-90% of children who have witnessed IPV that occurs in the home, 47% of those are under the age of six (Graham-Bermann & Perkins, (2010). Surprisingly, few studies have explored the effects of IPV in preschool-age children. This study examined the relationship between maternal reports of exposure to IPV and preschool-age children's behavior and physical health, particularly obesity. Participants consisted of 100, predominantly African American (92%) primary care givers of children enrolled in Head Start programs in the city of Detroit. The purpose of this study is to: (1) describe the level of potential IPV in the homes of primary caregivers with a child in Head Start, and (2) to examine the relationship between IPV and preschool-age children's behavioral problems and obesity, so that programs may be developed to better serve preschool-age IPV survivors and their families. There are two hypotheses for this study: (1) Primary caregivers who report incidents of IPV will also report more internalizing and externalizing behavioral problems in their preschool-age children, and (2) primary caregivers who report incidents of IPV will have children with higher BMIs compared to children whose mothers did not report incidents of IPV.

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Brunette Robinson | Faculty Mentor: Janet Okagbue-Reaves

"The I-Pad Research Initiative: The Impact Of I-Pads as Engagement Tools For Children With Asperger's Disorder"

Children living with Autism Spectrum Disorder (ASD) often exist in their own world, devoid of interaction or engagement with others (Gilmour, Hill, Place & Skuse, 2004). The iPad Research Initiative, carried out by the Eastern Michigan University (EMU) Department of Social Work, assessed the effectiveness of the use of iPads to increase engagement and interaction between children with autism. Parents of children and youth with autism have found this technology to be effective and cost-efficient (Seshadri, 2012). In this research I examined samples from a larger research project to determine if young males between 10 and 12 years old and diagnosed with Asperger's Disorder (AD), engaged more with each other while using an iPad for an activity, than when engaged in a non-iPad activity. The results showed that the iPad is a form of learning technology that promotes positive and effective interaction between children with Asperger's Disorder.

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Jazmin Rodgers | Faculty Mentor: Natalie Dove

"The Influence of Early Life Conditions on Social Perceptions of Women in the Workplace"

Women are key contributors to an organizational environment, though the stereotypic perceptions about powerful women are common and often negative. Factors such as wage gap differentials between men and women imply that women are not of the same value to an organization's success as men. Many empirical studies have examined perceptions about women in positions such as managers, CEOs, supervisors or directors. These studies have not, however, focused on how early life environments, and variables related to an individual's upbringing, might influence the self-perceptions of these women and the roles they play in the workplace. The purpose of this research is to identify 1) perceptions about women in today's workplace; 2) how individuals' early life experiences correlate with their later perceptions about women in the workplace, and 3) how early life influences affect women as organizational leaders in groups and dyads. As such, it is hypothesized that this correlational study will discover that early life conditions, such as the quality of education, household income, and demographic data from both male and female genders will influence common attitudes about women in the workplace. The present research also aims to help employees become more aware of company perceptions and to improve gender communication in the workplace. Examining the workplace perceptions of men and women formed by early life influences, and specifically, researching how women work as leaders in an organizational setting can provide information that will be useful in corporate environments. Significant early life predictors can also be used as data for families and schools raising young women to become leaders in the corporate world.

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Nayeli Sanchez | Collaborator: Nicholas Corniuk | Faculty Mentor: Ulrich Reinhardt

"Effects of Submergence Depths on Swimming Capacity of Sea Lamprey"

Invasive sea lamprey (*Petromyzon marinus*) is a fish parasite that has damaged the Great Lakes ecosystem. In-stream barriers that prevent upstream passage during migration can help reduce populations of sea lamprey. Exploring their swimming kinematics will help us understand how lamprey navigate across barriers at various water depths. I recorded attempts of sea lampreys to cross wetted ramps varying in water depth from 1 to 7 cm and used video analysis to examine their swimming mode. I found that at the shallowest depth, amplitude and frequency of body undulations were increased, but swim speed was not. I conclude that swimming capacity was reduced in the shallowest treatment. My findings suggest that a lamprey barrier with shallow water could block sea lamprey but allow native fin-fish species to pass upstream.

