

# GRADUATE RESEARCH CONFERENCE



EASTERN MICHIGAN UNIVERSITY

BREAKTHROUGH TO EXCELLENCE

March 20, 2020- Canceled due to COVID-19



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# Welcome to the 2020 Graduate Research Conference!

On behalf of the Office of Graduate Studies and Research, I welcome you to the 2020 Graduate Research Conference.

The GRC is an event that combines the primary missions of the Office of Graduate Studies and Research: The Office of Research Development and Administration and the Office of Research Compliance support and promote all research activities at EMU, including the GRC. Meanwhile, the Graduate School supports academic programs that emphasize the highest forms of intellectual development in each discipline, which includes the creation of the new knowledge that you see at the GRC.

This year's GRC is EMU's 21st annual celebration and showcase of graduate student scholarly and creative activities. Over 200 students will deliver formal accounts of their work by way of 162 oral presentations, posters presentations, and artistic displays and performances. The activities they describe took significant investments of time and were performed over countless hours outside the traditional classroom. These students and their work are sponsored by over 100 faculty who wisely guided the students' activities and, in many cases, gave students access to their laboratories, studios, and specialized equipment.

This year Shawn T. Mason will be our luncheon keynote speaker. Dr. Mason was a previous presenter at the Graduate Research Conference and earned a doctoral degree in clinical psychology from EMU. Today, Dr. Mason is the Director of Research & Outcomes at Johnson & Johnson Health and Wellness Solutions.

I wish to thank the students and faculty mentors for their hard work in carrying out their projects and in preparing the presentations. I thank everyone who had a role in planning, promoting, and facilitating today's activities. We thank Dr. Mason for his message. And, of course, we thank those who are attending today's event who wish to support our students and to learn and experience something new.

Wade Tornquist, Ph.D.  
Interim Associate Provost, and  
Associate VP for Graduate Studies & Research

# Schedule of Events

8:00 AM Check In

8:30 - 9:30 AM  
Three Minute  
Thesis Competition\*

The Thesis Competition  
will take place in the  
Auditorium

9:00 - 10:15 AM  
Oral Presentation  
Session #1

9:00 - 11:00 AM

Poster Presentation  
Session A

10:30 - 11:45 AM  
Oral Presentation  
Session #2

11:00 - 11:45 AM  
Poster Presentation  
Set Up/Tear Down

12:00 to 1:00 PM Lunch Reception & Keynote Speaker

1:15 - 2:30 PM  
Oral Presentation  
Session #3

1:15 - 3:15 PM

Poster Presentation  
Session B

2:45 - 4:00 PM  
Oral Presentation  
Session #4

3:15 - 4:00 PM  
Poster Presentation  
Tear Down

\*Students designated with a \* will also be participating in the Three Minute Thesis competition.  
` Students with a ` are distinguished winners of the Abstract Contest.

# Abstracts:

Arranged alphabetically by presenter last name

## Alpert, Krystol; Callison, Hannah

Poster Presentation

MA, College Counseling

Leadership & Counseling

Dr. Perry C. Francis

### The Use of College Programs and Support Services to Prepare Students for Life After College

The transition that graduating college students undergo is an aspect of college student development that is often overlooked in settings of higher education. There is little research on this population, however, the existing research shows a relationship between senior students and a lack of readiness for graduation. This research presentation will explore whether there are common senior year challenges that college students face in anticipating graduation. In addition, past studies on issues that individuals encountered in the years immediately following graduation as well as factors that may have aided them in their transition into work will be included. Preventative efforts, including suggestions for psychoeducational programming, are discussed as a way to help college students cope with distressing feelings leading up to graduation as well as foster resilience and adaptability in students so that they are enabled to endure challenges that come with graduating. This current study will address the college senior student's level of preparedness and the resources, both campus and non-campus, that helped with the transition to life after college.

## Angelosanto, Matthew

Oral Presentation

MS, Ecology, Evolution and Organismal Biology

Biology

Cara Shillington

### The stridulatory setae of *Ceratogyrus marshalli*: An examination of their location, morphology, and development.

Several species of spiders (Araneae) have the ability to produce sounds. One of the ways these sounds are produced is through stridulation, a process that occurs when one specialized body part is moved against another. These specialized body parts, also known as stridulatory organs, consist of the "scraper" and the "file". The "scraper" is a series of rigid setae, while the "file" is a region containing antagonistic structures. Stridulatory organs are found in at least 22 Araneae families; however, the location and morphology of these organs varies greatly. *Ceratogyrus marshalli*, the straight-horned baboon tarantula, is a stridulating species belonging to the Harpactirinae subfamily (Theraphosidae). While it is known that this species stridulates, the setae involved in this behavior have yet to be characterized. In this study, I used scanning electron microscopy to determine the location and morphology of the stridulatory setae. Additionally, I looked at the development of these setae by examining their presence across successive molts. From my analysis, I found that the stridulatory organs first appear during the third instar as modified plumose setae on the surface of the chelicerae.

## Armes-Thomas, Donna

Poster Presentation

PhD, Technology

Technology & Professional Services Management

Konnie Kustron

### An Evaluation of Public K-12 Teachers' and Superintendents' Perceptions of Copyright Policy Standards on K-12 Students' Copyright Rights: An Exploratory Sequential Mixed Methods Study

The purpose of this mixed-methods study with a sequential exploratory design was to (a) develop instruments; (b) identify public K-12 school teachers' and superintendents' perceptions of copyright policy; (c) investigate their expectations, roles, and responsibilities of protecting students' copyright rights; and (d) explore knowledge, current practices, and thoughts regarding copyright policy. There are limited research resources available that explore the views of teachers and superintendents regarding the issue of copyright law policy.

A two-phased study was conducted: The first phase included a content analysis; data were collected using copyright policy documents and one-one-one Skype interviews conducted with a convenience sample of ten teachers and ten superintendents. The second phase included a pair of surveys sent to participating teachers and superintendents from Michigan K-12 School districts. The survey protocol was designed as a follow-up method, prompting teachers and superintendents to rate their perceptions of copyright law policy and protecting students' copyright rights to build upon and complement the Skype interview data. The mixing of the content analysis, Skype interviews, and survey data was analyzed and triangulated to answer the overarching research question: "Which of the 10 selected Michigan school districts have copyright policies? Who do they protect? Do they only protect the teachers? Do they protect the students?"

Findings of the data collection and analyses discovered that public K-12 teachers and superintendents share similarities in their perceptions with regard to copyright law policy. Still, they also agreed on various viewpoints on copyright as it applies to copyright rights of students. The integration of the qualitative and quantitative phases of research occurred during the interpretation of the outcomes of the overall study. The findings of the study may influence decisions made by public K-12 school districts as well as the Michigan School Board of Education and education policymakers on copyright rules.

## Armitage, Julia

Oral Presentation

MS, Ecology, Evolution and Organismal Biology

Biology

Dr. Emily Grman

### *A. gerardii*'s influence on beta diversity in restored tallgrass prairies

Dominant species have a large influence on biodiversity by limiting the ability of other species to grow and reproduce in an area.

# Abstracts Cont'd

This tends to decrease alpha species diversity, or the number of species in a specific area, due to competition. However, the influence of this dominant species on plant beta diversity, or differences in plant communities between two adjacent areas, is not well understood. Tallgrass prairies that have been restored face high rates of species decline after the initial planting. This may be due to the abundance of specific species in seed mixes that are being chosen for these ecosystems. *Andropogon gerardii*, or Big Bluestem, a common dominant species in restored tallgrass prairies, decreases alpha diversity and richness and may also suppress beta diversity. I tested the hypothesis that: If *A. gerardii* is a strong competitive filter, then it will reduce alpha and beta diversity in restored tallgrass prairies. This question was investigated through a two year field experiment in a manipulated tallgrass prairie. Two seed mixes were planted, containing common tall grass prairie species. *A. gerardii* was added to some plots and excluded from others. After a period of growth, the resulting alpha and beta diversity was measured. Results from this work may help resolve questions about the effects of dominant species on patterns of diversity in restored tallgrass prairies.

## Armstrong, Cameron

Oral Presentation  
MPA, Public Administration  
Political Science  
Dr. Jeffrey L. Bernstein

### Using Think-Alouds to Understand How Students Balance Free Speech and Inclusion

Higher education is increasingly coming under fire for being a bastion of liberal intolerance, where freedom of expression is routinely curtailed to protect marginalized individuals and foster inclusion. While much of this picture is likely an exaggeration, recent evidence suggests there is some truth at the core of this claim. We explore student attitudes toward freedom of speech on campus using a think-aloud method, in which students are exposed to source material on a subject and “think aloud” as they work through it. We gain an in-depth picture of how students understand and make judgments about who should and should not be allowed to speak on campus. Students tend to be more restrictive than a civil libertarian might like, albeit in (usually) internally consistent and sympathetic ways. We conclude by suggesting interventions that could help students better understand the way First Amendment rights are typically adjudicated.

## Asemani, Hamidreza

Oral Presentation  
PhD, Technology  
Engineering Technology  
Dr. Vijay Mannari

### Design of Dual-Curing Materials Using a UV-Initiated Mechanism Suitable for 3-D Printing Applications

While 3D-printing is fast emerging as a fascinating technology of the future, one major challenge faced by 3D-printed products is their sub-optimum performance due to poor inter-layer adhesion between multiple stacking-up layers in their assembly. Moreover, the products generally suffer from lack of flexibility/hardness

balance and high strength build-up time. This research is focused on the design of a series of 3D-printing materials that cure by two independent mechanisms: The first mechanism provides rapid green strength development for faster processing while the second one allows for chemical bonding between the layers. This approach could potentially enhance the performance of final products. The proposed system is enabled by ultraviolet (UV) curing technology which makes it efficient and environmentally responsible. Highly functional materials were synthesized and formulated with photo-blocked catalysts. Rapid strength build-up could be achieved after application of each layer and exposing it to UV light (rapid cure). The bonding between remaining functionalities (dark cure) could take place after application of multiple layers under appropriate conditions without the need for any additional exposure to UV, heat or moisture. Results indicated that by proper design of materials, a strong inter-layer adhesion and toughness could be achieved due to covalent bonding between and within the applied layers.

## Atali, Sarah

Poster Presentation  
MS, Chemistry  
Chemistry  
Hedeel Evans

### Examining the Binding of Humanin and Acetylcholinesterase with Phosphorylated and Unphosphorylated Amyloid Beta

The importance of amyloid-beta (A $\beta$ ) in the development and progression of Alzheimer's disease (AD) is currently well recognized. A $\beta$  was recently shown to be protective against certain types of cancer and capable of inhibiting the growth of tumor cells. The mechanisms by which the primary sequence of A $\beta$  is converted into functional entities and dysfunctional assemblies are largely obscure. Humanin (HN) is a binding partner of A $\beta$  that protects against its deleterious effects while acetylcholinesterase forms a stable toxic complex with the A $\beta$  peptide during its assembly into filaments, increasing the aggregation and cytotoxicity of A $\beta$  fibrils. Phosphorylation of A $\beta$  on Ser 8 by PKA or on Ser 26 by cdc2 kinase promotes toxic aggregation of A $\beta$ . How these phosphorylations affect binding of HN and AChE to A $\beta$  is unknown. Our hypothesis is that HN blocks phosphorylation of A $\beta$  on Ser 8 and/or 26, reducing oligomeric formation and toxicity of A $\beta$ .

## Autterson, Gillian

Oral Presentation  
MS, Molecular/Cellular Biology  
Biology  
Anne Casper

### Evaluating the Role of Exo1p in the Repair of Chromosome Breaks in *Saccharomyces Cerevisiae*

The complex process of DNA replication is constantly challenged by intrinsic and extrinsic factors that can ultimately lead to breaks in DNA. A variety of enzymes play a role in the repair process, such as Exo1p, an endonuclease responsible for the long resection of DNA at a chromo-

# Abstracts Cont'd

some break. Cells lacking Exo1p have slowed kinetics of resection at the break. We hypothesize that cells lacking Exo1p will be more likely to use microhomology-mediated break induced replication (mmBIR) for initial establishment of replicative repair at a DNA break. A yeast model system was manipulated to induce replication stress, resulting in a break in DNA at Fragile Site FS2. Cells that repaired the break were identified by a screen for red/white sectored colonies. The type of repair event that occurred was determined through SNP testing, contour-clamped homogenous electric field (CHEF) electrophoresis, Southern Blotting and next generation whole-genome sequencing. The site of initial establishment for each repair event is currently being analyzed using Sanger sequencing in order to determine if microhomologies were used to initiate the repair. To date, the data do not support our hypothesis that mmBIR is used for repair of DNA breaks in cells lacking Exo1p. Instead, we have observed an increase in premature telomere addition at DNA breaks in these cells.

## Balilaj, Eliona

Oral Presentation

MA, Teaching English to Speakers of Other Languages / TESOL

World Languages

Ildi Porter-Szucs

## Corpus-based Teaching of English for Specific Purposes

Various researchers and scholars have suggested that language is best taught as it naturally occurs, hence the need for instructional patterns that are based on naturally-occurring text. Friginal claims that "language is mediated by and modified according to registers". Due to the specificity of the genre and difficulty of material design, similar to other English for Special Purposes (ESP) courses, Legal English is a rarely-taught subject. Utilization of corpus-based instruction that focuses on the learners' needs and draws upon their knowledge, regardless of the constraints, is the best way to teach Legal English skills to legal professionals and translators, because discourse organization in the drafting of legal documents is unique. One of the two main reasons the European Court of Human Rights rejects applications is the failure to meet the legal drafting requirements. It is therefore important that legal professionals are familiar with and skilled at using the appropriate language to draft documents in English. The presentation showcases a Legal English lesson for advanced adult learners (law and translation students, practicing lawyers and legal translators/interpreters) to teach vocabulary and the use of modal verbs. The presenter will elaborate on how to fill the gap with a corpus-based lesson created using the European Court of Human Rights court decisions on Albanian cases, AntFile Converter, and AntGram to analyze texts. The objective of the presentation is to share information and teaching tools that can be used to design authentic materials for use in ESP classes. Although the presentation focuses on teaching Legal English, the tools can be adapted for any ESP setting, in any country where English is taught as a foreign or a second language.

## Bapat, Kartikey

Poster Presentation

MS, Polymers and Coatings Technology

Engineering Technology

Vijaykumar Mannari

## Novel Photo-latent Base Catalyzed Organic-Inorganic Hybrid Coatings

Organic-inorganic hybrid coatings based on interpenetrating networks of polyurethane and silane functional polymers has been a novel approach towards developing high performance coatings. This approach combines the benefits of excellent thermomechanical properties and durability of polyurethanes with improved scratch resistance and high reactivity of silane functional polymers. Such coatings may find diverse applications for metals, wood and plastic surfaces, such as in automotive clearcoats, coatings for interior and exterior wood, and plastics. In this study, we have attempted to enable UV-curable compositions containing a two-component polyurethane system and organosilane precursor using photo-latent base catalyst (PLB). The in-situ generation of a strong base upon exposure of the thin wet films of such compositions to a UV source initiates a sol-gel reaction, utilizing ambient humidity, via silane functionality. The two concurrent but independent cure-reactions, leading to the formation of a urethane network via NCO + OH and a siloxane network via a sol-gel reaction, produce a cured coating with an organic-inorganic hybrid interpenetrating network structure. By controlling polymer composition, type of PLB, and cure conditions, the microstructure and hence coating properties can be customized for myriads of end-use applications. Some key results highlighting this novel approach will be presented.

## Bari, Tasfia

Oral Presentation

MS, Technology Studies

Technology Studies [M.S.]

Dr. Bilquis Ferdousi

## Data Security and Privacy Concerns in Adoption of Technology for Children with Autism Spectrum Disorder

Recent findings indicate that the prevalence of children diagnosed with Autism Spectrum Disorder (ASD) has increased to approximately one in 59 (Baio, Wiggins, Christensen, et al., 2018).. Existing literature has suggested that technology can play an effective role in the growth and development of individuals with ASD. The usage of technological tools such as communication devices and/or apps can be adaptable and utilized amongst children with ASD for communication purposes. As society becomes increasingly familiarized with such tools, the communication gap for children with ASD can be diminished. However, privacy and data security concerns appear to be the significant factors in the adoption decision of technology for children with ASD. This concern is a vital issue that has been leading to negative or adverse effects on such important technology adoption for communication with ASD children. In this context, this presentation focuses on: How do privacy and data security concerns affect the attitude toward the technologies for ASD? and How do privacy and data security factors affect intention to adopt those technologies?

# Abstracts Cont'd

## Bautista, Mary

Oral Presentation

MS, Chemistry

Chemistry

Dr. Amy Flanagan Johnson

### **Bringing Climate Change Instruction into K-12 Education: Implementation Ideas from Pre-Service Science Teachers**

Eastern Michigan University students in the teacher preparation program with a focus in integrated science or a scientific discipline take a course on the Nature of Science in order to help them connect the practices of science with its content. Students in this course are typically at the end of their program and are thinking about how to take what they have learned and apply it to their future classrooms. Climate change is a global issue that will continue to impact all of us and, as such, it is a necessary topic to include in K-12 education. In Fall 2019, individual interviews were conducted with pre-service science teachers enrolled in a Nature of Science course in order to better understand their definitions of climate change, their perceptions of its global and personal impacts, and their plans to incorporate climate change instruction into their own classrooms. This presentation will focus on how these future educators view their responsibility to teach environmental topics and what lessons or activities they hope to implement with their own students.

## Bazzi, Aleen

MS, Orthotics and Prosthetics

Poster Presentation

Health Promotion and Human Performance

Nathan Kearns

### **Patient Education on Sock-Ply Management for Trans-tibial Prosthetic Amputees**

In the field of orthotics and prosthetics, the educational aids provided to patients are often presented in methods which do not accommodate for the patient's health literacy level. This may lead to misunderstanding, noncompliance and the possibility of a higher cost of health services. Collecting data on the prosthetist's current modes of education on the subject "sock-ply management for transtibial amputees," we will develop an understanding of what their current methods are and if they are comparable to effective modes of education to improve a patient's health literacy. This information will guide us to the possibility that there is a need to create improved pictorial guides on the topic. The study will be a survey research directed to prosthetists, which will collect quantitative data on their current methods of patient education in sock-ply management. Through this survey research, we will be able to identify if there is a need to create an educational pamphlet on this topic.

## Beisser, Megan

Poster Presentation

MS, Orthotics and Prosthetics

Health Promotion and Human Performance

Frank Fedel

### **Perceived Benefits and Suggested Improvements for**

## **Orthotics and Prosthetics Communication Skills Training Developed**

A communication skills training specific to orthotics and prosthetics students has been developed for second year EMU MSOP students. This training will be integrated into the curriculum and, if time permits, this project will evaluate the perceptions of and effectiveness of the training. At the least, the project will determine the survey validity for future use. Literature supports the administration of communication skills training to healthcare providers after moderate experience. However, effectiveness has been shown to diminish as the participants gain extensive in-field experience (Ayn, 2017; Zolnierk, 2009; Schmitz, 2017). Second year master of science in orthotics and prosthetics students had moderate in-field experience during summer clinical rotations and most have not had extensive prior experience. Therefore, students in the second year of the Master's program have the most to gain from this type of opportunity to participate in such communication training. The training will be given during a scheduled course. A series of surveys will be administered before and after the lecture and potentially after seeing a patient model several weeks later. The survey will gather information concerning students' perception of their communication skills and the importance of communication. Opportunity will be provided for participants to suggest improvements for the training. It is hypothesized that the training will be well-received by the students and that suggestions for improvements will be gathered. Data will be collected February 7, 2020 and will be analyzed prior to the GRC.

## **Bennett, Alexandra; Chen, Tiffany; Kreuzwieser, Kimberly**

Oral Presentation

MA, Educational Leadership – Higher Education/Student Affairs Leadership & Counseling

Dr. Raul Leon

### **A Comprehensive Literature Review on Contemporary International Students' Sense of Belonging Within American Higher Education Institutions.**

International students contribute significant value to American higher education institutions, both intellectually and financially. Historically, American institutions have had a high number of enrollments of international students. They add different perspectives to the classroom and provide opportunities for domestic students to develop multicultural competence, an increasingly essential skill in today's global economy. However, international students are often neglected in diversity and inclusion practices on American university campuses. This research explores the literature on current inclusion practices for international students and proposes recommendations as to how higher education institutions should incorporate forms of greater, more targeted inclusion into their program designs.

This study examines current literature on international students' sense of belonging in American higher education institutions in order to provide insight for considerations when designing programs that work with a number of diverse populations at Research 2 (R2) institutions. This study focuses on three international

# Abstracts Cont'd

student subpopulations: East Asian, European, and Latinx. The literature referenced within this exploration is derived from the works of Strayhorn, Kuh, Hurtado, and other researchers in relation to international students. Our findings will help educational leaders to design effective and inclusive programs to foster international students' sense of belonging, which will, in turn, increase their persistence.

## Bennett, Jennifer \*

Oral Presentation

MA, Educational Psychology

Teacher Education

Alane Starko; Sylvia Jones; Nelson Maylone

### The Impact of Role Models on Resilience

Resilience research seeks to understand why some individuals are able to overcome adversity more successfully than others. Existing research emphasizes the importance of interpersonal connections as a protective factor in developing resilience. These supportive relationships can help improve outcomes in the face of challenges. There is a need to explore how protective factors contribute to the development of resilience in particular populations and, specifically, to better understand how role models promote the development of resilience. This study contributes to the research by examining the relationship between role models and resilience in first-generation college students. The goal of this study is to explore answers to the question: How do relationships with role models impact resilience?

The study used a mixed-methods approach, including surveys and one-on-one interviews. The sample was comprised of first-generation college students, with 155 students completing the quantitative survey and 12 students participating in follow-up interviews. Surveys were used to examine the relationship between two measures of resilience and the presence of role models. Interviews explored individuals' perspectives regarding the ways relationships with their role models contributed to their ability to overcome adversity. Analysis focuses on comparisons in resilience scores among subgroups of participants, based on the presence and type of role model, and on identifying themes in interviews that reveal important characteristics of role model relationships. Significant differences in resilience were found between college students with and without role models. Conclusions provide insight into how role models promote greater resilience.

## Benson, Janella

Oral Presentatioin

MA, Educational Leadership – Higher Education/Student Affairs

Leadership & Counseling

Dr. Carmen McCallum

### Beyond the Bridge: Exploring the Experiences of a Summer Bridge Program Through Student Voices

This qualitative study explores how pre-college characteristics, academic preparation and social interactions influence students' experiences in a Summer Bridge Program (SBP). The feelings, attitudes, and beliefs of seven participants are examined through semi-structured interviews, utilizing organizational socialization theory as a lens. Findings reveal thematic constructs of the SBP

that are indicators of individual student success. Recommendations drawn from study findings are offered to higher education staff and administrators interested in starting or improving summer bridge or similar programs.

## Benson, Janella ; Bowe, Miquie; Tolbert, Shamiya; Woolley, Sara

Oral Presentation

Educational Leadership – Higher Education/Student Affairs [M.A.]

Leadership & Counseling

Dr. Raul Leon

### Building a Bridge: Comparing Summer Bridge Programs amongst Semi-Selective and Highly Selective Institutions

This study compares literature on the academic, social, and long-term impacts of Summer Bridge Programs (SBP) among students at somewhat competitive institutions and highly competitive institutions. We explore the academic and social experiences of upper-classmen students with similar identities, such as being a student of color or a first generation student. The students' abilities to process this highly anticipated academic transition is examined by reviewing literature based on SBP experiences, utilizing Schlossberg's transition theory as a lens. Findings show that regardless of institution selectivity, the purpose of an institution's SBP is an indicator of an individual student's perception of success. Selectivity is also found to have an impact on the resources that students recall using at their institution and the perceived importance of these resources as students persist. Recommendations drawn from the findings are offered to higher education administrators at various institutions in hopes of acquiring richer qualitative data on student perceptions on SBP as well as facilitating discussion on formally continuing social connections post-program.