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Kala Sherman | Faculty Mentor: Silvia von Kluge

"Human Perception and the Color of Flavor"

Human taste perception can be analyzed in different areas of study. Physiology and psychology work together to construct the way we taste, and our sense of taste is not obtained merely from the tongue. The process of tasting involves olfaction, vision, and texture reception to form our overall perception of taste. The present study involved 25 participants who tasted and rated multiple samples of flavored gelatin. Half of the gelatin samples were unlikely color/flavor combinations, and half were unlikely flavor/scent combinations. Responses to the flavors as perceived were collected and used to gain insight into the interactions among sight, smell, and taste perception.

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Tasina Shimu | Faculty Mentor: Margaret Hanes

### "Investigating the Species Relationships in Megistostegium (Malvaceae)"

The island of Madagascar is known for its rich fauna and flora, and is an ideal area to study species and speciation (Vences et al., 2009), especially species in the Hibiscus tribe (Koopman & Baum, 2008). The island contains unparalleled levels of endemism and species diversity, making it one of the greatest biodiversity hotspots in the world (Goodman & Benstead, 2005). The three morphologically distinct plant species in the genus Megistostegium will be used to study speciation. Previous research has shown that all three species are, genetically, very similar (Koopman & Baum, 2011; Callewaert, 2014). This research aims to use additional molecular data to determine how the three morphologically distinct species in the genus Megistostegium are related. Genomic DNA will be extracted from 110 individual plants, representing one to five populations per species. Individual plants will be sequenced using RADseq next-generation sequencing methods. Genetic variation will be summarized across all individuals, populations, species, and across geographic space. Phylogenies will be constructed to understand how the three species are related.

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Lantina Sledge | Faculty Mentors: Deborah Harmon and Regina George

### Get Your Education: Family Support for African-American College Students

On predominately Caucasian campuses, African Americans face the common hardships of college life and the strain of racism and discrimination. Often these students have fewer support systems that encourage them to accomplish their higher education goals. When issues arise for these students, turning to family members they trust is usually the first response. This literature review offers an examination of current research on family socioeconomic status, structure, emotional, financial, social, and academic support for African American students in a four-year college/university. Ultimately, family involvement throughout the student's life and constant support during higher education increases the chances of persistence, while strengthening the student's resolve to help others in the community.

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Jesse Smith | Faculty Mentor: Steven Backues

"Determining the Interaction Of Atg11cc2-3 with Its Protein Partners Using In Vitro Binding Assays"

Autophagy is a mechanism of cellular upkeep by trafficking intracellular material to be degraded. Autophagy is known to be carried out by autophagy related proteins (Atg), yet the exact mechanism of how autophagy occurs has yet to be discovered. Due to its clinical relevance to conditions such as neurodegenerative and muscular diseases, a great deal of current research is being dedicated to further our understanding of how autophagy occurs. Atg11, a protein critical to a yeast's ability to perform selective autophagy, may also hold many answers to selective autophagy within humans. Atg11 is a coiled-coil protein that interacts with Atg1, 9, 11, 20, 29, along with Ypt1 in selective autophagy. However, it is unknown how these interactions occur. Does Atg11 have multiple binding sites where it may bind to proteins simultaneously? Or does Atg11 have one competitive binding site where it can only bind with a single protein, and then release it before it may bind again? In this research we attempt to purify the binding portion of Atg11 so that it can be used to observe Atg11's binding interactions with these proteins through a protein binding test mediated by a resin pulldown.

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LaPorche Smith | Faculty Mentor: Marti Bombyk

"Head Start: A True Start to Getting Ahead: A Literature Review of the Head Start Program as a Primary Poverty Prevention Strategy"

The federal Head Start Program plays a vital role in increasing the likelihood that under-privileged children will become academically successful in school, attend college, and become successful citizens. Yet, Head Start continuously struggles to retain its funding and is challenged in its goal of assisting low income children. A review of the literature on Head Start and related early childhood education longitudinal studies will attest to the importance of this program as a primary prevention strategy to reduce poverty, raise public awareness of its benefits, and support the efforts of its advocates to retain and expand its funding at local and federal levels.