## Bezeau, Bradley

Oral Presentation

PhD, Educational Leadership

Leadership & Counseling

Dr. Ronald Williamson; Dr. Robert Carpenter

### The Relationship Between Teacher Self-efficacy and Participation in New Teacher Induction Programs in Michigan Public Schools

Induction and support programs can be critical to the development and retention of newly hired teachers within an educational organization. With research showing that nearly half of all new teachers leave the education profession within the first five years of teaching, and the percentage of teachers from diverse and minority backgrounds continuing to decline, it is essential that induction programs for these teachers are high-quality and comprehensive.

The problem being studied was the relationship between teacher self-efficacy and participation in new teacher induction programming. The study examined the variables of race, gender, and number of years of induction program participation to explore the relationships they have on the induction experiences and reported self-efficacy levels of newly hired teachers. This line of

# Abstracts Cont'd

research will contribute to the development and implementation of induction experiences in order to ensure that they are comprehensive, tailored to the individual needs of a diverse teaching force, foster positive self-efficacy in new teachers, and promote retention within the organization and profession. Additionally, the financial and cultural gains in developing and retaining high quality, confident teachers are of particular interest to building and central office leaders.

## Bishop, Kaia-Marie

Oral Presentation  
PhD, Educational Studies  
Teacher Education  
Robert Carpenter

### English Teachers' Identities as Writers and Teachers of Writing

The purpose of this research is to explore how English Language Arts (ELA) teachers' identities as writers and as writing teachers are shaped by their writing and teaching experiences. These identities have the potential to impact their students' experiences with writing. This research will help fill a knowledge gap about ELA teachers and their writing identities in the growing field of writing teacher education. The overarching research questions of this study are 1) how do secondary ELA teachers perceive themselves as writers? and 2) how do secondary ELA teachers perceive themselves as teachers of writing? These questions were explored through the qualitative approach of Interpretative Phenomenological Analysis, which allowed for an in-depth exploration of the meaning making, experiences, and identity development of ELA teachers. Participants included six secondary ELA teachers at public schools who wrote literacy narratives reflecting on their previous reading and writing experiences, followed by two interviews. Preliminary results show that the writing backgrounds and identities of ELA teachers are varied and this variation impacts their approach to teaching writing. This research is important because a fuller understanding of teacher writing identities could affect how writing is taught at the secondary level, as well as the approach to teaching writing in teacher preparation programs.

## Boerman, Emily

Oral Presentation  
PhD, Educational Leadership  
Leadership & Counseling  
Dr. Ron Williamson

### Multi-Case Study of the Impact of Organizational Structure on the Relationships of International Education Offices

International education is growing in higher education in the United States. More than 300,000 students study abroad and more than one million students come from overseas to study in the United States. Limited research has been done examining how international education offices (e.g., education abroad, international enrollment management, international students and scholar services, and English as a second language) are organized at universities. While there are some anecdotal reports of successful organizational practices in higher education, there is not

a widely used best practice for organizing international departments in colleges and universities. Two staff members from each area of international education offices will be interviewed at five midwestern universities. Each staff member will be interviewed individually through a multi case study approach to learn about the benefits and challenges of the organizational structure at the selected institutions.

## Bornemann, Hannah

Oral Presentation  
BS+MATR, Athletic Training Combined  
Health Promotion and Human Performance  
Courtney Lewis

### Various Measurements of Fatigue in Competitive Irish Dancers

#### Introduction.

Irish dance is known for its power, agility, endurance, poise, strength, technical abilities, and the one-sided nature of the dance. Irish dance is a high-performance sport which often results in bodily and muscular fatigue. Little to no research has been done to view the presence and effects of fatigue due to this style of dance. Fatigue can be measured in different ways, and in this study, fatigue is measured in multiple ways to compare biomechanics of dance and likelihood of injury when fatigue occurs.

#### Hypothesis.

Biomechanical markers will indicate physiological muscle fatigue sooner than dancer self-report. Judges will also observe the dancer's muscle fatigue earlier than dancer self-report, and the judges will indicate the dancer's muscle fatigue within five seconds of biomechanical markers.

#### Methods.

Biomechanical markers will be placed on the lower extremities to measure fatigue. Fatigue will also be measured by the participant's self-report of perceived exertion on the Borg Scale. Lastly, fatigue will be compared via biomechanical markers and an adjudicator's opinion on when a dancer appears fatigued.

#### Conclusions.

While this study has not yet been completed, we hope to be able to establish a relationship between fatigue and the likelihood of injury.

## Bostley, Scout

Oral Presentation  
MA, English Studies for Teachers  
English Language & Literature  
Amanda Allen

### A Menstruation Investigation: How Non-Fiction Children's Texts Influence the Stigma on Menstruation

Within the field of children's literature, there is a wide variety of texts that entertain children and young adults, but that inform and educate children as well. While fiction texts are a venue for learning (typically within the symbolic and implicit messages of a story), the present study focuses on examining the implicit messages students may learn from non-fiction texts intended to provide explicit instruction and information. In order to focus the analysis, I chose a topic which has historically been stigmatized:

# Abstracts Cont'd

menstruation. My goal in investigating the topic of menstruation is to highlight the ways in which non-fiction literature has grown out of oppression, and to identify the elements necessary to create a non-fiction literature which works to liberate those who engage with it. My research includes a text set of six popular children's puberty and period books. The publication years range, from 1979 to 2019, demonstrates areas of both evolution and stagnation. Using feminist theory and queer theory, I analyze each text by examining scientific accuracy, gendered language use, and images within the texts in order to better understand how culture influences the explicit and implicit lessons found in non-fiction texts. The additional outcome of my research is my development of criteria for a better Period Text that works against the current stigma on the topic.

## Bowe, Miquie

Poster Presentation

MA, Educational Leadership – Higher Education/Student Affairs Leadership & Counseling

David Anderson

## Assessing the Effectiveness of Implementing Introductory Biology into an Eight Week Summer Bridge Program

During Summer Bridge, students are introduced to college-level classes in order to prepare them for classes in the fall. The program that I will be evaluating is a portion of Summer Bridge: the Introduction to Introductory Biology workshop. This workshop was pilot-tested for the first time in the summer of 2019, because there was a need for student assistance within the science sector. Thirty student participants took part in this course and were given a specialized schedule that included two hours of biology instruction weekly. Within the hourly sessions, students were taught course content and provided with an active participation booklet. The booklet given to students allowed them to take notes as the content was being given, while giving them the opportunity to write any extra notes they may have. Students were expected to use study time to finish incomplete class activities and consult the instructor with questions for clarification. The Introduction to Introductory Biology component of Summer Bridge had two main learning outcomes:

1. Students will demonstrate their ability to comprehend content with the use of learning techniques to enable adequate comprehension of exam questions; and
2. Students will be able to demonstrate their ability to articulate course content individually and within groups.

## Boyle, Jane

Poster Presentation

MSN, Nursing – Adult Gerontology Primary Care Nurse Practitioner

Nursing

Meriam Caboral-Stevens; Keisha Lovence

## A Systematic Review Of The Relationship Between Neighborhood Environment And Allostatic Load

Stress is part of a person's life. A person's physical, mental health, and coping skills play a key role in determining the vulnerabil-

ity to a stressful experience. Under stress, the body experiences physiological and behavioral changes to adapt to its environment, a process known as allostatic load (AL). AL is a physiological measure of the cumulative burden of stress on the body as assessed by markers of physiological dysregulation. Repeated exposure to chronic stressors poses significant physiological stress, leading to AL and causing potential negative health outcomes. There is evidence in the literature suggesting the relationship between neighborhood deprivation and negative health outcomes. Two electronic databases, CINAHL and PubMed were utilized with a focused search including articles published from 2014 to 2019. This review of the literature noted a significant relationship between neighborhood quality and AL levels. The initial review generated 9357 articles, and five articles were included in this review. AL biomarkers studied in each article varied. Individuals with poor social support living in deprived neighborhoods were also noted to have increased levels of AL. AL impacts mental and physical well-being of both patient and nurse. Not only do nurses need to be aware of the effects of AL on the patient's health for appropriate prevention and treatment, they should also understand they are vulnerable to AL as well.

## Boyle, Jane; Schonfelf, Jane

Oral Presentation

MSN, Nursing – Adult Gerontology Primary Care Nurse Practitioner

Nursing

Kathleen Seurnick

## Teen Sexual Health

The purpose of this paper is to review literature and state and local statistical data to determine the impact of a highly prevalent Sexually Transmitted Infection (STI) in our young adult population. To reduce the incidence rate, co-infection, complications, and further transmission of this STI (chlamydia) in our community, we plan to intervene with at-risk sexually active teens in high school through education and screening. Chlamydia has been on the rise in Jackson, Michigan, over the past several years. This major public health concern often goes undiagnosed. In turn, adverse long-term consequences affect the health and well-being of both young men and women. Bringing awareness of significant STI complications associated with chlamydia could reduce the spread of this STI and improve sexual health within the Jackson population. Promoting healthy, safe sexual behaviors can improve the overall health of our future generation.

## Bradley, Jessica; Parent, Tim; Roche, Renuka; Szuba, Julia

Poster Presentation

MOT, Occupational Therapy

Health Sciences

Renuka Roche

## Development of Novel Methodology to Assess Kinetics and Kinematics during Tracing and Copying Tasks

Handwriting is an important skill across the lifespan. Occupational Therapists (OT) often receive referrals with the aim of improving handwriting speed and legibility. Previous research

# Abstracts Cont'd

has examined handwriting performance of children with Developmental Coordination Disorder (DCD), focusing on speed, quality, and fine motor control. However, there are no studies that examine the effect of force modulation on writing performance. The purpose of this study was to develop a methodology to examine force modulation in the handwriting of children with DCD / Autism Spectrum Disorder (ASD) and their neurotypical peers. This methodology was developed to measure accuracy, speed, and force production during print and cursive writing. A Wacom Intuos Pro Paper Edition Digital Graphic Drawing Tablet, was used as the handwriting surface allowing for a true-life writing experiment. The Wacom tablet was synced with Movalyzer®, a software that analyzes movement for acquisition and analysis of the force of a pen on paper, as well as other kinematic variables. In order to obtain pressure of the fingers on the inking pen, a separate force acquisition system was developed using an Arduino Uno® microcontroller along with a 150 mm thin film force sensitive resistor instrumented around the pen barrel.

The study methodology consists of 12 tracing and 12 copying trials of three pre-handwriting shapes. Trials were divided into two conditions, continuous to resemble cursive writing and discontinuous to resemble printing. Kinematic and kinetic data are collected from Wacom Movalyzer and Arduino during handwriting performance. Accuracy of performance will be determined by comparing sample data to the ideal template that has been developed by the research team. The next steps will be to use this methodology in order to collect preliminary data to compare writing performance in neurotypical adults and children. Future research may benefit from using these methods for data collection and intervention planning for clients with motor difficulties during handwriting.

## Bromley, Nicholas

Poster Presentation

MS, Orthotics and Prosthetics

Health Promotion and Human Performance

Frank Fedel

## An Initial Inquiry into the Clinical Definition of “Fit” by Orthotists

Use of the term “fit” in orthotics research is widespread in descriptions of devices delivered to patients. However, the word has no set clinical definition nor indication as to whether it refers to a physical attribute measured by the orthotist or a self-reported measure of comfort from the patient. Existing research into the concept of fit uses the term “fit” to refer to a patient reported measure of comfort, while research into device properties uses the term “fit” with reference to a physical attribute. If practicing orthotists are asked a series of questions to determine their use of the term fit in clinical practice, then it is expected that their answers will reflect aspects of a physical characteristic. A link to an electronic survey to assess and classify the current uses of the term “fit” by practicing orthotists will be posted on the email listserv for practicing orthotists. Data will be collected electronically and analyzed by comparing orthotists who report using the term “fit” as a patient reported measure of comfort or a clinician-assessed physical characteristic. The survey is anonymous. The

results from this survey will be organized to determine if current clinical usage of the term fit is used primarily as a physical attribute or a self-reported patient evaluation of comfort.

## Calhoun, Tyler; Donnelly, Kasey; Wiggins, Hananiah

Oral Presentation

MA, Theatre Arts - Interpretation and Performance Studies

Communication, Media, & Theater Arts

Dr. Anita Rich; Amy Johnson; Decky Alexander

## “The F Word” An Intersectional Performance Celebrating Femininity

Femininity is an identity construct that impacts each individual differently. Factors such as sex, gender, race, class, sexual orientation, and religion prescribe different ideologies concerning this construct. Often, the feminine identity is used to oppress and limit certain groups of people. Current feminist scholars question why critical femininity studies does not exist, while others believe that such a concept cannot be contained by theory and should be explored through praxis. This project aims to celebrate femininity from diverse intersectional perspectives. Like current feminist scholars, this research maintains that conducting such a study through traditional means would do a disservice to the topic. In this study, three performers use autoethnography, applied theatre, and Theatre of the Oppressed techniques to research their personal experiences with femininity. Their research will manifest as a performance of diverse works investigating the identity construct of femininity involving integral participation from the audience. The performers will not only share research, but also invite the audience to participate in the research. It is our intent that the diverse experiences and perspectives of the performers will offer an intersectional understanding of femininity that empowers our audience to reflect on their identities as they explore their relationship with femininity.

## Carew, Jillian

Oral Presentation

PhD, Educational Leadership

Leadership & Counseling

Dr. Rema Reynolds

## Flesh of my Flesh: How Black People Advocate for and Uphold Anti-Black Practices in Schools

Having taught and led in schools across the PK-12 spectrum, I have been an advocate for and upheld anti-Black practices for many years of the last decade. In her article “Social class and the hidden curriculum of work, Anyon (1980) found there are four distinctly different types of schools, which fall into two categories, students could encounter throughout their educational career: those that “train” students to work for someone else and those that “educate” students to lead. Anti-Black practices being upheld in schools has been no secret over the past decade. This study seeks to determine why these anti-Black practices continue to persist, particularly in schools that serve students who are predominantly Black. Parenting practices in the Black community is symbolic of the slavery experience. In both cases, authority figures “control” those being managed. There were and are severe consequences for making a mistake or not doing what is expected. Given the false

# Abstracts Cont'd

sense of success based on traditional methods of parenting in the Black community, Black people often advocate for those same methods within the schools they send their children. These anti-Black practices are described and sometimes masked as "tough love," "discipline," and "structure." In this study, I will examine what factors contribute to the advocacy of anti-Black practices from Black people (educators, families, and even students themselves) in particular. For this study, I will survey parents in grades K through 12 to collect qualitative data around the degree to which they advocate for anti-Black practices and why. Within the survey, I will also collect data linked to their awareness of such advocacy. Through this study, I hope to uncover whether or not Black parents are advocating for anti-Black practices, what factors contribute to such behavior, and their awareness of the two.

## Carpenter, Anne; Favot, David

Poster Presentation

MSN, Nursing – Adult Gerontology Primary Care Nurse Practitioner

Nursing

Linda Myler DNP, RN, CHSE, CNE; Kathleen Seurynck

## Reducing Obesity in Jackson County, Michigan Utilizing Survey Data from the WIC Office

The purpose of this project is to explore the ways to reduce the amount of obesity in Jackson County, Michigan. This project is being conducted due to the many negative chronic health consequences of obesity which include heart disease, type 2 diabetes, hypertension and risk of stroke. According to a comprehensive Community Health Assessment for Jackson County (2011), the obesity rate is 37%, which is greater than the State of Michigan rate of 32%. According to the same community health assessment, the obesity rate in Jackson County is also greater than the national rate of 36%. We will be developing a survey to be implemented at the Jackson County Health Department Women, Infants & Children (WIC) office to evaluate the obstacles clients encounter when buying healthy food. This survey will be included in office visits for one month to each client seen in the WIC office. We hope to determine the cause behind poor dietary choices of residents in Jackson County and from these results formulate a plan to address the greatest need to improve obesity rates in this county.

## Casey, Maha

Oral Presentation

PhD, Educational Studies

Teacher Education

Robert Carpenter

## Discrimination Against Arab Muslim American Students in the Public Schools After the September 11, Attack

The central issue of Islamophobia has been on the rise in the United States. The tragedy of September 11, 2001 changed America and its way of thinking towards Muslims. Arab Muslim American students have been in a systemic form of oppression and racial/ethnic discrimination against their religion and culture. On top of this, they are a hidden minority. American schools have

dismissed, failed, or not recognized the discrimination against the Arab Muslim American students. American schools have failed to address the psychological and cultural needs of Arab Muslim American students. The physical and mental impact on Arab-Muslim American students has become unbearable, especially when it leads to discrimination from teachers and peers. The U.S. education system has excluded the history of Middle Eastern regions from textbooks. Because of this, some information that is spoken about in school is inaccurate, which causes division and discrimination. The paper will address three major themes. 1. Discrimination against Arab Muslim American students after September 11; 2. The psychological effect and impact from teachers, administrators, and peers; and 3. Inadequate representation of Arab-Muslim history and culture due to the exclusion of Middle Eastern History from U.S. textbooks.

## Chen, Dongru

Oral Presentation

MS, Applied Statistics

Mathematics

Khairul Islam

## An Assessment of Household and Living Environment on Asthma Exacerbation

Asthma is one of the nation's most-common and costly chronic conditions, for which the disease management requires a long-term, multifaceted approach. Meanwhile, asthma exacerbation draws more attention to society and families due to its potential hazard on the patients' life. Since household and living environment factors are comparatively easy, quick and economic ways to control asthma attacks, we will explore the relationship between those factors and asthma exacerbation so as to discover potential risk or protective predictors to child asthma. We hypothesize that the type and quantity of different household and living environment allergens affect the likelihood of exacerbation events in the asthmatic patients.

We utilize the public-use data from the United States 2016 BRFSS Asthma Call-back Survey on children. Those patients came from all 50 states as well as the District of Columbia and three U.S. territories. In total this includes 1050 child-onset patients, who report ever being diagnosed with asthma. Asthma exacerbation will be defined as a dichotomized phenotype according to whether the patient had one of three experiences. We selected 17 variables of household and living environment in the survey. Data will be cleaned, standardized and coded. In the statistical modeling, we will firstly perform chi-square tests to examine the relationship between each of those 17 variables and the phenotype. Using the significant variables, we then perform a generalized linear model by logistic regression to evaluate the combined effects of those factors. Conclusion: It is expected that the factors of household and living environment will be significantly associated with Asthma exacerbation.

## Cookenmaster, KaSandra

Poster Presentation

Sp.A., Educational Leadership

Leadership & Counseling

# Abstracts Cont'd

Dr. Teresa Saunders

## K-12 Suspensions and Expulsions in Michigan

The State of Michigan has amended and added additional School Code guidelines for consideration when determining out-of-school suspension and expulsion of individual students. In 2012, the State of Michigan Department of Education released a Resolution to Address School Discipline Issues Impacting Student Outcomes. Following this resolution were amendments in 2016 as well as the addition of factors of consideration and restorative practices mandates as alternatives to suspension or expulsion in certain cases. The question then is since 2012, how has the Resolution to Address School Discipline Issues Impacting Student Outcomes affected out-of-school suspension and expulsion rates in Michigan schools? Suspension out of school and expulsion data were obtained from the Center for Education Performance and Information as well as the United States Department of Education Office of Civil Rights databases. After analysis of the available data, it can be determined that the resolution and later enacted legislation has had a positive effect on reducing the number of suspensions and expulsions in the state of Michigan. Possible implications for future study would be programs and methodologies implemented due to the resolution as well as fidelity of implementation. Additionally, potential implications of impacts on the culture and climate within school systems, gaps in proportionality across racial, gender, and disability categories, as well as the influence on the school to prison pipeline would be paramount as these are related to implied outcomes of the resolution.

## Corcoran, Marshall

Oral Presentation

MA, Philosophy

History & Philosophy

Peter Higgins

## Collaboration and the Moral Responsibility to Resist Oppression

Much attention has been given to the moral responsibilities of privileged and marginalized people to resist oppression. Among the privileged, distinctions have been made between those who act as oppressors and those who simply benefit from the oppression of others. But, the same distinctions are not often drawn among the marginalized (some of whom collaborate with their oppressors and some of whom do not). In this presentation, I attempt to fill that gap. I argue that a distinction needs to be made between those who are (merely) oppressed and those who collaborate with their oppressors. Relying on the examples Ann E. Cudd uses throughout Analyzing Oppression, I come to a definition of collaborator that separates them from the (merely) oppressed and, in fact, positions them closer to the oppressors they collaborate with. I then argue that collaborators ultimately have a different moral responsibility for resistance than do the oppressors or the (merely) oppressed, and in some cases this may involve short-term acts of collaboration as a way to create an overall lessening of oppression.

## Corcoran, Sean

Poster Presentation

MA, Special Education

Special Education

Gilbert Stiefel

## Mindfulness as an Effective Behavioral Intervention for Special Needs Populations

Research suggests that schools have reported a rise in negative student behaviors, in both the general education setting and the special education setting. As schools move away from "zero tolerance" policies, mindfulness training programs have become more popular in the last 10-15 years. While many of these programs promise significant results due to their application, research cannot give a definite answer to the short-term and long-term effectiveness of mindfulness programs in schools. Further research is still needed to develop a general consensus among researchers that mindfulness-based training programs can be included into the list of solid evidence-based practices.

## Craze, Jacob; Le, Man

Poster Presentation

MSN, Nursing – Adult Gerontology Primary Care Nurse Practitioner

Nursing

Kathleen Seurnick

## Vaping in High Schoolers

The purpose of this paper was to review current research evidence on the influence of high schoolers who use vape products or e-cigarettes in Washtenaw County population. Surveys performed by Washtenaw County shows that over eighteen percent of high schoolers used electronic vape products in the last 30 days. The PubMed and CINAHL databases were used to search for journal articles from 2015-2019 to evaluate the elements that influence high schoolers to vape. Although the Center for Disease Control and Prevention has reported lung injury associated with vaping products, vaping continues to be on the rise. Furthermore, studies suggested vaping is no safer than cigarette smoking. Therefore, understanding and targeting what influences high schoolers who use vape products would be beneficial to the epidemic.

## Craze, Jacob; Favot, David

Oral Presentation

MSN, Nursing – Adult Gerontology Primary Care Nurse Practitioner

Nursing

Meriam Cabral-Stevens, PhD, RN, NP-C; Keisha Lovence

## Active Surveillance in Men with Intermediate Prostate Cancer: An Integrative Research Review

Prostate cancer is the second most common cancer in men worldwide and the fourth most occurring cancer overall. Active surveillance (AS) and watchful waiting are two conservative approaches to treating prostate cancer for some men over the age of 65 and those with other comorbidities. Active surveillance is a clinical monitoring strategy that is the gold standard for men with very low risk or low risk prostate cancer. While AS is recommended for men with very low risk or low risk prostate cancer, the use of AS in men with intermediate risk prostate cancer is still debated and controversial. Therefore, guided by Shared-Decision Making

# Abstracts Cont'd

model we aimed to examine current evidence on the effectiveness of AS in men with intermediate risk prostate cancer. An integrative review of the literature was conducted. Electronic databases, CINAHL, PubMed, and Cochrane Library, were searched for peer-reviewed articles published within the past ten years (2009-2019) using keywords: intermediate risk prostate cancer AND active surveillance, AND outcome. Four articles were found to fit the inclusion and exclusion criteria. Our findings showed that the use of AS in men with intermediate risk prostate cancer who meet specific criteria may be appropriate. However, findings should be interpreted with caution because of limited studies conducted and the level of evidence of each studies noted.

## Dace, Cheslyn

Oral Presentation

MS, Mathematics

Mathematics

Tanweer Shapla

## Multivariate Analysis of Percent Body Fat and Body Measurements

Brozek and Siri's equations provide formulas that calculate a person's percent body fat using body density, calculated using Hydrostatic Underwater Weighing technique, which is expensive. Alternatively, percent body fat can be estimated using age, weight, height, and ten circumference measurements of various body parts, which require only a scale and a measuring tape. In this presentation, we aim to explore the regression relation between the percent body fat of adult men and various body measurements using multiple regression and multivariate statistical techniques. Dimension reduction techniques are also utilized to determine the latent variables and summarize the overall variance structure of the predictors. Our study results show that the percent body fat can be reasonably well estimated by the predictors considered in the study. We also come up with three latent variables to represent thirteen model predictors. The variance structure of predictors is well summarized by means of a smaller set of principal components.

## Daniels, Fred

Oral Presentation

MA, Africology and African American Studies

History & Philosophy

Dr. Joseph Engwenyu

## A Lesson on Inhumanity: The Church and Genocide in Rwanda

In April of 1994, in the small African country of Rwanda, ethnic conflict between those designated as Hutu and Tutsi escalated into the massacre of close to 1 million people, primarily Tutsi;--a number exceeding one-tenth of the entire population, in the most Christianized country in the continent of Africa. The perpetrators of the killings were predominantly Christians murdering other Christians, based upon a myriad of factors that under-girded and propelled the murderous genocidal events. Many questions arise including: how did the association between government officials and the leadership in Rwandan Christian Churches interact with policies and the social climate prior to, during, and after the

genocide? Did the acquiescence to the social discrimination in Rwanda, and within the Christian Church, based on ethnicity, and perpetrated by Christian Church leadership, play a major role in the genocide? Were the internal contentions within the Christian Church instrumental in the provocation of the genocide? What possible interventions could the Church have pursued to prevent the genocide? What lessons may be learned from the genocide about separation of Church and State to ensure that this should never happen again?

## Daugherty, Morgan; Sieja, Jordan

Oral Presentation

MS, Psychology - General Clinical

Psychology

Dr. Jamie Lawler; Dr. Angela Staples

## Receptive Vocabulary as a Protective Factor for Parental Stress

Research shows a relation between lower executive functioning (EF) and greater stress, but it is not clear what might moderate this relation (Williams et al., 2009). Greater child receptive vocabulary has been associated with improved parent-child communication (Gershon et al., 2013). Little is known about the impact of parental receptive vocabulary. Problems with communication in families may lead to higher parental stress (Patterson, 2002). Zelazo and colleagues (2013) noted small correlations between EF and receptive vocabulary. We hypothesize that receptive vocabulary will moderate the relation between EF and perceived stress in parents. Parents ( $M = 33.79$  years;  $SD = 4.29$ ) of children (girls = 23, boys = 15) between 24-48 months ( $M = 3.21$  years;  $SD = 1.19$ ) completed a self-report measure on stress (Parent Stress Index; PSI). Parents also completed the NIH Toolbox Cognitive Battery to measure receptive vocabulary (Toolbox Picture Vocabulary Test; TPVT) and EF (flanker task), which were uncorrelated ( $r = -.04$ ,  $p = .81$ ). A multiple regression tested the main effects of parent age, child age, receptive vocabulary, EF, and an interaction between vocabulary and EF. Stress was significantly predicted by child age, vocabulary, EF, and an interaction between vocabulary and EF,  $F(5, 32) = 3.11$ ,  $p = .02$ ,  $R^2 = .22$ . Parents of older children tended to report less stress. Simple slopes analysis indicated that increased receptive vocabulary predicted significantly lower stress ( $b = -.55$ ,  $p = .03$ ) for parents with lower levels of EF (-1SD). Parent receptive vocabulary moderated the relation between EF and perceived stress. Receptive vocabulary may serve as a protective factor for parents with low levels of EF or greater receptive vocabulary may improve parent-child communication, which contributes to lower stress. The role of child age is suggestive of this possibility, but future research is needed to directly test this hypothesis.

## DeCamillis, Jason

Oral Presentation

PhD, Educational Studies

Teacher Education

Joe Bishop

## My Dashed Hike and the Aftermath

I conducted this autoethnographic research in order to examine

# Abstracts Cont'd

my experience as a legally blind, Disabled, teacher and long-distance backpacker who experienced a sudden and further vision loss while attempting a nearly 500-mile trek of the Colorado Trail with my wife during the summer of 2019. Through a reflexive autoethnographic process, I told the story and traced the roots of my experiences through time and space, colliding with personal and cultural contexts, toward developing personal understandings and shared meanings. Themes emerged and were explored in the literature toward centering my lived experience and Disability Justice: Interdependence and Freedom; Belonging; Medical Systems and Quality of Life; Coping; and Resilience.

## DeWitt, Steven

Postter Presentation  
MS, Orthotics and Prosthetics  
Health Promotion and Human Performance  
Nate Kearns

### **Comparison of Gait Symmetry and Efficiency Between a Fixed Ankle Prosthetic Foot and an Articulating Microprocessor Foot**

The purpose of this study is to understand the effect of feet with microprocessor controlled ankle articulation on gait symmetry and efficiency. The goal of technological advancements in prosthetic components, such as microprocessor controlled prosthetic ankles, is to help individuals regain as close to normal gait as possible. Some studies suggest that the microprocessor component of the Ossur Proprio foot can provide amputees with a more efficient gait, however, there is a lack of research looking at joint angulation and symmetry. Greater symmetry in walking is an indication of greater energy efficiency. The subjects gait will be recorded using Kinovea video gait analysis software and evaluated with the Edinburgh Visual Gait Score (EVGS). The EVGS is a video based outcome measure, normally used for the cerebral palsy population. This study has the potential to provide a better understanding of the effects that the Proprio microprocessor foot has on gait symmetry. Results for this study should be available by March 2020 .

## Dhurpate, Priyanka

Oral Presentation  
MS, Computer Aided Engineering  
Engineering Technology  
Dr. Herman Tang

### **Quantitative Impact Of Inter-Line Conveyor Capacity For Throughput Of A Complex Manufacturing Systems**

The objective of this study is to identify the impact of an inter-line conveyor on the throughput performance of a complex manufacturing system and determine the capacity of an inter-line conveyor to improve productivity. First, a complex manufacturing system for an automotive assembly line is modelled by adapting the methodology of two lines with an inter-line conveyor system. A quantitative analysis of an inter-line conveyor capacity is carried out under different conditions and capacities. The initial results are obtained to justify the purpose of an inter-line conveyor followed by introducing a random failure of a station at upstream and downstream line for stoppage time of ten minutes and

average stoppage time of 30 minutes. Catastrophic breakdown of two hours is also studied. The case outcomes show a significant improvement in productivity when 20-unit capacity is considered. The findings of the different stoppage and catastrophic breakdown studies show the buffering of an inter-line conveyor may serve as a new approach and guideline to the buffer design and scheduling maintenance.

## Dixon, Molly

Poster Presentation  
MS, Ecology, Evolution and Organismal Biology  
Biology  
Dr. Katherine Greenwald

### **Are Urban Snakes Eating Nonnative Species? Analyzing Snake Diets with DNA Barcoding.**

Across taxa, biodiversity is declining well above the background extinction rate. In order to protect at-risk species and populations, it is vital to identify the factors influencing their declines. The main objective of this research is to assess whether diet drives differences in abundance between the Michigan snake species Storeria dekayi and Thamnophis sirtalis and their less abundant sister species, Storeria occipitomaculata and Thamnophis butleri. Each species consumes both native and nonnative slugs or earthworms, but in unknown proportions. This unique relationship of abundant versus less abundant populations within the Storeria and Thamnophis genera presents a unique opportunity to study the effects of nonnative prey species on predator abundance. I hypothesize that consuming non-native prey and a wider diversity of prey is associated with greater abundance within Michigan snake genera. The approach to investigating this objective involves conducting field surveys of S. dekayi, S. occipitomaculata, T. sirtalis, and T. butleri and performing genetic prey analysis of fecal samples by DNA barcoding. The results of this research will help us understand why some snake species are more abundant than others and help us effectively manage at-risk populations.

## Dixon, Simone

Oral Presentation  
MA, Women's and Gender Studies  
Women's and Gender Studies  
Dyann Logwood

### **From Middle Passage to Modern Times: Black Women's Experiences with Sexual Violence**

In closing out Lifetime's six-part documentary "Surviving R. Kelly," Chance the Rapper expressed sentiments regarding the victim/survivors of R. Kelly, concluding that he "didn't value the accusers stories because they were black women." Historically, sexual violence against Black women and girls has never been a case of if but when which has shaped racist perceptions of Black woman as "rapable." Consequently these historical conceptions of Black women have resulted in a "blame the victim" mentality in regards to Black women's experiences with sexual violence. I hypothesize that historical representations of Black women and Black womanhood coupled, alongside misogynoir, aids in diminishing the authenticity of their voices, despite the rise of a politics of respectability or reclamation of Black women's sexuality. Hence

# Abstracts Cont'd

Black women, and girls' experiences of sexual violence continues to be dismissed and denigrated. I will utilize a mixed-method approach in the proposed research project. I will employ archival, content analysis and quantitative methods. I aim to examine images from magazines, and other visual sources to showcase a pattern of representations of Black women, and Black womanhood over time in relation to themes of: promiscuity, uninhibited sexuality, and hyper-sexualization. Through content and data analysis, I expect to yield results that support my hypothesis that historical representations of Black women and Black womanhood aids in the dismissal of their accounts of sexual violence.

## Dixson-Ferrel, Kimberly; Katherine Naish

Oral Presentation  
PhD, Educational Studies  
Teacher Education  
Dr. Christopher Robbins

### How Trauma Informed Practices Inclusive of Poverty Simulation Can Help Educators Better Understand Their Students

Educational providers struggle to understand their students who live in poverty because many classroom teachers are from white, middle-class backgrounds. It is essential that teachers become aware of what their students experience every day in order to better support them in their educational environment. The present research explores whether utilizing a poverty simulation and trauma informed practices in professional development will help teachers and school staff increase their understanding of working with students who live in poverty. A survey will be administered before and after a professional development intervention that uses trauma-informed practices and poverty simulation. Analysis of survey data will determine if there are correlations amongst teachers with regard to their attitude and awareness of their students living in poverty and/or with trauma. Participants will include school-wide educational teams consisting of teachers, administrators, ancillary staff, and support staff. Variables under study include educator awareness, attitude, new strategies utilized in the classroom, age, and work experience. Data will be collected using an online survey made available to the educators five days prior to the professional development, and administered 30 days after completion of the professional development. This study has not yet been conducted, but the hope is that results presented will show a significant correlation between educator awareness of students who live in poverty and/or with trauma and educators' attitudes toward these students. We are also hopeful that educators will implement strategies presented in professional development to further support their students who live in poverty and/or with trauma and see an increase in student progress and learning.

## Dorandish, Sadaf

Poster Presentation  
MS, Chemistry  
Chemistry  
Hedeel Guy-Evans

### Examining the Effect of Glycosylation and Reduction on the Interaction of IGFBP-3 with Humanin and on

## Regulation of Hyaluronan-CD44 Signaling.

Insulin-like growth factor binding protein-3 (IGFBP-3) belongs to a family of insulin growth factor (IGF) binding proteins. Humanin is a peptide known to bind to residues 215-232 of mature IGFBP-3 in the C-terminal region of the protein. This region of IGFBP-3 has been shown to bind to certain glycosaminoglycans including hyaluronan (HA). We found that the HA receptor, CD44, blocks HA binding to IGFBP-3, but has no effect on binding of humanin to IGFBP-3. Both IGFBP-3 and CD44 are known to be glycosylated with disulfide linkages. The role of glycosylation and the role of disulfide bonds in modulating the binding of IGFBP-3 to humanin or regulating the IGFBP-3 interaction with HA, and the consequent effect on HA-CD44 signaling is unknown. In vitro binding assays along with in vivo kinetics using normal human lung cell (HFL1) and two human non-small cell lung cancer (NSCLC) cell lines with relatively high levels of IGFBP-3 (A549) and undetectable levels of IGFBP-3 (H1299) are employed in this work. We hypothesize that IGFBP-3 can block cell adhesion by competing with CD44 for binding to immobilized HA, and that this effect is abolished by humanin. Moreover, addition of IGFBP-3 (glycosylated/reduced or unmodified) should compete with cells expressing CD44 (A549, H1299) for binding to immobilized HA. This competition should be relieved by the addition of increasing concentrations of humanin because it binds to the same region on IGFBP-3 that binds HA. A minimal effect is expected on adhesion of HFL1 cells, as they do not express CD44.

## Edbrahim, Salaheddin

Oral Presentation  
PhD, Technology  
Visual & Built Environments  
Dr. Shinming Shyu

### Developing a Sustainable Environmental Modern Cave Dwelling Model for Residential Use in Libya

Cave dwellings are abandoned at a fast pace in Libya, damaging the historical and anthropological wealth of the nation. A validated questionnaire was distributed on a convenient sample of Libyans after the research was approved by the Institutional Review Board at a Midwestern University in the United States. Results indicate that Libyans are willing to inhabit cave dwellings if they are modernized and up-to-date, made with sustainable technologies, easy to build and maintain, and do not cost much to be constructed or renovated. The data supports the claim that technologically acceptable models, and ease of use and usefulness of cave dwellings, explain Libyans' preferences toward residing in modernized cave dwellings. Modernization theory is partially supported by the evidence that more educated Libyans, as well as those self-reporting high incomes, exhibit higher likelihoods of living in cave dwellings compared to less educated and poorer Libyans. Age, gender, and employment did not carry any significant effects on Libyans' decisions to live in cave dwellings. This research contributes to our theoretical understanding of peoples' decisions to live in richly historical structures like cave dwellings. The results indicate that once the cave residence is equipped with modern-looking equipment and styles, it becomes more appealing to individuals. Also, the research defines the overarching argu-

# Abstracts Cont'd

ment that modernization explains the flight from cave dwellings.

## **Elkoudsi, Mazen; Bazzi, Farah**

Poster Presentation

MSN, Nursing – Adult Gerontology Primary Care Nurse Practitioner

Nursing

Linda Myler

### **Screening Colonoscopy in Arab Americans**

The purpose of the study is to research the reason behind the low rate of colorectal cancer screening (CRCS) in the Arab American population in Dearborn, MI, and to investigate if an alternative method to colonoscopy screening can increase the rate. Colorectal cancer is the second deadliest cancer in the United States. CRCS plays an important role in the detection of early stages of cancer and precancerous conditions, such as adenomas. Despite the benefit of CRCS, the rate of screening for individuals is only 62.6% nationwide. Among the Arab American community, only 48.5% of individuals 50 and older underwent CRCS. There are two studies that discuss CRCS in Arab Americans. These studies suggest that socioeconomic, culture, nationality, gender, and education level all play a role in the rate of CRCS. Other factors that affect CRCS rates in Arab Americans exist, including concerns about the procedure and lack of communication. We will conduct this research to find out why Arab Americans refuse or are noncompliant with colorectal cancer screenings. The low rate of CRCS in Arab Americans should be addressed. We are looking for ways to improve the rate of CRCS among Arabs. We are planning to interview patients at a clinic in Dearborn to explore their acceptance of different methods of screening for colorectal cancer, such as a noninvasive screening like Cologuard.

## **Emery, Lisa**

Oral Presentation

PhD, Educational Leadership

Leadership & Counseling

Dr. Rema Reynolds

### **Help Wanted: The Call for Transformative Women Leaders In Higher Education**

This research study considers the need for transformational change in higher education admissions policies and student success initiatives in the wake of significant impending changes in the demographics of the college-going population. The role of the Chief Enrollment Management Officer will be examined for its potential to shape policies around access and equity within an institution. It is predicted that there could be up to 750 vacant Chief Enrollment Management Officer positions within the next few years, creating an opportunity for more women to step into this executive-level role. Feminist research methods will be used to construct a survey based on human capital theory. The survey will collect information about demographics and work-life issues, as well as measures of morale and job satisfaction to understand the impacts on intention to leave. Once the data have been analyzed, the intended purpose is to understand the challenges and highlights of the Chief Enrollment Management Officer role, and

provide recommendations for reshaping the role to attract transformational women leaders.

## **Fares, Fredaz; John, Elsina**

Poster Presentation

MSN, Nursing – Adult Gerontology Primary Care Nurse Practitioner

Nursing

Linda Myler

### **Sexually Transmitted Infections in Arab-Americans**

Limited research is available on the health promotion and disease prevention of Arab-Americans. The purpose of this study is to review current research and information available on the sexual activity and behaviors of Arab-American adolescents, and identify the effects of these behaviors on the increased incidence of sexually transmitted infections (STIs) among this population. Current discussions are restricted regarding sexual health awareness and sexual health prevention among the Arab-American community, as they consider sexual issues a taboo and do not freely discuss these issues. A significant lack of public consideration to these problems exists, such as lack of knowledge and personal perspectives regarding sexual health. This research will aid in the development of an educational document in the Arabic language that will act as a tool to provide information about the prevention of and screening for STIs, and list local health resources available for the Arab-American community. Arab-Americans have a unique culture and behaviors that call for a community-specific tool to prevent and minimize the transmission of STIs. Therefore, an appropriate educational program is designed to help the vulnerable adolescent population regarding this controversial topic among this culturally sensitive community.

## **Farrell, Alessa; Meriwether, Anna-Marie**

Poster Presentation

MSN, Nursing – Adult Gerontology Primary Care Nurse Practitioner

Nursing

Kathleen Seurnick

### **Improving Human Papillomavirus Vaccination Within Wayne County**

The purpose of this paper is to identify, address, and propose a solution to the low rate of vaccination against human papillomavirus (HPV) for young males in Michigan's Wayne County. Statistics show that Wayne County has a markedly low rate of vaccination against HPV in young males. Our plan is to construct a versatile educational tool that highlights the importance of the HPV vaccine in a gender-neutral way. The main goal for this tool is to shift the association of the HPV vaccine from its focus on cervical cancer to the various cancers to which it has been linked. Prior to the construction of new education, a literature review and interview were utilized to examine current educational practices used within the Wayne County health department. After implementation, the success of our tool will be evaluated by monitoring for an overall increase of HPV vaccinated males within the county. Obtaining these records will be done through data collection of records provided by the Wayne County health

# Abstracts Cont'd

department. Ultimately, our goals are to decrease HPV-related cancers within the sexually active population of Wayne County and increase awareness of the importance of vaccination against HPV in young males.

## Fasbinder, Adrienne; Thompson, Christle

Poster Presentation

MSN, Nursing – Adult Gerontology Primary Care Nurse Practitioner

Nursing

Dr. Linda Myler

## Vaping Prevention in Michigan High School Students

Since their emergence on the market in 2007, electronic cigarettes or “e-cigarettes” have become the most common tobacco product used among youth within the United States. This surge in popularity has resulted in what the Surgeon General has deemed a public health epidemic. A Healthy People 2020 objective is to reduce tobacco use by adolescents. Due to lack of consumer awareness, high school-aged children have succumbed to the unwarranted life-threatening complications caused by the use of e-cigarettes and vaping devices. High school-aged children are unaware of the health consequences vaping poses as a result of highly addictive properties, nicotine content, and the harm of additives and flavor enhancers. The aim of this paper is to use data from a literature review to promote prevention strategies and inform consumers of the complications and risks of the use of e-cigarettes and vaping devices. We postulate that dispelling myths, increasing awareness, and educating high school-aged children and their parents will assist in making safer choices to foster lifelong positive outcomes.

## Finkelstein, Katrina

Oral Presentation

MS, Historic Preservation

Geography & Geology

Nancy Bryk

## On the Front Lines of Cosmetics: A Tube of Lipstick in World War II

Lipstick, and cosmetics as a whole, can be viewed as very symbolic of a woman, how she views herself, and how society views her. This paper examined a tube of lipstick, allegedly produced in the early 1940s. Through research utilizing many issues of Vogue and Harper's Bazaar, memoirs of women living in the era, and individual correspondence, the tube of lipstick was evaluated for its authenticity, cultural significance, and contemporary interpretation. The research showed that cosmetics, in this case lipstick, stood almost unparalleled as a symbol during the Second World War in that there was continued production of the products despite increased rationing. It was viewed as a tool to keep morale up on the home front and for the men on the front lines and was worn by women serving in the military and working in factory jobs. Lipstick was symbolic of embracing individuality and sexuality. It was also a way for victims of the atrocities of the Holocaust to reclaim their humanity. Lipstick and other cosmetics continue to have meaning for women today, becoming more inclusive and empowering along the way.

## Gadekar, Aishwarya

Poster Presentation

MS, Polymers and Coatings Technology

Engineering Technology

Vijay Mannari

## Bisphenol-A (BPA)-Free Sustainable Epoxy Resin Coatings

Epoxy resins are among the very important resins used in a variety of industries, such as adhesives, coatings, composites, and insulations. Bisphenol-A (BPA) is an important building block used in most versatile grades of epoxy resins. Increasing concern about use of BPA is present due to its adverse toxicology profile, and industries and scientists across the globe are challenged with finding a sustainable alternative to BPA. Recently, a number of approaches have been developed to replace BPA; however, opportunities still exist for developing BPA-free epoxy resins that meet performance requirements of the end-use products with minimal environmental footprints.

This research focuses on developing BPA-free epoxy resins using bio-renewable raw materials. Guided by the principles of green chemistry and engineering, we have developed BPA-free epoxy resins using sorbitol polyglycidyl ether (SPE), a commercially available low-cost corn sugar-derived raw material. Chemical modification of SPE with a variety of carboxylic acids, including bio-based ones in varying ratios, has allowed us to develop a range of BPA-free epoxy resins with functionality, backbone structure and polymer morphology comparable to the conventional BPA epoxy resins.

These epoxy resins were characterized with spectroscopic methods (NMR, FT-IR) for qualitative confirmation of functional groups. Two-component amine-cured coating compositions have been prepared and their properties compared with BPA-epoxy resins as reference. The coatings are characterized by chemical and thermo-mechanical properties. The study reveals that it is possible to develop BPA-free epoxy resins by the proposed route by optimization of their chemical composition, functionality and morphology. This new-generation BPA-free epoxy resins have potential for replacing BPA-epoxy resins in many commercial applications.

## Gaston, Annie

Oral Presentation

MS, Historic Preservation

Geography & Geology

Nancy Bryk

## A Final Resting Place for the Incarcerated: An Analysis of the Jackson Prison Cemetery

Cemeteries offer rich clues about the cultures that create and sustain them. Where the cemeteries are placed and how the dead are memorialized reveals how society viewed the dead, and how they should, or should not, be honored. Research into active prison cemeteries is few and far between. Prisons are difficult places to access, and the prison cemetery is often unspoken of. What can the layout, headstone iconography, and maintenance of the Jackson Prison cemetery reveal about the prison and its functions?

# Abstracts Cont'd

Through conversations with current Department of Corrections employees, cemetery records, and an on-site analysis, the prison cemetery reveals the importance of systematic recordation and economic efficiency. This research paper examines how the prison cemetery is a lens through which one can begin to understand some of the essential functions of the Michigan prison system.