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Mikki Smith | Faculty Mentor: Janet Okagbue-Reaves

"A Generation at Risk: The Ties Between Zero Tolerance Policies and the School-to-Prison Pipeline"

This research will discuss the use of "zero tolerance policies" in public schools across America. These policies have been shown to adversely affect students from urban backgrounds, particularly minority males and those with disabilities. Equally, the use of out-of-school suspension is statistically proven to have a negative impact on high school completion, often

resulting in criminal activity and future incarceration for these students, a phenomenon described as the “school-to-prison pipeline.” This research will discuss the history of zero tolerance policies, reveal bias in their use, and review alternative solutions that have proven successful.

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Tyronda Smith | Faculty Mentor: Renee Lajiness-O’Neill

"Examining Neural Synchrony in Autism During Resting State With Magnetoencephalography (MEG)"

Autism Spectrum Disorder (ASD) comprises a group of neurodevelopmental disorders associated with the functioning of the central nervous system (American Psychiatric Association, 2013). The symptoms experienced by individuals with this disorder include social impairment, communication difficulties, and repetitive and stereotyped behaviors. The etiology of ASD has yet to be determined, and it is typically diagnosed based on behavioral criteria of the Diagnostic and Statistical Manual- 5th Edition (DSM-5; APA, 2013) and confirmed with “gold standard” assessment tools such as the Autism Diagnostic Observation Schedule (ADOS) and Autism Diagnostic Interview- Revised (ADI-R; Johnson Center for Child Health Development, 2014). Abnormalities in synchronous neural activity have been hypothesized to be a core pathophysiological mechanism (Cornew et al., 2012). Magnetoencephalography (MEG) can measure synchronous neural activity during resting state, when the brain is not consciously engaged in cognitive processing. Coherence is a measure of the synchronicity. We examined differences in coherence during resting state in ASD, compared to neurotypical developing individuals (NT), in an attempt to identify potential biomarkers and illuminate a core etiological mechanism.

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Kimberly Solomon | Faculty Mentor: Angela Staples

"Relation Between Anxiety and the Perception of Expressed Emotion"

This study investigated the relation between anxiety, expressed emotion, and perceived emotion in a face-to-face interaction task. Students (N = 56) participated in a dyadic three-phase laboratory task that involved: (1) writing about a remembered event (either anxious or serene; randomly assigned), (2) engaging in a face-to-face interaction task, and (3) completing personality and mood questionnaires. Preliminary findings suggest experimentally induced anxiety may not play a role in listener-speaker agreement about expressed/perceived affective information during face-to-face interactions. Further analysis will consider the role of context and personality on listener-speaker agreement.

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Anthony Sparkling | Faculty Mentor: Benedict Ilozor

### "Cost Justification for Investing in LEED Projects"

Sustainability, or “green” building, has been examined across disciplines and continues to be at the forefront of global organizations’ and governments’ commitment to promote energy and environmental stewardship. As it relates to construction, this term has been defined and developed by the United States Green Building Council (USGBC). This Green Building certification body has developed a green building rating system for building construction, referred to as LEED (Leadership in Energy and Environmental Design). The practice of constructing building facilities that meet LEED certification standards implies the overall goal of “meeting our building needs of today without compromising the ability of future generations to meet their needs” (WCED, 1987). The objective of this study is to determine key cost justifications informing the pursuit of LEED certification, and to ascertain the level of satisfaction of owners as to the value of LEED. The study comprises 30 LEED-certified buildings that are owner occupied, and a survey to determine which cost justifications associated with LEED construction participants favored.