## Gatchel, Kristine

Oral Presentation

MA, Children's Literature

English Language & Literature

Dr. Annette Wannamaker

### **Exploring the Manifest, Concealed and Invisible Aspects of Anorexia Nervosa in Young Adult Graphic Narratives**

In 2010, physician and graphic novelist Dr. Ian Williams coined the term 'Graphic Medicine' to describe a distinct sub-genre of graphic memoirs, namely texts that explore the intersection of the medium of comics and discourses of healthcare. Produced from varied perspectives including health care professionals, patients, and their caregivers, these texts offer multifaceted perspectives on medicine, illness, disability, caregiving, and being cared for. In "The Graphic Medicine Manifesto", Williams explores how comics, when depicting disease, trauma, or suffering, contribute to "the iconography of illness"; a term Sander Gilman used to describe the bank of available images that inform our collective conceptions of illness and healthcare. Williams contends that Graphic Medicine narratives add to this bank by representing illness in three distinctive categories: the Manifest, the Concealed, and the Invisible. Using three graphic pathographies aimed at young adult readers – Tyranny by Lesley Fairfield (2009), Ink In Water by Lacy J. Davis (2017), and Lighter Than My Shadow by Katie Green (2017) – as case studies, this paper will argue that graphic narratives on anorexia nervosa should not be classified into just one of Williams categories, but instead offer the opportunity to portray all three categories at once, sometimes in a single panel. Comics that critically depict representations of the anorexic body have not received enough attention from comics scholars or young adult literature scholars. These works need more scrutiny because they represent an under-represented and misunderstood community of readers, subject matter, and emerging sub-genre.

## Ge, Yang

Oral Presentation

PhD, Technology

Engineering Technology

Shinming Shyu

### **Prefabricated Design of Net-Zero Building**

The proposed study aims to investigate the design strategies to achieve prefabricated net-zero building design (NZEB). According to the 2019 report by Global Footprint Network, human beings had collectively run out of natural resources for the whole year of 2019 on July 29, indicating that the Earth would have to produce 1.75 times its current natural resources in order to meet human needs. While a significant portion of natural resources are used to produce energy for building operation, a NZEB is able

to generate equal or more energy than it consumes, thus it eases human dependence on fossil fuels and reduces greenhouse gas emissions. To further energy efficiency, a prefabricated NZEB building can improve construction efficiency, reduce energy use, and minimize construction waste and dust emissions on the construction site. Hence, this study will analyze available sources on building performance modeling tools, prefabricated construction methods, insulation materials, and technologies to understand the major strategies, advantages, and the feasibility of prefabricated NZEB.

## Glynn, Kenneth

Poster Presentation

MS, Ecology, Evolution and Organismal Biology

Biology

Dr. Jamie Cornelius

### **Lead Exposure Effects on the Behavior and Body Condition of American Robin (*Turdus migratorius*) Nestlings**

Many songbird species live in both urban and rural environments. These two habitats can have vastly different costs and benefits, and thus may present trade-offs. One songbird species that commonly resides in both habitats is the American robin. During the spring and summer, the diet of this species consists mainly of terrestrial invertebrates, particularly earthworms that reside in soil. An instance of environmental pollution, such as the Flint water crisis where lead entered the city's drinking water supply from eroding lead service lines, has the potential to impact this soil-associated songbird if lead entered the urban soils via the watering of lawns. Due to the known negative consequences lead has on neural development, we hypothesized that if American robins in Flint are exposed to elevated levels of lead, their nestlings might be experiencing neurological deficits, resulting in less favorable behaviors and/or lower body conditions. We recorded nestlings at affected-watered college campuses within Flint and at an unaffected-watered college campus in Ypsilanti. Recordings were done at a developmental stage that would reflect fledgling success (Day 7-10), to assess behaviors such as time spent begging, stretching, preening, as well as time of response to feeding by parents. Nestling blood samples were collected to determine blood lead content, and body size and mass were used to assess body condition. Blood lead values were not markedly different between study sites; however, a significant difference in body condition was identified. Lower body condition correlated with higher blood lead values at both sites. Preliminary work has shown that American robins in Flint have elevated blood lead levels; however, it is unclear how this may be impacting their reproductive success and the overall health of their nestlings. Further data collection is planned to clarify these findings.

## Glynn, Kenneth

Oral Presentation

MS, Ecology, Evolution and Organismal Biology

Biology

Dr. Jamie Cornelius

### **Examining Blood Lead of Songbirds Flint, MI Following**

# Abstracts Cont'd

## the Flint Drinking Water Crisis

Anthropogenic pollution is common in urban environments, thus organisms that reside in these urban habitats may be at a greater risk of exposure. Anthropogenic lead (Pb) pollution is considered to be especially dangerous as exposure at relatively low concentrations has been known to cause neurological, behavioral, and physiological dysfunction in a wide array of organisms. The Flint Michigan drinking water crisis is a recent example of lead pollution in an urban environment. While residents were advised to not ingest the tap water, less attention was given regarding watering lawns and the exposure risk to urban wildlife. This study explores songbirds in Flint, MI at affected-watered sites and un-watered sites, in comparison to an unaffected-watered reference site, to evaluate differences in exposure across species and age groups (i.e. nestlings, juveniles, and adults). Birds were captured during the breeding season of April-August at watered and un-watered sites in Flint, and compared to an unaffected-watered site in Ypsilanti. Blood lead values were obtained from five species to assess lead accumulation. Omnivorous songbird species exhibited higher blood lead values than granivorous species, and American robins tended to have the highest blood lead values across all species. Juvenile American robins had significantly higher blood lead values compared with nestlings but did not differ from adults. Our results suggest that this difference in exposure across species may be related to diet preference, in particular, the earthworm-heavy diet of the American robin. The age variation in blood lead values may not only be related to their earthworm heavy diet but also an age-specific excretion ability during feather growth. Future research plans include examining feather lead content and the migration behavior of juvenile American robins, to determine if potential fitness consequences exist from their elevated blood lead.

## Good, Jessica

Poster Presentation

MS, Psychology- Clinical Behavioral

Psychology

Alexandros Maragakis

## Behavioral Conceptualization of Pediatric ADHD: An Old but Underappreciated Perspective on a Prevalent Issue

Attention-deficit hyperactivity disorder (ADHD) is a group of behavioral excesses and deficits that tend to present in children and adolescents. If left untreated, ADHD may contribute to the development of aggressive behaviors such as troubles with authoritative and legal entities through adolescents and into adulthood, and internal problem behaviors such as avoidance, excessive rule-following, and even learning disorders. Due to the expansive list of symptoms and growing prevalence of ADHD, as well as the lack of functional knowledge behind the disorder, ADHD is often treated with medication. Increasing the behavioral impact in both the current conceptualization of and assessments and treatments for ADHD could make effective behaviorally-based treatments more mainstream across all provider settings. Textbooks and literature reviewing behavioral psychology and ADHD will be consulted to create a comprehensive explanation of ADHD from

a behavioral perspective, as well as compose a list of behavioral treatments for ADHD. The current study aims to reestablish the behavioral analytic influence in current conceptualization and treatment of ADHD.

## Goodson, Emily

Poster Presentation

MSW, Social Work

Social Work

Jillian Graves

## The Rise of Telehealth in Social Work Practice

The use of technology is widely growing, making it easier to connect with others without having to leave the comfort of your home. With the use of technology, the field of social work is no longer confined to agencies, schools, and offices. The rise of digital communication allows for social workers and clients to engage across various electronic platforms.

The practice of social workers engaging with clients online is commonly known as "Telehealth". Telehealth allows for greater access to healthcare services, which has implications for people who live in remote areas, have mobility issues, and may otherwise have difficulty accessing in-person care. Currently, telehealth is effectively used to allow people to have specialist treatment when it is not currently available in their environment. The use of digital communications brings new opportunities, risks, and challenges for both clinicians and clients. Through a review of literature, this study seeks to find an understanding of barriers to mental health treatment, and the efficacy and ethical issues that arise in the practice of telehealth in relation to social work.

## Grzelak, Beth

Oral Presentation

PhD, Educational Leadership

Leadership & Counseling

Carmen McCallum

## A Conceptual Framework for Uncovering the Building Administrator's Role in Supporting Student Voice for Transformative High School Reform

Schools and, more specifically, high schools, are failing students. An increasingly large body of research that shows that high school students are disengaged, disenfranchised, and de-motivated by school. Historically, high schools have been the most difficult part of the K-12 experience to reform, and few reforms at that level have longevity. Part of the issue is the way in which policymakers and school "leaders" think about how reform at the high school level should unfold. Students are often thought of as empty vessels, and schools and teachers fill those vessels with knowledge. For students to be part of the conversation about reform of their school experience, conditions within schools must exist that allow students to develop their voices to be a meaningful part of the reform process. School leaders, because they are also instructional leaders, need to promote a culture, language, and way of "being" that supports the development of student voice in high schools. Utilizing the distributive leadership practice model as outlined by Spillane, Halvorsen, and Diamond (2001; 2004), and models of student voice put forth by both Hart (1997) and Toshalis and

# Abstracts Cont'd

Nakkula (2012), the author makes an argument for a conceptual framework that would support the investigation of the language, behaviors, and activities of the building leader that support or undermine a meaningful role for students in transformative reform in their high school context.

## Gury, Melissa

Poster Presentation

MS, Biology

Biology

Daniel Clemans

### Does Nutrient Variation Impact Probiotic Biofilms in the Gut?

Current and recent research suggests that the health of our digestive system is much more important than we previously thought. Our gut health is thought to impact not only the gastrointestinal system, but potentially the health of our skin, urinary tract, and possibly even the immune system. Probiotics are living microorganisms that may positively impact gut health, however the process of how they work and how to efficiently use them is still not fully understood. In order to be therapeutically beneficial, probiotics need to survive the harsh intestinal environment. Many probiotics have the ability to form biofilms, which may be an important part of their ability to survive in the gut. The mechanisms and impacts of biofilm formation aren't well-understood, and there are many directions that scientists are taking to understand the types of microbial interactions that may be taking place. My research will attempt to shed light on how nutrient shifts can impact the ability of probiotics to form biofilms. I will be utilizing *Lactobacillus rhamnosus GG* (a well-known probiotic) and *Bacteroides thetaiotaomicron* (a representative gut microbe) to attempt to grow biofilms under varying nutrient conditions. I will look at the impacts of providing different sugars (fructose, dextrose and glucose) in combination with different peptone sources (casein, soy, and beef) to see how the composition of any resulting biofilms changes. I will use Scanning Electron Microscopy (SEM) under variable pressure conditions to visualize surface characteristics of biofilms in a hydrated state. This will allow me to assess the change in biofilm structure that results by varying nutrient levels. I expect that the results will support my hypothesis that nutrient level variation (specifically the source of protein and carbohydrate) will have a significant impact on biofilm formation.

## Hailu, Tehetna

Oral Presentation

MS, Interior Design

Visual & Built Environments

Shinming Shyu

### Renewable Energy Systems for Neonatal Healthcare in Rural Ethiopia

Everyone is entitled to get the same service from health care facilities, as they are established to provide quality and timely service to people in need. Healthy people invest their time and knowledge to contribute to the development of any nation, which ultimately contributes to improve living standards. Ethiopia is one of the least urbanized countries in the world, with 83% of the popula-

tion living in rural areas. This poses notably high access issues to healthcare for the majority of the population—maternal and neonatal mortality being one of the largest health concerns in the country.

One obstacle to accessible health care in Ethiopia is energy. According to the United States Agency for International Development (USAID) Power Africa (2016) report, Ethiopia has a potential to generate over 60,000 megawatts of electric power from hydroelectric, wind, solar, and geothermal sources. However, Ethiopia only produces approximately 2,300 megawatts of installed generation capacity to serve a population of over 95 million people. Factors that affect the development of renewable energies for healthcare systems are lack of knowledge, inaccessibility, lack of financial investors, political instabilities, etc.

Healthcare centers are strongly tied to energy supply, as sufficient energy is required to deliver and improve healthcare services and lifesaving interventions. In order to plan a sustainable project, it is mandatory to assess renewable energies that can be used for healthcare facilities. It is also important to start from an urban scale of assessing accessible locations to specific interior space designs.

The aim of this research project is to lower the neonatal mortality rate by providing possible design alternatives in rural healthcare equipped with renewable energies that are accessible, cost efficient, and sustainable.

## Han, Na

PhD, Technology

Oral Presentation

Visual & Built Environments

Shinming Shyu

### The Effects of Advanced Air Distribution Systems and Enhanced Building Envelope Design on Indoor Air Quality and Energy Efficiency in Educational Buildings

Building design and systems are important for indoor air quality and energy efficiency. The current project focuses on enhanced building envelope design, which is related to a measure of the exterior walls with thermal resistance (R-value), the windows with the window-to-wall ratio (WWR), and the rate of Solar Heat Gain Coefficient (SHGC) values based on building codes and standards. In addition, this study examines advanced air distribution systems by comparing traditional and advanced air handling unit systems. The systems addressed are related to outdoor air (OA) airflow with ventilation requirements based on the following building codes and standards: the American Society of Heating, Refrigerating and Air- Conditioning Engineers (ASHRAE) 62.1, and ASHRAE 90.1., Leadership in Energy and Environmental Design (LEED) v4, and the International Energy Conservation Code (IECC).

## Han, Xiaokai

Oral Presentation

MA, Teaching English to Speakers of Other Languages / TESOL

World Languages

Cynthia Macknish

### The Use of Online Vocabulary Learning Tools in Uni-

# Abstracts Cont'd

## versity English as a Second Language (ESL) Academic Vocabulary Class

This study investigates English as a second language (ESL) students' perceptions of the effectiveness of online vocabulary learning tools (specifically COCA and Quizlet) used in an academic vocabulary class. It also tries to find out whether the online tools could help students increase the number of target words used in their academic writing. The eleven participants were in a combined ESL 400 and 500 level academic vocabulary class. Pre-survey, post-survey, evaluation forms for COCA and Quizlet, and students' pre and post writing samples were collected during the semester. The findings of this study reveal that students showed positive attitudes towards the use of online vocabulary learning tools, but there was no significant difference between the numbers of academic words in the pre and post writing samples. This research suggests that while online vocabulary learning tools may be motivating, students' vocabulary development may be limited.

### Han, Xiaokai

Oral Presentation

MA, Teaching English to Speakers of Other Languages / TESOL

World Languages

Wendy Wang

### Effective E-tools for Formative Assessment in the College English as a Second Language (ESL) Classroom

In the era of technology, college English as a second language (ESL) teachers are starting to use e-tools to help support language teaching and learning. However, challenges remain in choosing easy-to-use e-tools that both engage students while also effectively assessing their learning. In this session, the presenter introduces three e-tools for formative assessment, illustrating their unique features and demonstrating how they can be used to engage students in assessment as learning: 1) Quizizz, an effective e-tool that enables teachers to conduct student-paced formative assessments while receiving real-time reports; 2) Quizlet, an engaging e-tool that allows students to work together in connecting words or definitions to a given description; and 3) Plickers, a user-friendly e-tool that provides quick and on-the-spot formative assessment data for teachers without requiring students to use pencil and paper or personal devices. With proper use of these e-tools, assessment can be an engaging and enjoyable experience for both teachers and students.

### Harper, Jennifer

Oral Presentation

MS, Ecology, Evolution and Organismal Biology

Biology

Steve F

### Potential Mechanisms for Algal Stimulation of Bacterial and Fungal Production in Periphyton

Periphyton is an aquatic community comprised of autotrophic and heterotrophic microorganisms bound together in an extracellular matrix. This extracellular matrix facilitates intimate interactions between algae and heterotrophic microbes such as bacteria and fungi. Previous studies have documented increased production of heterotrophic microbes stimulated by algal photo-

synthesis, and the production of these heterotrophs contributes to decomposition in aquatic habitats. Environmental factors including pH, O<sub>2</sub>, and labile organic carbon concentration are altered by algal photosynthesis. We experimentally manipulated these factors and observed the responses of bacteria and fungi to test the hypothesis that one or more of these factors increases heterotrophic microbial production in periphyton communities. Typha (cattail) leaf litter was submerged in greenhouse mesocosms under high and low nutrient regimes. Production assays were conducted on litter-associated periphyton after 79 and 128 days of microbial colonization and growth. During the day 79 assays, little change was observed in fungal production in the low nutrient treatment and bacterial production in the high nutrient treatment however, we observed significant reductions of fungal production when photosynthesis was inhibited in the high nutrient treatment ( $p=0.009$ ). Additionally, we observed a significant increase in bacterial production in response to glucose in the low nutrient treatment ( $p=0.043$ ). Data analysis on the day 128 assays are ongoing. Preliminary results suggest the absence of algal photosynthesis has the potential to significantly reduce heterotrophic microbial production, and photosynthetically-mediated shifts in labile organic carbon concentration could be stimulatory to bacterial production. This research has the potential to identify the role of photosynthesis as a stimulator of ecosystem-level processes in aquatic ecosystems and can advance our understanding of decomposition, nutrient cycling, and energy flow in these systems.

### Heckaman, Taylor

Poster Presentation

MS, Molecular/Cellular Biology

Biology

Daniel Clemans

### The Effects of Natural Probiotics on the Coaggregation and Biofilm Formation of Bacteria Commonly Associated with Oral Cavities

Dental cavities are the most common oral health concern among all age groups of people today. Initially, early colonizing bacteria of the oral cavity lay the groundwork for disease causing species to take over. Streptococcus mutans is a later colonizing oral bacterium associated with cavity formation. S. mutans can consume a variety of carbohydrates which ultimately leads to the accumulation of acidic compounds. Furthermore, these bacteria are very proficient in forming biofilms. Biofilms are complex communities of organisms interacting together in a common environment.

Oral biofilms are more commonly known as dental plaque. The formation of a biofilm allows the bacteria to easily attach to the teeth. Since the bacteria are in direct contact with teeth, the acidic compounds these bacteria produce can more readily destroy the tooth enamel. This is a serious issue that needs to be addressed and a possible treatment method is the use of probiotics. Probiotics are beneficial microbes, commonly found in fermented foods and supplements, and when consumed convey certain health benefits throughout the body. The goal of this research is to determine if natural probiotics isolated from fermented foods interact with early colonizing oral bacteria, as well as S. mutans. Coaggregation occurs when bacteria adhere to one another using

# Abstracts Cont'd

molecules on their cell surface, and is essential for biofilm formation. This research will use coaggregation assays to characterize interactions between oral bacteria and a panel of known probiotic organisms, as well as wild-type probiotic organisms isolated from fermented foods. In addition, pairs of oral and probiotic bacteria will be grown together to determine if they form biofilms. Finally, those bacteria will then be introduced into wild-type biofilms to determine their integration abilities and if biofilm formation is diminished in any way.

## Heidari-Matin, Negar

Oral Presentation

PhD, Technology

Visual & Built Environments

Shimming Shyu; Ali Eydgahi

## New Visual Comfort Metric for Control Strategies Used in Responsive Facade Systems

Facade is the element of a building that is in contact with natural light and needs to have continuous responses to the dynamic pattern of daylight. A high-performance building system that is capable of interacting with natural light is known as a responsive facade system, which constantly provides maximum comfort for occupants inside the building. The capability of the responsive facade system to change its features over time in response to natural light dynamic patterns is achieved by implementation of a control system using sensors and actuators. A facade control system evaluates received natural light information utilizing metrics to change and control the actuators. The performance of the facade system is dependent on the quality of the natural light information and the accuracy of the evaluation metric.

This paper introduces metrics by integrating hourly indoor illuminance data and spatial information into the useful daylight illuminance metric to increase accuracy of the evaluation process occurring in a responsive facade control system. A simulated office room located in four different cities with a responsive facade was designed to test the performance of the proposed metric. Raw indoor illuminance data were collected for both vertical and horizontal facade configurations in four different facade orientations for an entire year. Data analytic techniques were used for managing, processing, and analyzing the simulated data. An exhaustive search approach was utilized to evaluate performance of the proposed metric for different angles to determine the hourly optimum angle variations. The evaluation results show the optimum adaptation angles by hourly measurements can improve visual performance in horizontal responsive facades up to 14.3%, 72.6%, 14.1%, and 97% in the South, East, North, and West directions, respectively. Using hourly measurements can increase the visual performance of vertical responsive louvers by 15.4%, 75.6%, 6.1%, and 77.7% in the South, East, North, and West directions, respectively.

## Hergenrath, Mark

Poster Presentation

MS, Orthotics and Prosthetics

Health Promotion and Human Performance

Frank Fedel

## Design and Fabrication of a Lower-Limb Part Task Trainer for Assessment of Knee Joint Integrity

In the United States, as many as 1 in 2 adults report suffering from a musculoskeletal condition, and this number is expected to rise due to the aging population. It is imperative that healthcare professionals be adequately trained to clinically examine and evaluate a broad range of musculoskeletal conditions. Despite the large need for highly trained healthcare professionals, many educational programs do not have the resources to expose their students to training regarding assessment of many common conditions or injuries. This project resulted in successful design and fabrication of a part task trainer of the knee, using 3D-printed skeletal structures from MRI data. The resulting model can provide immediate kinesthetic feedback to the user as they attempt to replicate a musculoskeletal assessment of the knee in the frontal plane.

## Hill, Victoria

Oral Presentation

MS, Chemistry

Chemistry

Amy Flanagan Johnson

## Increasing Awareness of Plastic Pollution and the Subsequent Effects Through Polymer Education for Preservice Teacher

Polymer products are an important part of our daily lives and are pervasive across the globe. However, polymers are rarely discussed in non-major Chemistry courses. The research presented here used polymers and their effect on the environment to teach basic Chemistry concepts, like density and chemical changes. This incorporates polymer education without adding additional course content. The participants were in an introductory Chemistry course geared towards preservice elementary teachers. All laboratories were based on the Next Generation Science Standards that the state of Michigan requires for K-12 education. The environmentally focused polymer curriculum covered microplastics, biopolymers with additives, and styrofoam alternatives. Students' recycling habits, pollution beliefs, and understanding of polymers were evaluated throughout the semester using surveys, course assignments, and observations. As all of the students were preservice teachers, their interest in teaching these topics and activities was also evaluated. Qualitative data analysis from student pre/post surveys, focus group interviews, and course assignment results will be discussed.

## Hovestol, Jessica; Daniels, Alexandria

Oral Presentation

MS, Orthotics and Prosthetics

Health Promotion and Human Performance

Rebecca Spragg

## Agreement in the Definition and Treatment of Idiopathic Toe Walking

Idiopathic Toe Walking (ITW) has been researched for decades, however there is no consistency in the definition or exclusion criteria among various studies. The variability in defining ITW creates a gap in the understanding of optimal treatment plans as well. This research project hopes to uncover the level of agreement

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on the definition of ITW and on the treatments based on the parameters of the definition that are uncovered. The study consists of an electronic survey, utilizing the Delphi method. The survey was sent out to 13 experienced healthcare professionals who work with pediatric idiopathic toe walkers. It is made up of three rounds that are participant driven. As the participants develop answers, the successive round is based off of those answers to find a level of agreement. Currently the results indicate a wide variability among respondents from clinic to clinic, but a higher level of agreement on what is an acceptable definition and treatment of ITW. In conclusion, this research provides current clinicians with a snapshot of where orthotists, physical therapists, and physicians agree and disagree about the definition and treatment of idiopathic toe walking.

## Hu, Xinkan

Poster Presentation

MS, Geographic Information Systems

Geography & Geology

Richard Sambrook

## The Spatial Point Pattern and Causes Analysis of the Museums: A Case Study in New York.

The United States Museums play a significant role in urban revival and the tourism development of cities. In the United States, museums are a significant part of the American cultural and educational landscape, and are powerful drivers of educational, economic, and social change and growth in their communities. The research aims to analyze the potential causes of the spatial pattern of the museums in New York, the relationship of popular extent, and satisfaction degree based on the top ranked museum in several categories. The results of this study indicate that museums' numbers and economy (median household income), generally, in a certain area have a positive relationship. However, the spatial point pattern of the museums could also be significantly affected by the local economic and cultural center. Also, the spatial pattern of museums could be impaired and influenced by other tourism resources. The results of this study could be meaningful to promote the relevant measures/policies, or help develop a better spatial pattern model (combining Geographic Information Science or Remote Sensing technique) of the museums or other cultural tourism resources in the future.

## Hudson, Rebecca

Poster Presentation

MS, Chemistry

Chemistry

Donald Synder

## Palladium-catalyzed Synthesis of Bifunctional Benzotriazole Monomers for Study of Step-growth Polymerization

Benzotriazole has been used primarily as a corrosion inhibitor for copper in industrial applications such as plumbing, electronics, and other environments in which copper is exposed to a variety of conditions (e.g., hydraulics systems). Additionally, benzotriazole has applications as embossing inhibitors in foams, anti-fogging agents, and polishing agents due to the protective properties

noted in corrosion inhibition. Bis-benzotriazole (b-BTA) has been previously synthesized through alternative pathways, but these typically require a starting material that is known to be a mutagen. This project focuses on the synthesis of a b-BTA molecule utilizing a palladium-catalyzed Suzuki reaction pathway to avoid the use of harmful materials. This palladium coupling seeks to create a unique b-BTA molecule by incorporating a benzene bridge. By coupling two bromine-substituted benzotriazole molecules with para-diboronic acid, a product with the resulting structure of para-bis-benzotriazole benzene may be obtained. Future aims for the product include utilizing this product as a bifunctional monomer for the synthesis a novel step-growth polymer that would maintain the inhibitory properties that are observed in singular benzotriazole molecules.

## Johnson, Amber; Varano, Sharon

Poster Presentation

MSN, Nursing – Adult Gerontology Clinical Nurse Specialist

[MSN]

Nursing

Linda Myler

## Lead Poisoning Management in Residents Affected by The Flint Water Crisis

The purpose of this project is to study the effects of lead poisoning on the residents of Flint, Michigan, and to increase accessibility to secondary prevention options through increased registry enrollment. Families had been continuously exposed to water pollution with lead and other contaminants supplied to them by the city of Flint, Michigan, until 2015. It is now 2020 and we are continuing to see the effects of this thoughtless and preventable crisis. Of the 99,000 people affected, only 12,000 people have started enrollment in the Flint Registry, and about 2,500 are fully enrolled. We can continue to help the community of Flint by increasing registry enrollment to provide a streamline of resources. The goal of this project is to study the crisis further and propose that with education regarding screening, we can increase registry enrollment. Emphasis is needed on secondary prevention options for lead poisoning and increasing access to care resources. Many residents are living with the incurable effects of this health crisis and by increasing enrollment, the community of Flint can be prepared to address any long-term effects in the future.

## Johnson, Kalyn

Poster Presentation

MA, Educational Leadership – Higher Education/Student Affairs

Leadership & Counseling

Raul Leon

## Exploitation of Whiteness in Cross and Fhagen-Smith's Model of Black Identity Development

A major limitation of Cross and Fhagen-Smith's Model of Black Identity Development is that the theorists researched Black identity development without considering the context of being Black in white American culture. It is within this limitation that theorists failed to recognize the effects of Western standards on gender identity, specifically Black identifying women. When Western culture is forced upon Black communities through institutional,

# Abstracts Cont'd

cultural, and individual socialization, Black women acculturate to white American standards of beauty. This happens through the introduction of products such as hair relaxers, skincare products with bleaches, and being taught American Standard English without learning how to maintain their cultural mannerisms and use of ebonics.

Cross and Phagen-Smith's Model of Black Identity Development will be analyzed to create a poem where each stanza will represent a sector of the model. The poem will be a representation of my life experiences as a Black woman, showing how the model can take on reality. The poem will tell a story of how an individual's story may determine how they have been shaped (Sectors 1-3), encounter their identity (Sector 4), define their identity (Sector 5), adapt to whiteness and a white society to protect themselves, and the patterns that occur (Sector 6). By adding the elements of gender and exploring Western culture in the theory, there begins a conversation around reclaiming female Blackness in white-dominated spaces and how this can be done with Nigrescence Recycling.

## Johnson, Theodore; Thompson, Johanna R.

Poster Presentation

MPA, Master of Public Administration

Political Science

Dr. Barbara Patrick

## How Does the Effectiveness of Collegiate Aviation Online Marketing and Websites Impact Diversity in Recruitment?

The aviation industry lacks racial and gender diversity, which stems from low minority enrollment in collegiate aviation programs. Although the number of minority enrollment within higher education has increased, the number of minorities working in aviation is scarce. This study evaluated the websites of 10 collegiate aviation programs in the Midwestern region. These programs were analyzed via four broad categories to evaluate academic and financial support, aviation recruitment strategies, and training/development. This was done to answer the question, "Are prospective students and/or their parent/guardian able to access information pertaining to funding, scholarships, or mentorship programs/organizations within 'three clicks or less'?" The academic institutions that showcased the most success were the 'division one' institutions. The remainder lacked vital information pertaining to the areas/concepts of 'Financial Support' and 'Aviation Recruitment Strategy'.

## Jones, Matt

Oral Presentation

MS, Historic Preservation

Geography & Geology

Nancy Bryk

## From Kalamazoo to Pretty Prairie: The Cultural Value of Musical Performance and Low-Cost Musical Instruments in Rural Indiana 1930-1940

Today, Kalamazoo guitars are a minor Holy Grail for many guitarists in the Upper Midwest. Manufactured during the Great Depression and discontinued shortly after, Gibson's affordable

Kalamazoo series was designed to meet the needs of a population unable to purchase high-quality musical instruments. This paper, drawing on archival research and oral history across two states, describes the impact of Kalamazoo guitars on rural, northern Indiana farm culture and the community-based musical gatherings initiated by that culture. Using the author's great-grandfather, owner of a 1933 Kalamazoo KG-11 as a case study, this paper describes how rarely-congregating Indiana farming families instituted musical performance as a constant feature of public events. Information gathered from church records, newspaper postings and family members, along with an examination of the guitar itself, bear out the community-building implications of a particular musical instrument on an otherwise financially-compromised rural region.

## Kamaj, Orlando; Adomako, Nana; Pope, James

Oral Presentation

MBA, Business Administration

Accounting & Finance

Yu Zhang; Ivan Rodriguez

## Eagle Investment Fund (Student Paper Fund)

This study shows how to integrate financial theory with tools such as Bloomberg terminals to build and manage an equity portfolio that aims at outperforming the benchmark, the S&P 500 index. The methodology used for this study involves valuation multiples relative to historic averages, earnings growth, leverage levels, and Discounted Cashflow (DCF) methods to identify possibly undervalued stocks. The portfolio was formed on October 31, 2019 and will be rebalanced based on first quarter earnings, which are released in January and February. The current portfolio consists of 53 stocks from 11 sectors, following S&P 500 index. In mid-March, the portfolio will be evaluated and compared with the benchmark to see whether it outperforms the benchmark or not. The portfolio is managed by the Eagle Investment Fund, a group of seven student "analysts" and supervised by two faculty advisors from the College of Business. The portfolio management experiences will help students apply investment techniques learned in the classroom, improving communication skills, leadership skills, and presentation skills.

## Kane, Tara

Oral Presentation

PhD, Educational Leadership

Leadership & Counseling

Raul Leon

## The Pursuit of Procedural Justice and Police Legitimacy

This is a case study of suburban community police officers and their perception of benefits of higher education as it relates to outcomes of procedural justice and legitimacy. Acknowledging controversial, high-profile incidents which have caused the police profession to be generalized in a negative manner, this study sought to examine community-policing initiatives as an effective strategy for promoting positive community-police relationships. Community police officers were queried about academic and professional preparation they perceived as necessary for the demands

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of the 21st century community police officer.

Previous literature on community policing and procedurally just policing has primarily focused on the perceptions of the public. This study hoped to contribute to the literature as the authentic police officer voice was shared. Analysis of the data revealed several themes and found that a redefined model of community policing is a promising answer to restoring trust between the community and the police. This new model shall be referred to as the Procedurally Just Community Policing Model, and concludes that when intentional community policing efforts are intertwined with procedurally just policing practice, trust is maximized, therefore resulting in legitimacy.

## Karel, Hannah

Oral Presentation  
MM, Music

Music and Dance  
Diane L. Winder

### Long Ago and Far Away: The Exoticism of Fantasy

#### Music

Howard Shore's soundtrack for The Lord of the Rings film trilogy is known for its eclectic compositional approach. Not only does it feature a wide array of instrumentations and performance techniques, but it also references many musical traditions from around the world. While some individual themes have been commented on as "exotic" because they sound like distinct references to Arabic music traditions, this assessment is never extended to the soundtrack as a whole. However, if Tolkien's view of fantasy—that the goal of all fantasy is to create a secondary world—is correct, then the entire Lord of the Rings soundtrack as work of fantasy, not merely its individual themes, should be considered exoticism because its purpose is to evoke a foreign place and way of being.

Moreover, although some themes within The Lord of the Rings soundtrack reference non-western European traditions, the references to traditions that audiences find familiar or homey are just as important in the construction of this secondary world as the references that immediately sound "exotic." Discussions of musical exoticism must not be limited, as it often is, to topics such as Orientalism or cultural imperialism, but rather should include works of fantasy music, a genre to which exoticism is central.

## Keefer, Áine

Oral Presentation  
MA, Philosophy  
History & Philosophy  
Peter Higgins

### Citizenship and the Political Animal: Social Membership and the Rights of Nonhuman Animals

Recent work in animal rights scholarship proposes that non-human animals should be granted a form of citizenship by liberal democracies. In this paper, I explore prominent justifications for non-human animal citizenship, finding that some are more successful than others. Sue Donaldson and Will Kymlicka argue in *Zoopolis* that domesticated animals have the same capacities generally taken to be basic requirements for citizenship as do

humans with severe intellectual disability (SID), and therefore should be granted citizenship. Their assertion of the capacities of domesticated animals has not found broad acceptance in mainstream discourse, however. In fact, the argument for full citizenship for humans with SID is also currently controversial, despite the volume of disability theory literature on the subject. In this paper, I propose that Joseph H. Carens' argument—that social membership in a community creates a moral obligation to confer citizenship on infant children—presents a better path. I apply Carens' argument to the case of domesticated companion and working animals, arguing they are social members of human communities, and therefore that a similar moral obligation to confer citizenship arises. I further argue that such a move could serve to reorient how humans in the Global North think about, relate to, and interact with the "more-than-human world," offering an integrated view of humans and the environments they inhabit. This integrated view would meet the ecojustice demand to recognize that humans are embedded within the environment.

## Kemmer, Ray

Poster Presentation  
MS, Chemistry  
Chemistry  
Brittany Albaugh

### Characterization of the Binding Interactions Between UHRF Epigenetic Reader Proteins and Histone 4 Trimethylated Lysine 20 (H4K20me3)

Epigenetics is the study of chemical markers on both DNA and the proteins that DNA winds around, called histones. These markers act as switches that signal the cell to turn genes on or off. UHRF1 and UHRF2 are two proteins that are implicated in cancer and read epigenetic markers on DNA and histones. Both proteins are known to bind to the specific epigenetic mark trimethylated lysine nine on histone three (H3K9me3) using two of their five domains, the Tandem Tudor Domain (TTD) and the Plant Homeodomain (PHD). Previous work done within our lab group showed that the combined TTD and PHD domains of UHRF1 and UHRF2 can also bind to tri-methylated lysine twenty on histone four (H4K20me3). This work examines the individual interactions of the TTD and PHD domains with H4K20me3. In addition, the stability of the lone TTD domains in UHRF1 and UHRF2 is investigated.

## Kennedy, Vee

Oral Presentation  
MA, Written Communication  
English Language & Literature  
Logan Bearden

### An Analysis of Disability Accommodation Statements from First Year Composition Classrooms in the 14 Public Universities in Michigan

Wood, Dolmage, Price and Lewicki-Wilson posited in their 2014 article "Where We Are: Disability and Accessibility, Moving Beyond Disability 2.0 in Composition Studies", that disabled students are now generally accepted in college writing classrooms. The conversation about disability inclusion in composition studies

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has instead shifted from a question of if disabled students should be included, to how instructors and institutions can be more effectively inclusive. In lieu of providing a reductive checklist for inclusion, these specialists recommend the development of a "more holistic, recursive approach, one in which disability becomes a central, critical and creative lens for students as well as teachers," (Wood et al 148). Disability 2.0 asks scholars in composition studies to engage with access as an ongoing dialog, as opposed to the static accommodation I experienced (indicative of 'Disability 1.0'). Are these recommendations being followed, or are composition courses still treating disability as a checklist item? How, if at all, are we accommodating students in the composition classroom? Where do composition students begin their accommodation journeys? How do they navigate their 'asks,' in courses that often do not have timed exams or forms of accommodation that are not as clear as calculators and quiet testing rooms? In order to navigate these questions, I intend to examine the intersection of Disability 2.0 with composition course syllabi, the combination of which I will use to extrapolate praxis. If we are not doing Disability 2.0, we are not doing enough.

## Khan, Nafiah

Oral Presentation

MA, Communication Sciences and Disorders

Special Education

Ana Claudia Harten

## Examining Interprofessional Collaboration in Pediatric Swallowing Assessment Protocols

When diagnosing and managing feeding and swallowing disorders, interprofessional collaboration is considered a key component for improving continuity of care and patient outcomes. This is especially the case for children requiring high oxygen demands (>1 L/min) and/or tracheostomy tubes with or without mechanical ventilation, where many professionals are involved in their care, including Speech-Language Pathologists (SLPs) and Respiratory Therapists (RTs). Despite the importance of interprofessional collaboration, there is limited information in the literature regarding the current level of interprofessional practice involving pediatric assessment protocols. This survey study investigates the level of interprofessional practice between SLPs and RTs involving pediatric swallowing assessment in healthcare settings across the country. The results indicate that while collaboration between these professionals is recognized as an important component of the assessment protocol, the level of collaboration is dependent on different factors, including condition and age of patients, as well as service setting. The results suggest directions for future studies and bring insight into how interprofessional collaboration can be strengthened with the development of assessment protocols to promote continuity and quality of care in healthcare settings.

## Konglim, Veronica

Oral Presentation

PhD, Educational Studies

Teacher Education

Dr. Joe Bishop; Dr. Ethan Lowenstein; Dr. Heather Neff; Dr. Joe Ramsey

## Garden Education Rocks! Educator Perceptions and the Power of Bridging School and Community

This research project examined the perceptions of eco-conscious educators who use gardens as a teaching tool and a space for bridging school and community. These tools were explored through the lens of Place-Based Education (PBE), Eco Pedagogy (EcoPED), and EcoJustice Education (EJE). A gap exists in the literature regarding connecting school and community. Meanwhile, the wealth of knowledge involved in the planning and execution of these teaching styles and their benefits to the community are being ignored. I set out to investigate the teaching styles of these educators and how they incorporated state-mandated curricula into their lessons using gardens and what these experiences mean to them. A total of nine educators at schools in Southeast Michigan were interviewed and observed at three different sessions. Results indicate an increase in the desire to pursue garden-based teaching, but there are needs for guided professional development, more funding/support from both the federal level and the school administration, and time commitment and curricular flexibility on the part of the educators. With the rise of environmental consciousness and activism across the globe and the simple need to protect our environment, while acknowledging the interconnected nature of our shared humanity, it is becoming vital that our education reflects solutions to the ongoing planetary crisis. This research is a step in the right direction as I present voices of educators who use gardens as a teaching tool and how their models of teaching are shaping how students perceive themselves and their community.

## Kowalczyk, Kasyera \*

Oral Presentation

MA, Sociology

Sociology, Anthropology, & Criminology

Rita Shah; Tricia McTague

## Masculinity and Fathering in Popular Animated Children's Films (1989-2019)

Social learning theory suggests that socialization can occur through observation and influence the development of a person's attitudes, beliefs, and behavioral responses when they are able to observe both the actions of another as well as the consequences of these actions. An understanding of what gender looks like and knowledge of society's gendered expectations are some of the important building blocks acquired during the socialization process, and this includes the norms and expectations that surround parenthood. Film and television provide an efficient pathway for observational learning to occur, especially as children are spending more time watching television shows and movies via streaming services and the prevalence of handheld devices. Given the importance of the media's role in socializing children, and the continued research on the effects that this socialization has on the way children think about roles, social norms, and identities, it is necessary to analyze messages regarding fatherhood and masculinity that are being portrayed to children. This analysis may help us better understand how children may perceive these messages and how they may use the messages when constructing their own beliefs about fatherhood and masculinity. In order to address this

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gap, this project will analyze a sample of the top lifetime grossing animated films released between 1989 and 2019 that have been marketed toward children. Once completed, this qualitative analysis will identify characteristics that fathers and father-figures display in top-grossing children's animated films, differences that exist in the way these characters are constructed and presented in children's animated films, and the ways these characters are representative of or different from societal stereotypes of fathers.

## Krasnoff, Justin

Oral Presentation

MA, History

History & Philosophy

Ronald Delph

### **Deus Intervenit, Homo Interpretatur**

June of 1098 was the nadir of the First Crusade. The Christian army, which had besieged and finally captured Antioch on June 3 after more than eight months, found itself besieged by the Muslim forces of Karbuqa only four days later. With no easy way to get adequate supplies, they also faced the threat of starvation. Then, in a series of visions, a humble peasant named Peter Bartholomew received word from St. Andrew that the Holy Lance, the very instrument that the Roman soldier Longinus had used to pierce the side of Jesus Christ while He was still on the Cross, was buried in the city and awaited discovery. Andrew also assured Peter that it would bring victory for the Christian forces against any odds, and instructed him on where to find it. God had intervened. No one in the army doubted that, and almost none of the historians/chroniclers who wrote about this event doubted that either. However, they did have different interpretations of exactly what happened. When the issue of the Holy Lance came up again nine months later in Arqa, they had varying interpretations of that event, too. This paper will investigate the accounts of five contemporary historians and explain why they differed. I will argue that their interpretations differed because they had differing political loyalties, religious outlooks, and personal/idiosyncratic interests. Their individuality comes out even after nine centuries.

## Lancaster, Christine

Oral Presentation

PhD, Educational Leadership

Leadership & Counseling

David Anderson

### **Sense of Belonging and College Students in Recovery: Implications for Both Recovery and Student**

Students in recovery from addiction are an important student population on today's campuses. While the number of college students in recovery is unknown, Substance Abuse and Mental Health Data Archive estimates that 250,000 college students received treatment for alcohol or other drug use in 2014. Even with these numbers, many institutions do not recognize the unique needs of this student population in relation to supporting student success, retention, and persistence. One of these needs may be a sense of belonging. Students in recovery are actively working to sustain sobriety and increase wellness and personal growth while pursuing higher education. College social norms, adjustment to

academic demands, and new environments challenge students' feelings of belonging and fit which can challenge the student's ability to meet both recovery and academic goals. This presentation will pull from recent sense of belonging research and discuss how the findings might apply to providing success opportunities for this population.

## Larabell, Scott

Poster Presentation

MS, Biology

Biology

Daniel Clemans

### **The Impact of Microbial Diversity on *Amorpha canescens* Growth as a Model for Prairie Restoration**

Damage from human activity to prairies continues to cause lasting damage to prairie ecosystems both above and below the ground. As altered soil microbes affect the plants that grow above the ground, the microbial communities remain in an altered state, unable to naturally restore themselves from human activity. This study aimed to determine which microbial populations best supported the germination and growth of *Amorpha canescens* (lead-plant); a model for prairie plants. Microbial communities from either remnant or restored prairie soils were used to determine the effect of microbial diversity on the growth of *A. canescens* in a growth chamber. In this experiment plant growth and biomass were measured. The diversity of microbes in both the soils and inocula were assessed using DNA sequencing. Preliminary results showed that diversity was higher in remnant soil samples than of restored soil samples. Also, more isolates of microorganisms were recovered from the remnant prairie soils than the restored soils. (Glowacki et al., 2018) These preliminary results suggest that remnant prairie communities in remnant prairie soils may be more successful in germination and growth of a model plant *Amorpha canescens*.

## Lawrence, Wendy

Oral Presentation

PhD, Educational Leadership

Leadership & Counseling

Dr. Rema Reynolds

### **It's all Political: How Heteronormative School Politics Impede the Politics of LGBTQIA School Reforms**

Even as their experiences improve in recent years, LGBTQIA students in U.S. public schools are often targets of bullying, harassment, and worse. LGBTQIA faculty and administrators are similarly not immune to hostility, both open and veiled. And yet, schools have been slow to adopt reforms that have the potential to make schools safer and more inclusive of this marginalized community. Some educators argue that pro-LGBTQIA programming is too political. This reasoning is paradoxical as the anti-LGBTQIA status quo is just as political, but serves a different community's politics--the heteronormative majority's politics that causes harm to some of our most vulnerable students.

This study reviews published data and literature in order to better understand the experiences of LGBTQIA students and faculty in

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schools and to delineate a history of school resistance to proposed reforms. The data demonstrate that from the beginning of American education, heteronormative values have defined school environments to the detriment of the LGBTQIA population. The study asks schools to evaluate progressive school reforms by first acknowledging the political winners and losers of both change and entrenchment, recommending that schools identify the hurt that is being done by status quo heteronormative policies in order to move forward with reforms that protect and include vulnerable communities of learners.

## Leppala, Janet

Oral Presentation

MA, English Linguistics

English Language & Literature

Daniel Seely

### "Is she a DOCTOR doctor?": A Place for Contrastive Reduplication in English Grammar

One main goal of linguistics, and especially syntax, is to describe, understand and explain the internal mechanism that allows human beings to express themselves through language. This work analyzes the little-studied phenomenon of Contrastive Reduplication (CR) in English. CR is the repetition of words; such as in the phrase, "Is it a CAT cat or a tiger?" The theory presented in this work is that the repeated term in a CR utterance behaves in much the same way as an affix does in English. This study was conducted over a period of 4 months. First, data was collected from everyday conversations, internet content, and from the notable article "Contrastive focus reduplication in English (the salad-salad paper)" (Ghomeshi, Jackendoff, Rosen, Russell, 2004). The data was then analyzed using various linguistic methods for determining the grammatical category and/or function of words and morphemes. The results of the analysis show that CR in English does behave much like an affix. Specifically, the 'copied' word seems to be the first word in the utterance and the root word is the second. This can be seen in the stress pattern (i.e. "Does she LIKE like him?"). Additionally, the inflectional morphology is mandatory on the second word but not the first (i.e. "I like to read BOOK books, not eBooks."). For this reason, the copy word will be described as a prefix that means something like 'actual.' This study attempts to describe, explain and categorize the phenomenon of CR in English and, as always in linguistics, seeks to illustrate that no matter how perplexing a form may seem at first, patterns do emerge in everyday language and may be able to shed light on the human linguistic apparatus.

## Leppala, Janet; Bower, Mae; Taylor, Shelby; Smith, Whitney

MA, English Linguistics

Oral Presentation

English Language & Literature

Eric Acton; Veronica Grondona

### Stigmatization of Regional Dialects and Socially Motivated Shifting: Evidence from Detroit

Recent studies examining regional dialects have revealed a com-

mon pattern of convergence towards a more standard, often termed supraregional, sound. Work from Dodsworth (2013) and Knight (2015) looking at Southern dialects, found younger speakers opting for a less regional sound. Similar findings come from studies concerning the Northern Cities Shift (NCS) in places such as New York, Illinois, and Michigan (Driscoll, 2015, McCarthy, 2011, and Wagner, et. al., 2016). Taken together, these studies seem to indicate the beginning of a movement towards less regional sounding speech taking place in the younger population. The current study represents a sample of ten Jewish women from Metro Detroit. Traditionally, Detroit displays characteristic features of the NCS such as raised TRAP and fronted LOT vowels. Participants took part in sociolinguistic interviews and word list data collections. Results indicate younger speaker's NCS vowels, including TRAP and THOUGHT, are closer to a supraregional norm than older participants. Compared to conversational data, shifts towards a more standard sounding dialect were most prominent in the word-list data of younger speakers. Based on Trudgill (1974) this indicates younger speakers find less regional sounding speech more prestigious. This study adds to the development and understanding of the large scale changes taking place among regional dialects and suggests stigmatization of regional dialects as a possible explanation for these documented changes in vowel sounds.