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Mary Sue Storie | Faculty Mentors: Mark Ragg & Marilyn Wedenoja

### "Practitioners' Views Of Effective Treatment Options For Childhood Trauma"

In today's society the number of children who experience childhood trauma is increasing significantly. As a result of this increase, the number of people seeking treatment is also on the rise. For this study, data were collected using both qualitative interviews (N=10) and an online quantitative survey (N=32). Practitioners' views of effectiveness ranged from both more traditional treatments to emerging alternative treatments. Recent knowledge from brain research shows trauma impacts both the left and right side of the brain. Many practitioners noted effective treatment needs to be comprehensive. This is supported by literature recommending modalities that work with the effect trauma has on both sides of the brain

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Jaylen Taylor | Faculty Mentor: Deborah Heyl-Clegg

### "Cysteine Deleted Tachyplesin Peptide Analogs as Anti-Cancer Agents"

Adenocarcinoma is a common type of non-small cell cancer that represents 80% of all diagnosed lung cancers. Typical treatment methods include surgery, radiation therapy, and chemotherapy, or some combination of the three. Although radiation therapy and chemotherapy treatments are effective at killing cancer cells, the side effects and symptoms associated with these treatments can cause severe damage to the patient’s body and even encourage some fatal illnesses, such as sepsis. Research has been focused on the development of other methods of treatment that would be less harmful or even non-harmful to patients. Antimicrobial peptides are known for their potential in modern antibiotics to treat bacteria-caused illnesses. The antimicrobial peptide, cysteine deleted tachyplesin (CDT), demonstrates both antibacterial

as well as anticancer properties. To improve the development of CDT into a possible treatment for adenocarcinoma of the lung, analogs of the peptide CDT containing the hyaluronan binding sequence are being synthesized and tested on the cell line A549, with the hopes of improving their anticancer characteristics and to understand better the mechanism that allows CDT and its analogs to cause adenocarcinoma cell death.

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Jhazmin Taylor | Faculty Mentor: Heather Janisse

"The Relationship Between Parent Perception of Child Weight, Parent Feeding Style, and Child BMI Among Low-Income, African American Preschoolers"

In February 2011, First Lady Michelle Obama revealed her plan to end the childhood obesity epidemic in America. With childhood obesity considered a health crisis, it is crucial to begin serious prevention efforts. Shaping healthy eating habits and the physical activity of children at the preschool age is a great step toward life-long prevention. The U.S. populations most affected by and at-risk for childhood obesity are African Americans and Hispanic Americans. Overweight and obesity rates are also particularly on the rise among preschool children. The purpose of the current study is to examine the relationship between parents' perception of their child's weight status, parent feeding style and child body mass index (BMI). A total of 82 primary caregivers of preschool-age children participated in the study. Participants were low-income and primarily African American. Primary caregivers completed surveys that included a demographic questionnaire, caregiver feeding style questionnaire and a parent perception measure. The children's BMI information was gathered from Head Start's nutrition coordinator. Results showed that 35% of children in the current sample had a BMI at or above the 85<sup>th</sup> percentile, which is considered overweight. Results suggest that parents perceive their child's weight status to be at a healthier level than objective BMI estimates suggest. Parent feeding style was not significantly related to child BMI in the current study.

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Karess Taylor | Faculty Mentor: Chong Man Chow

"Attachment Styles as Moderator Between Stress and Emotional Eating in Adolescent Girls: A Research Proposal"

Emotional eating is an important precursor of weight gain and obesity among adolescent girls (Halberstadt et al., 2016). Researchers have defined emotional eating as individuals' eating behaviors in response to the positive or negative emotions they endure (Bongers & Jansen, 2016). In past studies, stress has been found to be an important indicator of emotional eating in adolescent girls (Corsica, Hood, Katterman, Kleinman, & Ivan, 2014). However, not all girls who experience stress will engage in emotional eating. The stress-diathesis model suggests that certain traits of vulnerability may predispose some individuals towards mental health problems (e.g., eating disorders) in response to stress (MacNeil, Esposito-Smythers, Mehlenbeck, & Weismore, 2012). One of the important traits that may moderate the effect of stress on mental



health problems is attachment styles (Chow & Ruhl, 2014). Attachment styles are defined as the internalized mental representations of individuals' key attachment figures (e.g., mothers; Cooper, Shaver, & Collins, 1998). Attachment styles are measured by the dimensions of anxiety (e.g., fear of being abandoned by others) and avoidance (e.g., fear of being too close to others). Combining the stress-diathesis model and attachment theory, the current study aims to investigate whether adolescent girls' attachment security within close relationships moderates the link between experiences of stress and emotional eating. Specifically, it is hypothesized that girls who are low in attachment security engage in more emotional eating when under stress. In contrast, it is hypothesized that girls who are high in attachment security engage in less emotional eating, regardless of their stress levels. To test the hypothesis, data will be drawn from archival data including 100 adolescent girls between 11 and 18 years old. Participants answered questionnaires on stress attachment security to their parents and whether they engaged in emotional eating. Moderation hypothesis will be examined with multiple regression implemented in R.