## Lindow, Rebecca

Oral Presentation

MS, Molecular/Cellular Biology

Biology

Dr. Paul Price

### The Evaluation of Parameters Affecting Antibiotic Production in Soil Microbes

The rise of antibiotic resistant bacteria, compounded by the reduction in antibiotic development and production, jeopardizes human health. Originally, antibiotics were derived from compounds produced by soil microorganisms grown using single-culture fermentation. However, recent genetic evidence suggests that microbes can produce many more antibiotics than we currently observe using this method. We recently developed a new method that can directly identify antibiotic-producing microbes from plated soil samples, termed the modified crowded plate technique. The method relies on co-plating soil microbes with a target organism and growing them together for several weeks or months to observe zones of inhibition. Further refinement of this technique demonstrated that D-alanine auxotrophic strains of *B. subtilis* were more efficient at identifying antibiotic-producing microbes than wild type strains of *B. subtilis*. The use of seven-day old cultures of *B. subtilis* was also more effective than using one-day old cultures. Following the isolation and identification of several antibiotic-producing microbes using these new parameters, we compared single-culture and mixed-culture fermentation for differences in antibiotic production. Secondary metabolites from these liquid cultures were extracted and tested for antibiotic activity against *S. aureus* and *E. coli*. We observed that mixed-culture fermentation with multiple antibiotic producers is an effective means of producing antibiotics when single-culture fermentation

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fails to produce antibiotic activity. Although the threat of antibiotic resistance is looming, this research suggests that there are still antibiotics to be found in the environment that have the potential for human medicinal use.

## Loest, Anna

Oral Presentation

MA, Speech-Language Pathology

Special Education

Dr. Sarah Ginsberg

### The Speech-Language Pathologist's Perceived Role in Fostering Self-Advocacy for Students with Cognitive Impairments

Speech-language pathologists (SLPs) are advocates. In addition to advocating for their clients, SLPs teach them how to effectively communicate, and in turn help them self-advocate. Based on the social model of disability, the Individuals with Disabilities Education Act, and the Individualized Educational Plan, which could all be used to support self-advocacy, a study is being proposed that will examine SLPs' perceived roles in self-advocacy for students with severe to profound cognitive impairments (CIs), who are beginning to transition to life after school. This qualitative study will explore the SLPs' role in fostering self-advocacy for individuals with CIs, specifically, how do SLPs teach their clients with CIs to advocate for themselves while outside of therapy.

## Long, Susanna

Poster Presentation

MA, Speech-Language Pathology [M.A.]

Special Education

Dr. Sarah Ginsberg

### Second Adolescence: An Examination of How Transgender Individuals Experience Erikson's Stages of Psychosocial Development

Erik Erikson's Theory of Psychosocial Development is a framework widely used by educators and mental health professionals to better understand common challenges and transitions individuals face across the lifespan. However, burgeoning research shows that Erikson's proposed timeline of development is less fixed for LGBTQ individuals than for their heterosexual, cisgender peers. This study seeks to analyze existing literature to better understand how transgender individuals navigate two factors of Erikson's development theory, identity formation and the development of intimate relationships, differently from their cisgender peers. Findings from the literature will be used to form suggestions on how mental health professionals can adapt Erikson's framework to better meet the needs of transgender clients.

## Loukota Mansilla, Gloria

Poster Presentation

MS, Orthotics and Prosthetics

Health Promotion and Human Performance

Nathan Kearns

### Retrospective Research of Orthotic and Prosthetic Outreach in Developing Nations

INTRODUCTION

"80% of people with disabilities live in low-income countries in very poor life-conditions. It limits their access to healthcare services, rehabilitation and assistive devices." (WHO, 2004) Low income populations have few opportunities to access O&P services, and free of charge options are scarce. (Wyss, 2015). The last impact assessment developed in Latin America in 2015 shows that there are only three O&P certified practitioners in Guatemala. There is significantly less information available about provision of orthoses compared to prostheses, yet the need for orthoses is greater. Areas for improvement include conducting field testing during the design process, providing services to rural environments, offering follow-up services, considering government collaboration.

## HYPOTHESIS

The world health organization (WHO) predicts that 0.5% of the overall population in developing countries needs O&P care. These needs are far from being met. In low and middle-income countries 5-15% of individuals that need assistive technologies have access to them (Borg 2009). These figures increased in the prevalence of disability, potentially due to population ageing and the rise in chronic conditions. Service delivery systems are underdeveloped or non-existent. Women and rural inhabitants have less access to this specialty, and 50% are children and adolescents (Eide, 2009).

## RESULTS

Research will be disseminated at the American Academy of Orthotists and Prosthetists Annual Meeting in Chicago in March of 2020. It will also be presented at the Graduate Research Conference at EMU in March 2020.

## METHOD

This is a retrospective review of patient care, documenting the demographic history of a single O&P outreach team from 2012 to 2019. Descriptive statistics will be reported identifying the most common pathologies of documented patients, age ranges, limbs affected, devices provided, and costs of devices from donation clinics.

## CONCLUSION

More updated research is needed regarding the management of orthotics and prosthetics in developing countries.

## Lowe IV, Basil

Oral Presentation

MS, Historic Preservation

Geography & Geology

Nancy Bryk

### Brita Before Brita: Cultural Analysis of an Allen Germ Proof Water Filter

With the 2014 Lake Erie and Flint water crises still fresh in people's minds, it left many wondering where they could obtain a source of safe, clean water. Inspired from these events and history of disease outbreaks of the past from unsafe sources of water, a cultural analysis of a ceramic water filter from the Allen Germ Proof Company of Toledo, Ohio, was done. Looking at the history of water filtration and water filters made between 1840 and around the time of production of the Allen water filter (circa 1900), we will be using the Fleming model to go over the physical

# Abstracts Cont'd

properties of the filter, its cultural analysis of the late 19th to early 20th century, and its interpretation and relevance today.

## Makki, Yasmine; Crisp, LaShonda

Poster Presentation

Adult-Gerontology Primary Care Nurse Practitioner [Post-Master's Certificate]

Nursing

Linda Myler

### Substance Abuse Among Adolescent Arab Americans

The purpose of this paper is to highlight the problem of substance-abuse among adolescents, especially Arab American students and propose a screening tool for use in high-schools in Dearborn, Michigan. By the time most adolescents reach twelfth grade about half of them have used marijuana and twenty percent of them have reported using unprescribed prescriptions (Center for Disease Control & Prevention, 2019). There were nine drug overdose related deaths of Arab Americans in Wayne County reported in 2018 (Arab American News, 2019). The significance of these statistics warrant a required annual substance abuse screening tool. The tool would require parents of high school students in Dearborn to answer a series of questions that identify specific behavioral and mood patterns that may be red flags for substance abuse risk. This screening tool would therefore identify those that may be engaging in, or at risk for substance abuse. From this screening tool, we would expect and hope to see a decrease in the use of marijuana, alcohol, and other drugs in Arab Americans of Dearborn, as well as an increase in parental awareness within this community.

## Marle, Naveen

Poster Presentation

MS, Polymers and Coatings Technology  
Engineering Technology

Vijay Mannari

### Development of Universal primer for Automotive Metals and Plastics

The automotive industry uses a multi-layer coating system for enhancing the protection and aesthetics of vehicles. Contemporary automobiles are built with increasingly mixed materials, such as metals and alloys, plastics and composites, to improve their efficiency, cost, and environmental impacts. This poses a serious operational challenge since different materials need different types of coatings and cure conditions. Automobile manufacturers are seeking to develop a universal primer system that can be used for all material types.. The development of such a technology will significantly reduce production time and handling issues and hence greatly increase efficiency and reduce production costs.

One of the major concerns for the auto manufacturers is the handling of different parts of the car body for painting. Currently, most of the plastic parts are painted at tier 1 or tier 2 suppliers and assembled at the OEM sites. Besides the logistics, one major concern in doing this is the color matching as the different parts are painted at different places at different times, leading to significantly higher rejection rates.

This research focuses on the development of a universal primer

which can cure at 800C (Plastics) that meets the performance requirements of both plastics and electrocuted metals. In this research, two prototype universal primers will be developed and evaluated for the suitability of plastics (Polypropylene, ABS), electro-coated steel and aluminum substrates. The first one is a 2-component urethane system supplemented with the adhesion promoter in order to improve adhesion in plastics. The second prototype system will be based on an innovative silane-type binder. These prototype systems will be evaluated as per ASTM test methods. Some key tests are inter-coat adhesion, corrosion resistance, flexibility, and MEK rubs. A comparative evaluation of test samples coated with conventional and prototype coatings will be presented.

## Mazur, Bessie

Oral Presentation

MAT, Special Education

Special Education

Dr. Derrick Fries

### What Barriers Do Secondary Schools' Present When Implementing Response to Intervention?

The Response to Intervention (RTI) process was put in place to help schools respond to the shrinking reading abilities of our nation's graduates, and to help identify which struggling readers truly had a learning disability, and which needed some interventions to strengthen reading skills. Teachers were called upon to use research that was scientifically based and had proven results in helping ensure all students were reading at grade level by the end of 3rd grade. RTI, when operating correctly is a multi-tiered system of supports (MTSS) that has procedures in place to identify which students are at-risk of failing; implements levels of support that increase with need; and either moves students on to the next level of support, or moves them back to a less-restrictive learning environment.

The RTI model was designed to work smoothly within the elementary school setting, but recent research has shown that it can be effective in the secondary setting if utilized correctly. If implemented with fidelity, RTI will successfully improve reading abilities of secondary students and help them become better prepared to graduate from high school. This research will focus on the question: What are the barriers for secondary public schools' implementation of "Response to Intervention"? As teachers at the secondary level struggle to pique their older students' interest in academics, particularly those who have a history of poor reading and math abilities, implementing strategies to help improve these abilities would be a step toward the end goal of high school graduation. The research that is centered around the above question, and that will be presented, discusses the main areas of RTI: How are we identifying students for intervention? What are teachers' perceptions of the RTI process as it relates to their buildings? and What are the concerns from teachers at the secondary level?

## McCombs, Patrick

Poster Presentation

MS, Chemistry  
Chemistry

# Abstracts Cont'd

Hedeel Evans

## The Regulation of Heparanase Expression by the CD44 Receptor in Non-Small Cell Lung Cancer Cells

Understanding the regulatory mechanisms of enzymes involved in tumor metastasis is of the utmost importance in understanding basic cancer physiology. One such enzyme is Heparanase (HPSE), a glucuronidase that cleaves Heparan Sulfate (HS), promoting tumor metastasis. Previous work has shown increased levels of both the CD44 receptor and HPSE expression in human non-small cell lung cancer (NSCLC). Furthermore, there is evidence that the activation of this receptor could lead to heparanase transcription. We show here that the inhibition of this receptor can variably affect heparanase secretion in NSCLC.

## McEwan, Katherine; Ducharme, Amanda

Poster Presentation

MA, Clinical Mental Health Counseling

Leadership & Counseling

Dr. Devika Dibya Choudhuri

## EMU Voices: Understanding how faculty, staff, and students experience diversity and inclusion on campus.

Conducted in the Fall of 2019, EMU Voices served as a qualitative companion to the Diversity Campus Climate Assessment. This project seeks to explore and understand how faculty, staff, and students experience diversity and inclusion at Eastern Michigan University. The EMU community was invited to stop by the WEMU studio in King Hall to share a 3 to 5 minute story as an addition to the survey, focus groups, and town hall meetings. Utilizing WEMU's soundproof studio and recording equipment, we captured each audio recording after reviewing an informed consent and obtaining permission from each participant. Our intention is to create a podcast series from these collected stories, with WEMU's assistance. Participants were given the option to allow their story to be turned into a podcast episode or for their story to be transcribed for data purposes only. Regardless of participation level, each recording was edited to remove any identifying information. We hope that these first-hand stories from EMU community members will help to identify areas of strength and weakness across campus, serving as a foundation for action and accountability.

## Mikovits, Aubrey

Poster Presentation

MS, Chemistry

Chemistry

Dr. Jeffrey Guthrie

## Simultaneous Detection of UV-Induced DNA Damage Using Capillary Electrophoresis with Laser-Induced Fluorescence

Ultraviolet (UV) radiation (200-400 nm) is the main environmental agent that induces human skin cancer by modifying genomic DNA and is classified as a class I carcinogen. UV radiation consists of three subtypes including UVC (200-280 nm), UVB (280-320 nm) and UVA (320-400 nm) and has been found to induce various types of DNA damage including cyclobutane pyrimidine

dimers (CPDs), pyrimidine (6-4) pyrimidone photoproducts (6-4PPPs), Dewar isomers, and 8-oxo-7,8-dihydro-2'-deoxyguanosine (8-oxodGuo). Previous literature that focused on DNA damage were primarily interested in the effects of UVB radiation, the most deleterious and carcinogenic type, which accounts for roughly 95% of the light that reaches Earth's surface. UVA radiation accounts for the remaining 5% of light that reaches the surface and has been found to induce DNA damage, although previous literature presents conflicting data. Multiple methods have been used to detect UV-induced CPDs, 6-4PPPs, and Dewar isomers including HPLC-MS-MS, ELISA, and Capillary Electrophoresis with Laser-Induced Fluorescence (CE-LIF). CE-LIF has been shown to be a reliable and sensitive method that can simultaneously detect low amounts of CPDs and 6-4PPPs; however, CE-LIF has not been used to detect UVA-induced DNA damage or UVB-induced Dewar isomers. The goal of this study is to simultaneously detect CPDs and 6-4PPPs following UVA exposure and 6-4PPPs and Dewar Isomers following UVB exposure using CE-LIF. This work may give new insight and provide information for future researchers which could contribute to enhancing the SPF sunscreen regulations to limit the damaging effects of UV light.

## Miller, Megan

Poster Presentation

MA, Clinical Mental Health Counseling

Leadership & Counseling

Dr. Patrice Bounds

## Exploring Relationships Between Mental Health Counseling and Student's Academic Achievement, Self-Esteem, Depression, Anxiety, and Stress

College can be a very stressful and difficult time for many students due to the demand that college places on students to be successful. College students are at an increased risk for mental health disorders and it has been found that approximately three quarters of lifetime mental disorders have the first onset by age 24 (Kessler et al., 2005; Balon et al., 2015). One study found that nearly 40% of college students who have a diagnosed mental health disorder do not receive counseling services and that depression and anxiety are the top presenting mental health concerns (Gruttadaro & Crudo, 2012). Specially, graduate school has been found to be even more difficult for students as they attempt to juggle many different life obligations in conjunction with attending a challenging graduate degree program (Polson, 2003; Schlemper, 2011). With this rise in mental health disorders, it is important that college students receive counseling services so their risk of developing mental health disorders does not increase, their academics do not suffer, and their self-esteem does not diminish. The purpose of the current research is to look at the relationship between mental health counseling services and graduate student's levels of depression, anxiety, stress, academic achievement, and overall self-esteem. The participants of this research will be students currently enrolled in a degree earning graduate program at Eastern Michigan University. A short online survey will be distributed through the university using an email sent to all current graduate students. It is hypothesized that students who are currently in counseling services or have received counseling services in the

# Abstracts Cont'd

past will have an increased level of self-esteem, a higher grade point average (GPA), and lower levels of depression, anxiety, and stress than students who do not receive counseling services.

## **Miller, Michelle; Monday, Katlyn**

Poster Presentation

MSN, Nursing – Adult Gerontology Primary Care Nurse Practitioner

Nursing

Kathleen Seurnick

### **Exploring Knowledge of Risks and Causes for Increased E-Cigarettes in High School Students**

The purpose of this project is to identify why high school students in Monroe county have had an increase in the usage of e-cigarettes. Research has shown a drastic increase in e-cigarette use among high school students in Monroe county within the past three years. Despite research on the amount of high school students using the devices, few sources exist to represent more detailed data. Information as to why students are using in addition to their knowledge base regarding the risks of using e-cigarettes is lacking. This paper proposes a program that administers a survey to identify vital details such as knowledge of risks, harms to health, as well as the root causes of the prevalence of e-cigarette usage in Monroe county high schools. With the results from the survey, an educational program that aids the high school students to make informed decisions about the products will be proposed to the high schools in Monroe county. The benefits from this proposed plan will be a decreased usage of e-cigarettes as well as an increased knowledge base regarding the risks to health by the high school students based on statistics gathered by Michigan Department of Health and Humans Services (MDHHS).

## **Molter, Noah**

Poster Presentation

MS, Orthotics and Prosthetics

Health Promotion and Human Performance

Nate Kearns

### **Optimal Carbon Fiber Laminations for Cost-Effective Fabrication**

The field of prosthetics and orthotics commonly laminates carbon fiber for patients' definitive devices. In the fabrication process, carbon fibers are combined with epoxy and allowed to harden over a mold of a patient's limb to a final form. In this process, carbon fiber and epoxy remain largely estimated, and many layups ended with substantial amounts of resin leftover which are left to harden and discarded. The field of orthotics and prosthetics (O&P) is transitioning to be more research-based in the coming years. In clinical practice, O&P is making great strides, but fabrication is still an experience-based area in the field.

By increasing the ratio of resin to carbon fiber, a ratio of diminishing return will be found where increasing the amount of epoxy no longer increases the tensile strength of the lamination and may even reduce its strength. This ratio should match the theoretical value closely. Samples will consist of the same woven carbon fiber sheet cut and laminated at 1% weight ratio increments in the theoretical window found for the lamination at 30 mmHg vacuum.

There will be 3 trials per weight ratio which will be tensile tested and plotted to compare against each other and the theoretical value using the volume fraction calculation. This research will focus on finding the optimal material usage during laminations of devices in the orthotic and prosthetic field using equipment and processes from the field to reduce production costs and increase device strength.

## **Morgan, Cynthia \***

Oral Presentation

MA, Autism Spectrum Disorders

Special Education

Sally Burton-Hoyle

### **Seeds of Disturbance: Effect of a Peer-Mediated Pivotal Response Training and Self-Management Plan on the Quality of Play of Black Learners with ASD**

As more Black children with dis/abilities are being educated in general education classrooms, in-school services may be their only protection against accelerated entry into the School-to-Prison pipeline. A review of the literature shows a need for enlisting more Black learners with ASD as research participants, targeting generalization using a self-management plan, and considering multicultural variables through parental involvement in the development of the intervention. This mixed methods research study examines the effect of a peer-mediated social and play skills intervention during indoor recess using PRT with or without a self-management plan on the quality of play of Black learners with autism spectrum disorder (ASD or autism). It is hypothesized that both participants with autism will improve in their individualized measurements of quality of play, but the participant with autism randomized to combine peer-mediation with a self-management plan will demonstrate more significant gains. Intervention goals, activities, and peer trainers will be chosen through a collaborative effort by the family, principal investigator (PI), the participant with autism, and their teacher. The PI will randomly assign the participants with autism to one of two groups, one that creates a self-management plan with the PI and one that does not. Both groups of students with ASD will participate in the intervention with peer mediators. The PI will teach the peer trainer how to use motivational strategies based on Pivotal Response Treatment (PRT) to improve the play and social skills of their peers with autism. The intervention will conclude with administering the Behavioral and Emotional Rating Scale (BERS) to observe any changes from the original assessment of personal strengths and competencies. The researcher hopes to demonstrate an in-school intervention responsive to the individual needs of Black learners with autism. Specifically, through improving their quality of play using peer-mediation, PRT strategies, and a self-management plan.

## **Mulder, Taylor**

Poster Presentation

MS, Molecular/Cellular Biology

Biology

Dr. Hannah Seidel; Dr. Aaron Liepman; Dr. Bob Winning

### **Expansion Microscopy To Visualize Events In Abbrevi-**

# Abstracts Cont'd

## ated Cell Cycle Of *Caenorhabditis Elegans* Germline Stem Cells

The cell cycle is the program cells use to replicate their genome and divide into two new daughter cells. Most cell types use a 'canonical' version of the cell cycle, in which the cell takes a long time to prepare for DNA replication. Hastening this preparation for DNA replication causes genomes to become unstable and is characteristic of cancer. Nonetheless, some cell types naturally exhibit an 'abbreviated' cell cycle, in which they prepare for DNA replication rapidly but without an increase in genome instability. How cells with abbreviated cell cycles accomplish this feat remains unclear. Here I use a new technique called expansion microscopy to visualize cell-cycle events in abbreviated cell cycles of the model organism *C. elegans*. Cells in the reproductive system of *C. elegans* exhibit abbreviated cell cycles and represent an excellent model system for understanding cell-cycle events in the abbreviated cell cycle. However, studying these events using standard microscopy techniques is difficult because the sizes of cellular components approach the diffraction limits of standard light microscopes. To better visualize cellular components in abbreviated cell cycles, I am applying expansion microscopy to *C. elegans* cells. This technique physically expands the sample by embedding it in a swellable gel. I am currently optimizing the protocol and will use it to determine the timing of key cell-cycle events, including packing and unpacking of chromosomes and replication of DNA. This study will provide a better understanding of the timing of cell-cycle events in the abbreviated cell cycle and will contribute to our knowledge of the mechanisms responsible for genome instability in cancer.

## Nelson, Jonah

Oral Presentation  
MS, Computer Aided Engineering  
Engineering Technology  
Tony Shay

## Improved SolidWorks FEA Batch Automation and Optimization

Finite Element Analysis (FEA) is a common method used to anticipate the breaking point of a product in various situations. Currently, there are three methods to perform FEA studies using FEA software. The first is to manually change inputs and record results, which is monotonous. Second is to use built-in functions to automate the process of changing the inputs; with this process, information available from the results, as well as the input options, are often lacking. The third method is to write a computer script to make the desired input changes and obtain the desired information from the results, which can be incredibly time-consuming. The objective of this research project is to create an application that offers the user a wider set of options to automate FEA studies, as well as output a greater amount of useful information to the analyst. This work uses the programming language Visual Basic for Applications (VBA) and takes advantage of the SolidWorks API which supports VBA scripts. The current program shows a great amount of promise for improving upon current methods by increasing the amount of useful result data, as well as input options in a user-friendly function, thereby reducing

the need for custom scripting.

## Nichols, Cainan

Oral Presentation  
MS, Physics  
Physics & Astronomy  
Eric Paradis

## A New Design for an Atom Trap

Magneto-Optical Traps (MOTs) are a method to cool atoms to the uK range and confine them. MOTs are used in applications such as quantum computation, precision measurements, and atomic clocks. Atomic clocks are used for the standard of U.S. official time. Here we present a new type of atom trap, contained within a cube of 1" side length, that incorporates diverging ball lenses with a diameter of 1.5 mm. We present evidence of trapping approximately 105 of 85 Rb atoms with a corresponding number density of 109 atoms/cm<sup>3</sup>. This new type of atom trap provides several advantages over other MOT designs: the laser power requirement for trapping is lower, the small size allows for miniaturization, and the lack of large optical beam pathways prevent external black-body radiation from entering the trapping region.

## Novinc, Rachel

Poster Presentation  
MS, Orthotics and Prosthetics  
Health Promotion and Human Performance  
Rebecca Spragg

## Effect Of Color On Parent Satisfaction And Compliance With Cranial Remodeling Orthoses

A very common condition found in infants is plagiocephaly, or a flat spot on a baby's head. This condition is very treatable, and most often the baby is prescribed a helmet, or cranial remolding orthosis, to help correct the deformity. The helmet works by only allowing for the baby's head to grow in the desired direction; it is a simple and harmless method of correcting a skull deformity. This study will be looking at the psychology of the patient's parents while their baby is wearing the helmet. Parents will be allowed to pick either a white, solid color, or patterned helmet for their child and asked to keep a log of how often they have the baby wear the helmet for two months. At the end of the two months, parents will be asked to turn in their log and answer questions on a survey created by the researchers. Subjects will then be grouped by their helmet color choice to determine whether patterns or colors have an impact on parent satisfaction and compliance with baby helmets.