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Anthony Terry | Faculty Mentor: Ellen Koch

"Barriers to Academic Success Experienced by Student Veterans"

Thirty to forty percent of student veterans do not complete their postsecondary programs (Cate, 2013). Many student veterans lack the proper assistance when battling stressors that directly affect their experiences during college. The stress and depression associated with Post-Traumatic Stress Disorder also prevent many veterans from succeeding. Veterans often experience culture shock when transitioning from the military to student life and may feel they have lost a part of their identity. This study addresses these challenges and highlights some of the issues returning veterans face when pursuing higher education. The study also examines the way in which student veterans' experiences in the military could help them succeed in college life. The study uses a mixed methods approach, employing a survey and focus groups.

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Elisa Torres | Faculty Mentors: Richard Camp and Denise Tanguay

"The Impact of Level and Type of Collegiate Sports Participation and Gender on Inferences Made by Job Recruiters"

The first step in the employment selection process, a review of applicants' resumes, determines who may be interviewed for a given position. This paper reviews the literature on how recruiters draw inferences during this process. Major topics examined include: the empirical validity of recruiters' inferences; the various biographical data elements that influence recruiters' inferences; and, the importance given the extracurricular activities portion of the resume. This literature review concludes with the identification of a gap in the research regarding the impact that both type and level of sports participation, as well as gender, have on inferences recruiters' draw from applicants' resumes.

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Sylvia Torres | Faculty Mentor: Ruth Ann Armitage

"Dart-MS Analysis of Historic Tobacco Pipes to Investigate the Preservation of Nicotine Residues"

Direct analysis in real time (DART) mass spectrometry has potential for rapid characterization of residues in and on archaeological materials, often without the need for extraction and sample preparation. These residues may provide insight into people's behavior in the ancient past, including what they ate and drank and what plants they used. Residues change over time through oxidation, loss of water-soluble components during washing, and contamination from burial and handling. We are investigating how nicotine residues in historic smoking pipes from Historic St. Mary's City, Maryland, have changed through time. To understand how residues change as they age and decompose, we are studying tobacco pipes that have been excavated and not cleaned, as well as pipes that have been cleaned and processed by the Historic St. Mary City museum. Nicotine and several of its oxidation products are readily observed in replica residues analyzed with DART-MS, even after the ceramic surfaces have been cleaned.

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Victor Torres | Faculty Mentor: Sally Burton-Hoyle

"A Closer Look at the Racial Disparity Rates in Michigan Schools"

Racial disparity in disciplinary actions has long been an issue in American public education. The United States Department of Education has collected data on this for over 35 years. Wright, Weekes and McGlaughlin (2000) claim, "research evidence indicates that those who are at disproportionate risk of exclusion are African-Caribbean boys of both primary and secondary schooling age." With a closer focus on Michigan public schools, national research will also support data collected on racial disciplinary disparity rates by the American Civil Liberties Union of Michigan. In addition, contributing factors and issues associated with unfair disciplinary sanctions on minorities will be examined to determine their effect on multi-cultural education.

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William Trice | Faculty Mentor: Ernest Behringer

"Fractal Patterns in Chaotic Scattering"

Fractal patterns can be observed in chaotic scattering, as occurs when light scatters from arrays of cylindrical or spherical mirrors. We provide an introduction to these optical systems and the corresponding fractal patterns generated by their chaotic behavior. We also describe the theoretical and computational models used to simulate the behavior of these systems, and the design of experimental apparatus to check the models.