## O'Toole, Lauren

Oral Presentation  
MA, Special Education  
Special Education  
Audrey Farrugia

## The Experiences and Perceptions of Students with Disabilities in Higher Education

In the 2015-2016 year, 19.4 % of undergraduate students enrolled at a 4-year university reported having a disability, and 11.9% of students working toward a graduate degree indicated having a

# Abstracts Cont'd

disability (National Center for Education Statistics, 2019). For many people with a disability, having a bachelor's degree increases their likelihood of employment. A person with a disability who completed higher levels of education were more likely to be employed than those who completed less education. In 2018 only 4.5 % of adults age 25 and older with a disability and with a bachelor's degree were unemployed. This can be compared to 15.5% of adults 25 and older with a disability, who are high school graduates with no college degree and were unemployed in the 2018 year (Bureau of Labor Statistics, 2018). The proposed study includes the investigation of academic and social perspectives of students with disabilities (SWD) and their relationships with university faculty members as it pertains to the use of accommodations. This study is designed to be qualitative by collecting the interviews of six participants who identify as having a disability and attend a University in the Mid-Western United States. This study will take the collected interviews and analyze them for commonality and similar ideas across each participant's experience.

## **Opdycke, Lacey; Maschke, Rachel**

Oral Presentation

Cultural Museum Studies [Graduate Certificate]

Sociology, Anthropology, & Criminology

E. L. Cerroni-Long

## **Add Women and Stir: The Misrepresentation of Women in American Museums**

A 2014 article entitled "The National Women's History Museum Apparently Doesn't Much Care for Women's Historians" criticized the NWHM for not consulting or hiring any women's historians to their board. Without diversity on their board, the NWHM could all too easily fall into the "add women and stir" trap which dangerously paints a picture of celebratory and triumphant experiences for women in history. This model has become all too common throughout museums in America. The commitment to multicultural expression, diversity, and teaching is waning under a system where board members and donors can influence, based on their monetary contributions, how museums represent groups of people. With this article in mind, we became curious about how women's contributions were represented in Michigan's museums, and how museum staff felt their institutions handled marginalized histories. Through research, we discovered major gaps, misinformation, and altogether silence towards women's contributions in American museums, whenever women are not serving as supporting actors to men. One goal of this project was to see if people who were not academically trained in history or anthropology could recognize these gaps, how they felt about them, and if they could learn new information. Also, this project explored how the worldview of participants impacted their experience in a museum. By asking participants to assess selected local museum exhibits by responding to specifically formulated questionnaires, we were able to identify areas in which complacency and biased perspectives clouded valuable information. Museum professionals must be aware of the symbolic meaning of the artifacts they display, the implications of language used in exhibit labels, and how perceptions differ across generations, communities, and even gender; if they want to continue to be a source of pedagogical potential, they

must confront the areas in which they can do better.

## **Osika, Jayson**

Oral Presentation

MS, Applied Econometrics

Economics

Amanda Stype

## **Cigarette Taxation Intensities and the Current State of Youth Price Sensitivities**

In the United States, smoking related illnesses remain the single largest preventable cause of death and disease, responsible for killing more than 540,000 Americans each year ("Tobacco Taxes"). This addictive and deadly habit often begins in adolescence, making preventative policies that target and protect the youth especially valuable to society. One form of policy that has been effective in the past is tobacco taxation. Studies on the 2009 federal tax increase on cigarettes show that at least 220,000 young people were prevented from taking up smoking as a result of the mere 62 cent raise from \$0.39 to \$1.01 ("Tobacco Taxes"). However, this kind of federal intervention is rare, and the majority of cigarette pricing falls into the hands of the state. State taxes range between \$0.17 and \$4.35 per pack (Tax Foundation). Additionally, a 2015 study determined that the youth have become less responsive to cigarette taxes in the recent past (Hansen, 2015). This paper will examine the current state of youth price sensitivity to changing cigarette taxes by measuring various magnitudes of taxation across states and its corresponding effect in youth smoking rates. I will combine data provided by the CDC including the Youth Tobacco Survey (YTS), Youth Risk Behavioral Surveillance System (YRBSS), as well as state and federal taxes on cigarettes to determine if a continued effort to increase cigarette prices via taxes might yield beneficial responses similar to those observed in the past.

## **Osunwoke, Ifeanyi Victor**

Poster Presentation

MS, Biology

Biology

Dr. Daniel Clemans

## **Coaggregation Of Microbial Isolates From Garri And Ogi With Representative Gut Microbes And Probiotics**

Garri and Ogi are two very common African fermented foods obtained from cassava (*Manihot esculenta*) and maize (*Zea mays*) respectively. They are made from wild type fermentations containing bacteria and yeast. The purpose of this work was to isolate microbes from garri and ogi and study their cellular interactions with known probiotics and representative gut microbes. Twenty-two different microbes were isolated from garri and ogi preparations using selected media and characterized by molecular techniques. Pair wise cellular interactions were studied using coaggregation assays. Coaggregation is the cellular interaction between genetically distinct organisms. Initial coaggregation assays showed poor cellular interactions between garri and ogi isolates and known probiotic or gut microbes. Preliminary studies indicate that there are strong interactions between specific isolates from garri and ogi. This paper presents the characterized interac-

# Abstracts Cont'd

tions of microbial isolates from garri and ogi preparations.

## Owolabi, Adegboyega

Oral Presentation

MS, Applied Econometrics

Economics

James Saunoris

### The Impact Of Business Cycle Fluctuations On Gender Employment Gaps

In my paper, I used a cross country data set consisting of 167 countries between 1970-2017 to explore the relationship between the gender gap in employment and the business cycle fluctuations as the explanatory variable while controlling with other very important macroeconomic variables using an OLS regression technique. The data I used is from two sources namely the Penn World Tables (PWT) version 9.1 and World Development Indicators (WDI). The gender gap is explained in this paper by using the labor gap of the labor force participation of between male and female. The primary hypothesis of my paper is that business cycle fluctuations have a positive relationship with the labor gap. The results of the paper are as expected in terms of signs and relationships between both variables of interests. This ultimately explains that business cycle fluctuations are having a positive relationship with gender gap in employment, thus increasing gender inequality. The paper shows us that there are asymmetric effects of business cycle fluctuations on the labor gap with the economy having an increase in labor gap during expansion period with statistically significant figures. However, the economic impact is small.

## Pankiewicz, Josiah

Oral Presentation

MA, Children's Literature

English Language & Literature

Amanda Allen

### When Staying in the Kitchen Saves the World: Motherhood in the Percy Jackson Series

Ancient Greek myths had a mainstage revival with Rick Riordan's 2005-2009 Percy Jackson and the Olympians series wherein the titular Percy must claim his birthright as a son of Poseidon and save Western Culture. Riordan adapts Greek myths for a contemporary audience, a tradition, I argue, that illuminates more about the moment of the author than the original myths themselves. While other scholars have looked at Riordan's texts through the lens of disability, cultural studies, or their use in education, little attention has been paid to depictions of gender in the series. At first glance, the five-book series can be lauded for the inclusion of female characters throughout and for portraying several three-dimensional female demi-god characters. However, a closer reading of the text reveals that girls and women, both divine and mortal, fall into only one of two categories – good mothers and bad mothers. All female characters are subjected to this form of judgement within the text, even if their mothering is purely metaphorical and not literal. None of their other accomplishments or abilities seem to matter as much as their prescribed duty to mother. Working through a feminist lens, I will investigate the ways Riordan's texts portrays the goddesses and illuminate a pattern of domestication

placed on them. I will argue that by portraying the goddesses as powerful and moral only when being domestic, the texts work to convince readers that women, regardless of their station or status, should prioritize traditional, family-focused femininity. In closing, I will offer alternative forms of representation Riordan could have used, and argue that an expansive form of feminism must be implemented – one where women are their own loci of power – which can encompass both domesticity and adventure.

## Petel, Michayla

Poster Presentation

MS, Orthotics and Prosthetics

Health Promotion and Human Performance

Rebecca Spragg

### Cranial Remolding Orthoses: Determining Objective Treatment Outcomes to Guide Treatment Plans and Maximize the Potential of Helmet Therapy

Plagiocephaly is commonly known as flat head syndrome. It happens frequently in babies due to the Back to Sleep Campaign, which was a successful effort to reduce SIDS. However, this increased time lying on their back increases pressure on the skull causing asymmetry to develop. Plagiocephaly is treated with a cranial remolding orthosis (helmet) that directs skull growth to improve symmetry. Currently, there are many ways to classify the degree or severity of plagiocephaly, including visual scales and measurements scales, but there is no accepted standard. Moreover, there is a lack of standardized objective outcomes for determining a successful treatment. Currently, clinicians rely heavily on subjective judgement, such as clinician or parent satisfaction with the visual shape or a set length of time, to determine when use of the helmet is discontinued. This may be limiting the potential of helmet therapy and ultimately jeopardize the success of treatment. The Congress of Neurological Surgeons released a position statement on cranial remolding orthoses and stated: "Helmets are... designed to be worn 23 hours a day for several months, until the child has achieved satisfactory cosmetic correction or they have outgrown their helmet" but does not define satisfactory. Currently, there is not a standardized goal for clinicians to adopt as an end point for treatment. We propose a goal of returning the skull to a normal shape, defined as a "Level 1" on the Children's Hospital of Atlanta Plagiocephaly Severity Scale (based on four objective skull measurements). This project seeks to perform a retrospective analysis of the proposed goal versus actual achieved outcomes to begin to inform the future of cranial remolding treatment.

## Plummer, Lucas

Poster Presentation

MS, Orthotics and Prosthetics

Health Promotion and Human Performance

Nate Kearns

### A Look into the Current State of Patient Satisfaction Assessment in Clinical Practice

Clinical orthotic and prosthetic practices can use surveys to assess patient satisfaction. These assessment tools are often provided as part of Medicare mandated policy, but little is known about the prevalence of particular tests or how results effect clinical prac-

# Abstracts Cont'd

tice. These tools can give researchers and practitioners valuable information for improving patient care and the patient experience in general when they are used. The aim of this study is to identify the prevalence of these assessment tools in clinical practice. With our data, we hope to gain a better understanding of the current state of amputee satisfaction assessment in clinical practice in the field of orthotics and prosthetics. A 5 question survey will be distributed to certified orthotists and prosthetists through the O&P ListServ. This survey will collect data regarding the type of tools currently being used in O&P practices and how the information is used in the clinical environment. Results have not yet been collected; however, we expect to gather data showing the current state of patient satisfaction feedback and implementation strategies.

## Jacob Praga

Poster Presentation

MS, Orthotics and Prosthetics

Health Promotion and Human Performance

Frank Fedel

## **Electroplating And 3D Printing: How To Make A Durable, Low-Cost Prosthesis**

3D printing is a form of additive manufacturing that allows fabrication of parts with complex geometries without requiring significant post-processing such as drilling holes and milling. This can reduce the overall cost of producing complicated components and multipart assemblies. Prosthetic hands are typically comprised of many parts, and the cost of such devices can be prohibitively high, with some high functioning hands priced at \$25,000-\$75,000 (Kate, 2017). Cost is a particularly important consideration when users are children, as they may require several updated prosthetic devices as they grow. This technology can also be beneficial for patients with a condition that is difficult to address with commonly used devices. Digital models of high functioning, open-source 3D-printable prosthetic hands are available for download online. The cost of fabricating these hands ranges from \$10 - \$1,000 depending on their complexity, function, and additional components needed. The durability of 3D printed prosthetic hands has been questioned recently. Research has demonstrated that electroplating 3D-printed parts results in an increase in hardness, corrosion resistance, and tensile strength (Raja, 2014). Potential challenges with electroplating 3D printed parts include surface preparation (Kim, 2019) and the cost of equipment. The purpose of this project was to test the effects of using a simple, low-cost process for electroplating 3D-printed prosthetic hand components on material strength. The results could be used to inform decisions regarding the suitability of electroplated, 3D printed parts for use in prosthetic hands.

## Price, Daicia

Oral Presentation

PhD, Educational Studies

Teacher Education

Joseph Bishop

## **Black Coffee: No Sugar, No Cream**

Feelings of isolation, experiences of racism, sexism, microaggressions and difficulty with achievement academically and professionally may impact individuals who identify as a Black female/woman. This essay seeks to describe my personal educational journey as I matriculated through a process of development of learning through informal and formal educational settings while attempting to be an invigorating and cultivated addition to current scholarship. Providing an authentic analysis of multiple experiences of a Black woman in educational settings will allow exploration of potential challenges and strengths. Additionally, future strategies can be identified for creating educational spaces that are supportive by encouraging growth while nurturing Black women to remain authentic and organically grounded in their cultural heritage.

## Price, Daicia

Oral Presentation

PhD, Educational Studies

Teacher Education

Ethan Lowenstein

## **Understanding Power and Oppression: Orientation to Graduate Students**

Polarized discourse of the current racial climate in the United States has impacted the milieu on college and university campuses. Students from historically marginalized ethnic backgrounds describe their experiences on campus as tenuous, unwelcome, and unsafe. Students describe experiencing behaviors from others that are hostile, antagonistic, and rooted in racism and impact their ability to engage in the learning process fully. As a commitment to prepare students in a predominantly white institution in the United States to participate in antiracism coursework and practice as beginning professionals, an initial workshop was developed and presented to all students entering their first year of graduate school. Common concerns the workshop sought to address were varying levels of understanding of the concept of racism and power, privilege and oppression, and ways to engage with colleagues during times of conflict. Delivering an interactive workshop during orientation of 300 new graduate students was intended to provide definitions, concepts, language and tools for engaging in anti-racist dialogue in a program focused on social justice. A pre and post evaluation was completed to measure participants self measurement on 10 items. There were significant positive increases in students' understanding of concepts and definitions of racism as a structural dynamic, having an ethical obligation to engage in anti-racist activities, and having tools and strategies to address challenges.

## Price, Deanna

Poster Presentation

MS, Molecular/Cellular Biology

Chemistry

Hedeel Guy-Evans; Jeffrey Guthrie; Deborah Heyl

## **IGFBP-3 Blocks Hyaluronan-CD44 Signaling, Affecting Acetylcholinesterase Levels in A549 Cell Media and Cell Viability**

Insulin-like growth factor binding protein-3 (IGFBP-3) belongs

# Abstracts Cont'd

to a family of six IGF binding proteins. We previously found that IGFBP-3 exerts its cytotoxic effects on A549 (p53 wild-type) cell survival through a mechanism that depends on hyaluronan-CD44 interactions. To shed light on the mechanism employed, we used CD44-negative normal human lung cells (HFL1), A549, and H1299 (p53-null) lung cancer cells. A synthetic IGFBP-3 peptide (215-KKGFYKKQCRPSKGRKR-232) but not the mutant (K228AR230A), was able to bind hyaluronan more efficiently than the analogous sequences from the other IGFBPs. In a manner comparable to that of the IGFBP-3 protein, the peptide blocked HA-CD44 signaling, and more effectively inhibited viability of A549 cells than viability of either H1299 or HFL1 cell lines. Treatment with the IGFBP-3 protein or its peptide, affected acetylcholinesterase activity in the A549 cell media but not in the media of either HFL1 or H1299, an effect that correlated with changes in cell viability. These effects were diminished upon the same treatment of A549 cells transfected with either p53 siRNA or acetylcholinesterase siRNA. Taken together, our results show that IGFBP-3 or its peptide blocks hyaluronan-CD44 signaling via a mechanism involving p53 and acetylcholinesterase.

## Purdie, Jaime; Bryne, Samuel; Neagu, Remus

Poster Presentation

MS, Orthotics and Prosthetics

Health Promotion and Human Performance

Frank Fedel

## Alternative Bracing Materials for Thermal Management in Total Contact TLSOs

### INTRODUCTION

Thermal discomfort causes moderate to severe reduction of quality of life for many prosthetic patients (Hagberg and Branemark, 2001). Effective sweat loss is limited by prosthetic devices due to minimal moisture permeability (Hachisuka et al., 2001). Additionally, local increases in skin temperature (ST) result from donning prostheses and spinal orthoses (Klute et al., 2007; Grew and Deane, 1982).

While total contact TLSOs limit all heat loss, more thermally conductive materials may reduce the impact on ST (Grew and Deane, 1982). The purpose of our study is to compare the thermal impact of a novel material to one traditionally used in orthotics on a healthy adult during rest and light activity.

### METHOD

Subjects: One 22-year old female (height: 165 cm; weight: 58 kg; n = 1)

Apparatus: Sample TLSO devices are approximately 13x18x0.5 cm. Devices are composed of either copolymer or ICE9, a thermally-conductive alternative. The devices are custom-fabricated partial devices that cover the lateral abdominal and lumbar region superior to the iliac crest.

Procedures: Six trials will be completed. Bilateral lumbar ST will be measured every two minutes via thermocouples. Participant will rest for 25 minutes then perform 30 minutes of treadmill walking at 4.8 kph. Device material will be blinded to the participant, who will don one of two sample devices

### PRELIMINARY DISCUSSION

An increase in ST is seen beneath the device which is consistent with previous literature (Klute et al., 2007). We hypothesized that a total contact TLSO made of ICE9 would result in a moderate increase in ST. A past study found differences in ST change caused by alterations to spinal support material (Grew and Deane, 1982).

### CONCLUSION

The donning of orthotic devices results in a local increase in ST. Changes to material usage appear to improve cooling efficiency and limit the increase in ST.

## Radtke, Zachary

Poster Presentation

MS, Orthotics and Prosthetics

Health Promotion and Human Performance

Frank Fedel

## Creating a Functional Model of an Elevated Vacuum Suspension System used by Transtibial Amputees for Clinical Education

Suspension is a key component to the overall success of a prosthetic device. There are several different kinds of suspension that are available for transtibial amputees such as pin lock, suspension sleeve, suction, anatomical, cuff, thigh lacer and elevated vacuum suspension systems (EVSS). The decision of which system to use is critical to the success of the device and the health of the patient and their residual limb. Choosing an inappropriate system can result in reduced circulation to the limb, pistonning, and skin deformation. A large proportion of the amputee population has diabetes - a disease that puts them at elevated risk for damage to skin due to poor skin integrity, as well as compromised wound healing ability. Elevated vacuum suspension has been shown to improve the efficiency of the circulatory systems and result in wound healing. It is important for prosthetic students and clinicians to understand how EVSS works mechanically, to ensure effective assembly and maintenance as well as patient education. The purpose of this project was to design, fabricate, test and demonstrate a functional physical model of an EVSS for educational purposes. Having access to a functional physical model of an EVSS can allow prosthetic students and other medical professionals to physically observe how the system works and enhance their understanding.

## Rajput, Divya

Poster Presentation

MS, Polymers and Coatings Technology

Engineering Technology

Vijay Mannari

## Novel Bio-Based Polymers: Enhancing Sustainability And Performance Of Thermoset Coatings.

In recent years bio-renewable materials have been increasingly explored as a promising replacement of petroleum-based materials used as building blocks for polymers. This trend is mainly driven by the increasing awareness and directives for sustainable development of polymeric materials. The lower carbon footprint compared to their petroleum counterparts, and depleting known resources of petroleum, makes bio-renewable materials very important for future development. However, it is very important to meticulously design polymers based on bio-renewable building

# Abstracts Cont'd

blocks by leveraging their unique chemistry and functionality, to meet the demanding requirements of the final products at the acceptable costs. By combining unique features and functionalities of two low cost commercial commodity bio-renewable materials - epoxidized soybean oil (ESO) and rosin – polymeric polyols with bio-renewable content > 78% by weight were successfully developed. A series of one-component thermoset coatings were then formulated and evaluated. Some of the resulting coatings demonstrated excellent adhesion (5B), high MEK-Rubs (100-200), high gloss @ 60° (>80), and good flexibility and impact resistance properties (140-160 lb.in). The outcome of this study clearly demonstrates suitability of these polyols as primary components of sustainable industrial coatings.

## Ramirez, Adriana

Oral Presentation  
MS, Applied Econometrics  
Economics  
Amani Rashid

### The Effect of Policy Incentives on Hispanic Educational Attainment

This paper will explore the effects of federal policy incentives on educational attainment for Hispanic individuals. In particular, it will focus on examining the effect of “The White House Initiative on Educational Excellence for Hispanics” (signed in 2010) on state-level Hispanic college attendance rates. Given the intent of the policy, we expect to observe meaningful effects in states with relatively higher Hispanic fraction of the population. Therefore, using data from the U.S. Census Current Population Survey from the years 2004-2017, I will implement a difference-in-differences methodology to compare the change in average Hispanic college attendance rates before and after the initiative is passed in states with a “high” Hispanic population proportion versus states with a “very low” Hispanic population proportion. I find that after the initiative is signed Hispanic college attendance rates increase, and the estimated effect is stronger the larger the Hispanic fraction of the population. As expected, the college attendance rates of other ethnicities and races do not respond to the initiative. This paper provides evidence that targeted efforts to promote college attendance and supply resources for historically disadvantaged populations is an effective method to increase enrollments.

## Rawson, Madison

Poster Presentation  
MS, Orthotics and Prosthetics  
Health Promotion and Human Performance  
Nathan Kearns

### Effect on Functional Ambulation and Balance of Unilateral, Transtibial Amputees when Utilizing the Proprio Foot versus the Flex Foot

Unilateral, transtibial amputees are subject to greater gait instability during ambulation and static standing than non-amputees. This is partially due to the loss of ankle proprioception and motor control of the ankle and it is commonly accepted that unilateral amputees are subject to a higher fall risk because of these factors. One study suggests that implementing a prosthetic foot with an

active dorsiflexion component, like Ossur's Proprio Foot, can increase the patient's limb symmetry, thus increase their base of support and increase balance. From here, it was found that the patient's functional ambulation is improved as well as walking speed. The Modified Emory Functional Ambulation Protocol (mEFAP) and the Berg Balance Score (BBS) are outcome measures that have been used to measure change in walking tasks and balance in the stroke population. The mEFAP and BBS will be administered to the patient while wearing his own fixed ankle foot and again wearing the Proprio Foot. It is hypothesized that the mEFAP and BBS scores will show improvement in the subject's ambulatory speed and balance when using the Proprio Foot over a fixed ankle foot.

## Rayner, Karen

Poster Presentation  
PhD, Educational Leadership  
Leadership & Counseling  
Dr. Rema Reynolds

### Exploring the State of Wellbeing in Education

In his disquisition, Democracy and Education (1916) the renowned philosopher, John Dewey, described the foundational role of the school in fostering wellbeing. He wrote, “It is the business of the school to set up an environment in which play and work shall be conducted with reference to facilitating desirable mental and moral growth.” (p.112). He argued that a happy and joyful school experience is of “fundamental worth” to mental health and facilitated learning (p.111). What is the state of wellbeing in our K-12 schools and what factors are thought to influence wellbeing? Furthermore, what factors define wellbeing? The intention of this research is to explore the current reality of and existing research on wellbeing in K-12 schools. The literature explored broadens our understanding of the current status and goals toward wellbeing in schools locally and in light of global educational goals. The research considers aspects of this topic including: social injustice, educational access, international educational research, perspectives on early childhood, social-emotional learning curricula, and the context of dispositional learning. These factors push educational leaders to think beyond Dewey's more hedonistic view of wellbeing as joy and happiness, instead viewing wellbeing in terms of quality, benefits, and value. It is hoped that exploring these questions will result in a more refined view of wellbeing and guide future inquiries.