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Yeliani Valdez | Faculty Mentor: Paul Leighton

"Controversies in Batterer Intervention Programs: Doing Good, Well"

One in four women has been a victim of domestic violence perpetrated by an intimate partner. Instead of holding the abusers accountable, many victims will be questioned and ostracized for not leaving an unhealthy relationship, which shifts the blame from the abuser to the victim. A variety of Batterer Intervention Programs are available to abusers, including anger management, therapy, and counseling. One such program is the Duluth Model, which focuses on the transformation of batterers through a social change framework. This research will examine the Duluth Model as it is being implemented in Ann Arbor, Michigan.

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Iris Vincent | Faculty Mentor: Marilyn Corsianos

"Pornography: Masquerading as Fantasy, Producing Reality"

Our society believes that the social practices within the pornography industry are not important enough to be addressed. Indeed, as Gail Dine notes in *Pornland: How Porn Has Hijacked Our Sexuality*, "what is surprising is how many people, even those who do not like porn, insist that the carefully constructed images that are formulaically scripted and produced by the multibillion-dollar porn industry belong in the realm of sexual fantasy, not reality" (100). Problems arise from the belief that the social practices intrinsic to porn—racism, creating dirty sexualities associated with women, and popular video searches depicting "forced sex"—exist within a vacuum. This article examines the social practices of pornography, creates a concrete definition of the oppression engendered by pornography, and challenges societal social mores that reflect those within pornography. I limit myself to adult, heterosexual pornography, but I will comment on the taboo of creating "barely legal" porn and the practice of catering to the masculine gaze by the creation of the "willing lesbian" fantasy. This research acts as a literary synthesis of the writing of anti-pornography scholars, experienced actors from the porn industry, and feminist philosophers.

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Dara Walker | Faculty Mentor: Melvin Peters

"Report On Information Literacy And The Mic: Teaching Higher Education Students Critical Research Skills Using Hip Hop Lyricism"

Many professors expect undergraduate students to have basic research skills. However, they soon learn that their students are unable to find, sort, and analyze information for research papers and projects. To help students attain these skills, university librarians develop course related information literacy (IL) sessions for both undergraduate and graduate classes. In this

study, I explored the differences and similarities in the objectives, teaching aides, and final assignments of information literacy instruction which uses the thematic content in conscious hip hop lyricism to reinforce skills learned as compared to other methods. Understanding the differences and similarities may encourage librarians to make instruction through hip hop a part of their repertoire. The similarities express hip hop's ability to join the range of other methods while the differences point to the many contributions it can make to the current array of techniques.

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Sina Webster | Faculty Mentors: Yvette Colón, Dyann Logwood

"A Qualitative Study of the Evolution and Erasure of Black Feminism in Historic and Contemporary Sociopolitical Movements, And Black Men's Resistance To Black Feminism"

Although Black Feminism can be traced to the period of American slavery, what may be considered the most prevalent emergence of "Black Feminism" came about in the mid-1970s, when it proved apparent that the second wave of the Women's Movement, overwhelmingly white, was discriminatory towards "Black, other Third World, and working women" (Smith, Smith, & Frazier, 2014), who often faced multiple forms of oppression (Simien, 2004). Contemporary Black feminists have followed the activism of earlier Black feminists, leading to a disruption of racial, gender, and sexual norms both in general society, and in the Black community itself. From a Black and intersectional feminist perspective, this research will analyze (1) the history of Black women engaging in feminist movements, (2) the evolution and erasure of Black Feminism, and (3) Beyonce's visual album, Lemonade, as a product of historic and living Black feminism.

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Mark Wheeler | Faculty Mentor: Betty Brown-Chappell

"Stereotypes: Racism and its Effects on the 2008 Presidential Election and our Citizens"

This is such a historic time in our country's story, due to the reprieve from the usual choice of middle-aged White males in a presidential election. The make-up of candidates' age, race, and sex in the 2008 primaries and general election allowed the unique opportunity for multiple stereotypes to be engaged. This was an exploratory qualitative study, relying on descriptive data, participant observation during the general election campaign, and in-depth interviews (N=8) that happened within six months after the election of Barack H. Obama, first African-American elected president of the United States. The purpose of this study is to examine the influences stereotypes of race had on the 2008 presidential election. My finding was that the preponderance of negative stereotypes in the campaigns counter-intuitively catalyzed the positive discussion of race.

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Carmita Williams | Faculty Mentor: Janet Okagbue-Reaves

"Biracial People are Subjected to Complex Dual Racism"

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Courtney Williams | Faculty Mentor: Professor Landau

"American Culture's Shifting Perspective on Female Homosexuality From the 1970's to the Present"

Homosexuality has been a subject of controversy since before it was removed from the Diagnostic and Statistical Manual (DSM) in 1973 as a mental disease. Female homosexuality holds special significance because women have generally been victims of sexism, both subtle and blatant, which has led to harmful effects, whether through individual or interpersonal discrimination (Angela R. Gillem et al, 2000). These issues began to be recognized when the second wave of feminism came into play, also known as the Women's Movement (Biaggio, 2000). There have been few investigative studies focusing on attitudes toward homosexual individuals, and fewer that look into gender differences in terms of how people perceive homosexuals. There are extremely few studies focused specifically on Lesbianism. This literature review will look at published research that focuses on female homosexuality and will examine shifts in perspectives that have occurred over the past thirty years. It will also provide suggestions for the next steps needed to increase acceptance of female homosexuality in American culture.

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Faith Williams | Faculty Mentor: Ashley Glassburn-Falzetti

"Afrocentrism, Hip-Hop, and the 'Black Queen': Utilizing Hip-Hop Feminist Methods to Challenge Controlling Images of Black Women"

Afrocentrism is a political framework that has aided Black intellectuals and scholars in re-conceptualizing a world with Blackness at its center. However, Afrocentrism has left the most marginalized people in the Black community—Black women, Black queer individuals and Black trans women—invisible and exploited. Hip-Hop Feminism, a Black feminist movement that emerged in the 1980s, developed a powerful framework to refute the oppressive language and sexually-exploitive images of women in mainstream hip-hop. Inaccurate and stereotypical images of Black women continue to plague Black social media, recreating toxic and controlling images of Black womanhood. This paper examines the multifaceted framework of Hip-Hop Feminism and discusses its relevance in dismantling the negative and reductive images of Black women that dominate social media.

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Sadde Wilson | Faculty Mentor: Ronald Hoodin

## "African American English: Dialect Mistaken As an Articulation Disorder"

The purpose of this literature review is to discuss the reasons speech-language pathologists often misdiagnose children using AAE as having articulation and phonological disorders. In my literature review, I will discuss three ruling explanations for why this problem occurs. The most common reason for this misdiagnosis is that speech-language pathologists (SLPs) are unfamiliar with AAE acquisition and its phonological features. The second is that SLPs administer norm-referenced standardized tests that are culturally biased, which unfairly contributes to these errors. Finally, SLPs often do not realize that AAE speaking children are, in a way, learning a second dialect  $\frac{3}{4}$  Standard American English  $\frac{1}{4}$  in school. Each of these practices delivers inaccurate information about the child, placing the SLPs and their clients at a disadvantage. I will provide recommendations and suggestions for SLPs. My argument is that changes can, and should, be made.

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Folayan Zheng | Faculty Mentor: Toni Stokes –Jones

## "The College Role In Diminishing The Digital Divide Gender Gap: Assessment Of Male Vs. Female Computer Access And Use"

Higher education has been allied with the computer industry since the advent of the personal computer. In the past, an anomalous gap has been found to generally exist between males and females in the United States regarding the access and use of computers. The purpose of this study is to review research regarding college student computer access for males and females. The report will also examine computer ownership based on examination of the results of a college-based survey, as well as by comparisons to past and present technology ownership trends. While a number of colleges have published reports on the progress of their technological initiatives, few publish gender data in regard to the state of computer ownership or college supported access today in order to continue to monitor important digital divide trends. The findings of this study suggest that colleges and universities offering low-cost options for computer use, purchase, or lease, and Internet access, are critical in suppressing the gender gap