## Reese, Ty'Asia

Oral Presentation  
MATR, Athletic Training  
Health Promotion and Human Performance  
Jodi Schumacher; Aaron Struminger

### Hyperbaric Oxygen Therapy Treatment Effects on Endurance in Athletes with Sickle Cell Trait

The use of holistic treatments with the athlete population is few to none. This study approaches filling the gap by gathering the results of VO<sub>2</sub> max in both healthy athletes and athletes with Sickle Cell Trait. With previous studies showing Hyperbaric Oxygen Therapy being effective, I hypothesize Hyperbaric Oxygen

# Abstracts Cont'd

Therapy will increase VO<sub>2</sub> max in athletes with Sickle Cell Trait. There are 50 athletes, 35 healthy and 15 with Sickle Cell Trait. Each athlete will have to complete a pre-test/post-test, VO<sub>2</sub> max fitness test, and 20 sessions of Hyperbaric Oxygen Therapy in a span of 4.5 weeks. Statistical analysis of the study will use paired-t test to determine the differences between the pre and post-tests for each athlete.

## Sabrah, Sonya; Arif, Hira

Poster Presentation

MSN, Nursing – Adult Gerontology Primary Care Nurse Practitioner

Nursing

Kathleen Seurnick

## Vaping/e-cigarette use in Adolescences in Dearborn, Michigan

Vaping or e-cigarettes is a trending topic in the healthcare world today; especially when it is greatly affecting the adolescent population. Numerous studies across the nation show its effectiveness in helping adult smokers quit tobacco, but it also has risks of its own. While vaping may help tobacco smokers quit, high school students have been getting a hold of these devices. Over the last decade vaping in middle and high school students has dramatically increased. From 2017-2018 there was a 78% increase in e-cigarette/vaping use in high school students. Using the Healthy People 2020 MAP IT Framework, the aim of this paper is to identify risk factors that contribute to adolescence vaping in Dearborn, Michigan to develop a screening tool for use in schools. This will be done by examining the literature for key factors that will help determine an adolescent's risk for e-cigarette/ vaping. By identifying at-risk individuals, we can begin to develop target strategies to prevent vaping. The research method includes using articles and journals from the following databases: CINAHL and Google Scholar. The research included articles from scholarly journals, a cross-sectional study, synthetic reviews and written in English.

## Sajjadi, Mishka; Garmo, Daniella; Hizam, Abdullah; Jessica Reszter

Oral Presentation

MOT, Occupational Therapy

Health Sciences

Tricia Foster

## Assessing Clients with Chronic Pain

Chronic pain affects 10-20% of the world population and the cost of treatment is projected to increase. People with Chronic Pain report physical function impairment, with many voicing functional difficulties in performing activities. The purpose of this review is to explore what health care practitioners (HCPs) use to assess individuals with chronic pain, discuss pragmatic considerations, and determine suggestions for more comprehensive assessment guidelines. A literature search was conducted using keywords: "chronic pain", physical, functioning, assessment, evaluation, questionnaire and participation. Databases used include: CINAHL, PROquest and Psycinfo. Inclusion criteria required peer reviewed articles, English language and an adult target population. Exclusion criteria consisted of articles with

dates prior to 2000 and single assessment reviews. Assessments found in the literature fall under domains of mental/emotional well-being, social participation, physical functioning and functional performance. Outcome measures were found to be patient-reported, clinician-reported, or performance-based. HCPs should consider assessment limitations used such as length and patient burden. To create a more comprehensive assessment, the literature suggests using a mix of outcome measures and cover multiple domains. HCPs can choose the correct assessment for their scope of practice from the data collected as well as use this information to develop a unified approach to chronic pain assessment in their setting. Further research should examine the development of a core set of outcome measures that assess chronic pain over multiple domains, solidify which assessments are best for occupational therapy scope of practice as well as evaluate the validity of assessments mentioned for chronic pain.

## Sarnacki, Marie

Oral Presentation

MA, History

History & Philosophy

Ronald Delph

## The Memory and Image of Charlemagne as the Once and Future Crusading Emperor

From the time of his death in 814, Charlemagne loomed large in the minds of Europeans. Political turbulence throughout Western Europe led many to long for a lost era of peace and prosperity under the benevolent leadership of a wise, strong, and pious emperor. The idea of an unambiguously rosy Carolingian golden age spurred the creation of legends, epic poems, and artwork depicting Charlemagne as the ultimate religious and political leader. During the eleventh through the thirteenth centuries, Western Europeans began to merge the idea of Charlemagne with the idea of a holy crusade, providing a template of the perfect Christian warrior for crusaders. Why did so many stories about Charlemagne begin to incorporate crusading images and motifs, and why were participants in the crusades inspired by this idea of Charlemagne? The crusader Charlemagne motif proliferated and was adopted as a crusading inspiration because Charlemagne represented a model Christian warrior who had journeyed east, defeated fearsome Muslim foes, and could unite the East and West under a dominant Frankish ruler.

## Schnurr, Rachael

Oral Presentation

MA, History

History & Philosophy

Ronald Delph

## "O Zelus Imitabilis Mulieris!" The Contributions of Non-combatant Women to the Wider Crusader Movement

Beginning with Pope Urban II's call for crusade in 1095 and lasting to the end of the crusading era with the retreat to Cyprus in 1291, women were discouraged from participating directly in the holy conflict. Nevertheless, research has illuminated the active engagement of women in the Crusades despite their proscribed status, including direct involvement in military action. What has

# Abstracts Cont'd

been more neglected in scholarship, however, is the role of those who remained within the constructed boundaries of their gender in the crusader movement. Why did women, who did not fight directly and did not oppose their gendered station, still significantly contribute to both crusader action and the collective memory of the Crusades? Through an analysis of both recent secondary research and primary sources--including letters, poetry, and material relics--this paper argues that, without the contributions of women both at home and abroad, the Crusades would not have materialized as they did. Though they did not pick up weapons to fight the infidel, these noncombatant females were critical, because they supported the crusading effort from home, served as auxiliary support abroad, and also developed cults of remembrance in the aftermath, to enshrine the Crusades in European memory.

## Schonfield, Dawn

Poster Presentation

DNP, Nursing Practice – Post-BSN Adult-Gerontology Primary Care Nurse Practitioner

Nursing

Dr. Meriam Caboral-Stevens

## A Systematic Review of the Effectiveness of the Use of Trauma-Informed Care in Various Sectors

About 5 million children experience a traumatic event every year. Twenty percent of adults who experience traumatic events will develop PTSD; whereas children often develop depression, anxiety, disruptive behavior, impacting school performance. Multiple models are currently in use to care for trauma victims, yet research is needed to determine the most effective model for care. Trauma-informed care (TIC) is an evolving concept in trauma management. TIC is to transform the entire organizations of care into understanding traumatic stress response in all aspects of care delivery and prioritizing individual's safety, choice and control. Guided by the Complex Adaptive System the purpose of this IRR was to examine evidence on the effectiveness of TIC in various settings. Electronic databases CINAHL, PubMed, PsycINFO, and Cochrane Library were searched. Peer-reviewed articles published in English, published from 2013-2019, and only review of TIC in a specific setting articles were included in this IRR. Initial search retrieved 247 articles, and 7 articles were included in this review. Studies were from Australia, Canada and the U.S. Settings evaluated were correctional systems, in-patient mental health settings, youth in-patient psychiatric and residential settings, out-of-home care setting, school, and one targeted range of sectors. Review showed the potential effectiveness of TIC in various settings however, this is interpreted with caution because of limited studies with higher level of evidence. Areas TIC was found effective were in reducing use of seclusion and restraints in youths in psychiatric and residential settings, lowering recidivism among adults in correctional system, and improving consumer experiences of care in acute mental health settings.

## Schukow, Alex

Oral Presentation

PhD, Educational Leadership

Leadership & Counseling

Dr. Rema Reynolds

## Culturally Responsive School Leadership: Examining White Male Principals' Practices

K-12 principals must enact culturally responsive school leadership (Khalifa et al., 2016; Khalifa, 2018) to close the opportunity gaps Black students and economically disadvantaged students experience. Critical race theory (Ladson-Billings & Tate, 1995), the key model (Scott & Robinson, 2001; Scott, 2009), and culturally responsive school leadership theory form the conceptual framework for this phenomenological study. The overarching research question for the study is: How do Whiteness and masculinity influence the enactment of culturally responsive school leadership by White male K-12 principals in exurban school settings? Interviews, school handbook policy analysis, and examinations of participants' professional social media posts provide data to critique the actions of four White male principals in midwestern exurban public schools. Implications can inform pedagogical choices of educational leadership preparation programs, educational leaders' and White male principals' actions.

## Sears, Christina-Marie; Tapley, Jess; Cox, Ryan; Dudek, Katlyn

Oral Presentation

MA, Literature

English Language & Literature

Dr. Elisabeth Daumer

## Unreal the City: an Exploration of the Devastating Cost of WWI and the Unlikely Cultural Recovery through Literary Modernism

Unreal the City is an oral presentation by a team of current graduate students in creative writing and literature. We are studying the ecologies of war, the hidden humanitarian and ecological costs of militarism, and the impacts of these on leading writers and theorists of the period. While we will concentrate historically on the period before, during and after World War I, we extend our findings to consider the capitalist militaristic global tensions as a whole. T.S. Eliot separates the words waste and land in the title of his ground-breaking modernist poem. This separation changes the meaning of the word from a naturally barren land to a land that has been wasted by human misuse. The catastrophic loss of human life, and the annihilation of animal and plant life, as well as contamination by toxins, will ground this study but poetry of the period will also be performed. Extensive literary analysis through the lens of trauma theory and ethos of being a veteran and survivor of the period will be utilized.

## Sherman, Janet

Oral Presentation

MA, Special Education

Special Education

Jackie McGinnis

## Alive and Breathing: Trauma at Educational Margins

Emotional trauma, historically understood and treated through the lens of a diagnosis-based, psy-complex medical model of disability and madness, has an overwhelming impact on a student's

# Abstracts Cont'd

ability to learn and engage in school. The rate of trauma is especially high for disabled children and their families. U.S. educators are beginning to explore ways to examine and understand trauma (Morgan, Pendergast, Brown & Heck, 2015). Using an autoethnographic, poetic research method, I work to add my voice to and to help create trauma-informed educational practices and environments that support students and family members. In exploring and reprocessing my own experience with emotional trauma and exposing vulnerability, I make visible the long-term impact of emotional trauma in order to help others understand the experience of families who have experienced and survived trauma.

## Shidler, Kim

Poster Presentation

MSN, Nursing – Adult Gerontology Clinical Nurse Specialist

Nursing

Kathleen Seurnck

## An Intervention for Insufficient Sleep in College Students

The purpose of this paper is to evaluate peer reviewed literature on insufficient sleep in college students and evaluate an intervention. This goal was guided by the Healthy People 2020 objective to increase the proportion of adults who get sufficient sleep. Lack of adequate sleep is linked to cardiovascular disease, obesity, diabetes, decline in cognitive function and increased risk taking. We plan to distribute a survey to graduate nursing students at Eastern Michigan University to assess sleep quality, habits, and perceived barriers to sleep. Students will then be provided education on evidence-based self-management techniques to promote length and quality of sleep. A post intervention survey will also be distributed to evaluate the utilization and effectiveness of the interventions. Potential implications of this study are that it could help students better understand their own sleep needs, utilize non pharmacological interventions and develop better sleep hygiene.

## Simko, Courtney

Oral Presentation

PhD, Educational Studies

Teacher Education

Christopher Robbins

## The Shameless Portrayal of Poverty

Newspapers, advertisements, movies, television, and radio are all components of the media. Information is disseminated to the public through these outlets in order to provide information or entertainment. Is this information accurate? The purpose of this study was to determine whether or not the media's portrayal of poverty is an accurate one. This study will examine the Showtime series *Shameless*, a story of a family living in poverty in Chicago, to determine whether or not the story being told is genuine or perpetuating stereotypes associated with those living in poverty. Five systems will be used to examine the accuracy of the story. The systems include: housing, education, transportation, child-care, and employment/income. The results of the study showed that overall, *Shameless* does an accurate job of portraying the everyday lives of those who are navigating these systems while living in poverty. Media impacts the public perceptions of who/what

is portrayed. In this instance, the public has been given an honest and truthful depiction of what it is like to live in poverty.

## Simpson, Amanda

Poster Presentation

MS, Orthotics and Prosthetics

Health Promotion and Human Performance

Rebecca Spragg

## Assessing the Association between Conservative Treatment, Self-Esteem, and Bullying in Adolescent Idiopathic Scoliosis

Adolescent Idiopathic Scoliosis (AIS) is an abnormal curvature of the spine that develops between the ages of 10 and 18 and has no known cause. AIS is the most prevalent musculoskeletal deformity affecting children. The goal of treatment is prevention of curve progression during the years of adolescent growth. The use of a spinal orthosis (back brace) is a common and effective treatment for AIS, however, the psychological impact of wearing an orthosis has become a concern as the treatment period occurs during adolescence. The transition from childhood to adulthood is a time of physical and mental development, when self-esteem and self-image are formed. Self-esteem is an integral part of self-image and plays a key role in development, school performance, competency, acceptance by others, and is related to mental health. Self-esteem can also be influenced by bullying which has been shown to result in adverse mental health outcomes. There is no report in current literature about self-esteem and bullying in individuals with AIS wearing an orthosis. This study will evaluate the presence of bullying and low self-esteem in this population and compare it to rates reported in the general adolescent population. Subjects aged 10-17 years old, who are currently wearing a spinal orthosis for (AIS) were recruited through the research adviser's clinical practice. Parental consent and subject assent were obtained and subjects completed a 45-item questionnaire. The survey includes questions regarding the subject's daily use of their orthosis, including wear time and location, as well as questions about their self-esteem and peer interaction outside of the home. The survey is anonymous and no personally identifiable information is collected. Survey results will be reviewed.

## Sirois, Melissa

Poster Presentation

MS, Orthotics and Prosthetics

Health Promotion and Human Performance

Frank Fedel

## Design and Fabrication of a Lower Limb Part Task Trainer for Palpation Education

Effective patient care in orthotics and prosthetics involves many clinical skills. Among these skills is palpation. Prosthetic patients may be vulnerable to skin problems and have bony abnormalities in their limb; therefore, palpation is a necessary clinical skill for practitioners to possess when creating a prosthetic socket. Identification of bony landmarks is essential in creating a more appropriate and comfortable socket fit that accommodates the patient's anatomy.

In an effort to improve palpation training, a part task trainer con-

# Abstracts Cont'd

sisting of an anatomically correct lower limb with integrated pressure sensors was designed and fabricated after a literature review revealed evidence of poor accuracy in manual palpation skills in healthcare practitioners of various fields. An MRI of a volunteer model's leg was obtained and used to 3D print anatomically correct bones, which were then placed within a silicone casting of the exterior of the model's leg. Foam was then carved and shaped based on circumferences of the model's leg and used to take up the bulk of the space normally filled by muscle and adipose tissue. Arduino software was used to create a script that turned on an LED light when individual landmarks were correctly palpated. There is currently no other lower limb palpation trainer for these landmarks. This model allows students to practice palpation skills while receiving feedback from the model.

## **Smith, Sawyer**

Oral Presentation

MS, Applied Econometrics

Economics

James Saunoris

## **Endogenous Money, Sectoral Balances, and Deficit Spending**

In New Keynesian economic theory, money is thought to be exogenous. It is assumed that a government is operationally restricted by tax revenue. More specifically, that the value of all government debt to be repaid at some time period must always equal the present discounted value of all current and future real fiscal surpluses starting in some time period plus the present discounted value of all current and future seigniorage revenue starting in some time period (Coeurdacier, 2020). More recently, incorporating the idea of endogenous money and sectoral balance analysis into modern macroeconomics is being taken into consideration. Loosely speaking, these two concepts fall under the umbrella of Modern Monetary Theory (MMT). One of the principal conclusions under sectoral balance analysis is that both fiscal surpluses and small fiscal deficits create drag on the economy because the private sector either runs at a deficit or an inadequate surplus (Juniper, 2014). This paper will examine the link between government spending as a percentage of tax revenue and Gross Domestic Product (GDP) controlling for other relevant variables. A time series regression will be used where GDP will be the dependent variable and government spending will be the lagged independent variable controlling for relevant variables. Data will be taken from the FRED database. A study like this has not been done before as MMT is relatively new. This paper in particular is not done yet. I expect that government spending relative to taxation will have a strong, lagged effect on GDP controlling for other factors.

## **Snounu, Yasmin**

Oral Presentation

PhD, Educational Studies

Teacher Education

Dr. Joe Bishop

## **Advantages and Challenges of a backyard Research on Disability in Palestine**

Conducting backyard research on disability in Palestine requires

deep self-reflexivity, exploring positionality while claiming authorship. Through exploring disability and accommodations for students with disabilities in Palestinian higher education from macro and micro perspectives, I used a critical ethnographical research mode in my doctoral study, along with some aspects of Critical Discourse Analysis (CDA) as a method. While conducting interviews and observing, it was crucial to understand the advantages of being both an outsider and an insider at the same time, including having easy access to my participants and being more vigilant of what my participants shared as well as checking for inconsistencies. On the other hand, positionality and reflecting on my own feelings led me to be aware of the challenges of being an insider and an outsider. Positionality and self-reflexivity helped me focus on my participants' voices, pay attention to how my participants coded my questions during interviews, and avoid judgment.

Addressing questions about what language and concepts to use when describing macro-related factors causing physical disabilities was also a challenge of being an insider. As a Palestinian conducting a backyard research, I explored ways to conceptualize macro factors related to the practices of Israeli occupation.

## **Sobh, Warifa; Andrews, M John**

Oral Presentation

MA, Teaching English to Speakers of Other Languages / TESOL

Teacher Education

Dr. Zuzana Tomas

## **Teachers who Speak ESL: Perceptions of Games and Engagement in the Second Language Classroom**

The purpose of this paper is to report the results of a pilot study examining the perceptions of Chinese teachers on games as a form of engagement in the classroom. Teaching English to Speakers of Other Languages (TESOL) pedagogy espouses the importance of engagement in learning often through utilization of educational games. This paper will share the findings of a study that used games in the English as a Second Language (ESL) classroom to examine Chinese teachers' perceptions on utilizing games as engagement.

## **Souza, Michelle**

Poster Presentation

MS, Ecology, Evolution and Organismal Biology

Biology

Dr. Katy Greenwald

## **Population Genetics and Viability Analysis of Marbled Salamanders (*Ambystoma opacum*) on Kelleys Island, Ohio.**

Populations at the edge of a species range suffer more frequent episodes of fragmentation and isolation and are more likely to have reduced genetic variation than core populations. These peripheral populations exhibit reduced genetic diversity, higher rates of drift, loss of rare alleles, population declines, and local extinctions. Peripheral island populations have an average of 29% less allelic diversity than mainland populations and elevated extinction rates because of these effects. This study will investigate the impact of habitat isolation on genetic diversity in Marbled

# Abstracts Cont'd

Salamanders (*Ambystoma opacum*) on Kelleys Island. This is a disjunct population located at the northern limit of the species' range. It has been isolated from the mainland for ~4000 years and may be especially vulnerable to decline because of recent habitat degradation (encroachment by invasive plant species). We will analyze genetic data from historic (2005) and current samples to examine changes in effective population size and other metrics of genetic diversity. Mark-recapture will be used to estimate census population size, sex ratio, and juvenile recruitment. Understanding both genetic effective population size and census population size is important for determining the long-term viability of a population and assessing its probability of extinction. We predict that the isolated population will have decreased genetic diversity, heterozygosity, and allelic richness when compared with the earlier samples. We also predict that effective population size will have decreased over time because of a lack of recruitment, reduction in suitable habitat, and increasing temperatures. Temporal re-sampling of an isolated population with no immigration can provide evidence of genetic changes that have occurred due to isolation and can inform management of peripheral populations with potentially unique adaptations.

## Srygley, Sara

Poster Presentation

MA, Sociology

Sociology, Anthropology, & Criminology

Grigoris Argeros

## Racial/Ethnic Segregation Patterns in Ann Arbor and

## Ypsilanti, Michigan

While the overall trend of racial and ethnic residential segregation in the United States is one of decline since the passage of the Fair Housing Act in 1968, Michigan ranks among the highest states for racial and ethnic residential segregation. Residential segregation is a popular topic of discussion in the cities of Ann Arbor and Ypsilanti with local media regularly attributing it as a factor underlying socioeconomic differences and inequalities between the two cities. Local governments have made efforts to address racial/ethnic residential segregation within and between these communities, including issuing point-in-time reports and hosting community discussion events. However, there is little research which addresses racial/ethnic residential segregation patterns in Ann Arbor and Ypsilanti over time and how the two cities compare to one another. The purpose of this work is to descriptively explore racial and ethnic segregation in the cities of Ann Arbor and Ypsilanti. Using data from the decennial censuses of 1990, 2000, and 2010 and the 2013-2017 5-Year American Community Survey (ACS) various indices of residential segregation, such as the index of dissimilarity, isolation, and interaction are calculated between non-Hispanic whites, non-Hispanic Blacks, non-Hispanic Asians, and Hispanics. While these indices are calculated for the cities, they are also calculated at the county level as a means of comparison. In addition to these measures, descriptive statistics were assessed to track racial/ethnic population shifts between 1990 and 2017. The findings suggest that while the cities have much in common as it relates to racial and ethnic population shifts and segregation levels, there are notable differences with regards to

Black/White segregation and population growth patterns. This work suggests that Black/White segregation is an area of disparity which is particularly pronounced between the cities of Ann Arbor and Ypsilanti and which merits further research.

## Strother, Stephanie

Poster Presentation

MS, Orthotics and Prosthetics

Health Promotion and Human Performance

Rebecca Spragg

## Investing the Degree of Job Strain Presence in Orthotics and Prosthetics

Job strain and perceived working conditions are often overlooked for clinicians in the Orthotics and Prosthetics field. This study will research if job strain, defined as high demand and low control, is present in orthotic and prosthetic clinicians. The study will be conducted by evaluating scores of high demand and low control (job strain) in current practicing orthotists and prosthetists. A demographics survey along with the Copenhagen Psychosocial Questionnaire will be sent out through random sampling via a nationwide list serve. Individuals included must live in the United States and be certified orthotic and/or prosthetic practitioners. Individuals also must be working at least part time, described as working no less than 20 clinical hours every week. Due to the presence of job strain in other allied health fields it may also be present in the orthotic and prosthetic field, and this study seeks to determine if it exists.

## Theys, Alexandra

Oral Presentation

MA, Learning Disabilities

Special Education

Jennifer Desiderio

## ADHD and ACEs

The purpose of my research study is to investigate the relationship, if any, that may exist between ADHD diagnoses and Adverse Childhood Experiences (ACEs). The Centers for Disease Control and Prevention define Adverse Childhood Experiences as "potentially traumatic events that occur in childhood (0-17 years old) such as experiencing violence, abuse, or neglect; witnessing violence in the home; and having a family member attempt or die by suicide." Also included are "aspects of the child's environment that can undermine their sense of safety, stability, and bonding such as growing up in a household with substance misuse, mental health problems, or instability due to parental separation or incarceration of a parent, sibling, or other members of a household." Attention Deficit Hyperactivity Disorder is defined by the Centers for Disease Control as "one of the most common neurodevelopmental disorders of childhood." The CDC states that the majority of individuals with ADHD are initially diagnosed as a child and that it is likely to follow into adulthood. There are three types of ADHD diagnoses: Predominantly Inattentive Presentation, Predominantly Hyperactive-Impulsive Presentation, and Combined Presentation.

As research has already shown, individuals who have experienced ACEs have heightened risks and increased percentages of other

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lifelong medical diagnoses including risky health behaviors, chronic health conditions, low "life potential," and early death. Symptoms of trauma can often present themselves in similar forms as the symptoms of attention disorders. The focus of my research is on adults with a valid medical diagnosis of ADHD and to what degree, if any, they have experienced ACEs in their lifetime. From there, my intentions are to find, analyze, and describe any potential patterns between the two topics.

## Totsuka, Yui

Oral Presentation

MA, English Linguistics

English Language & Literature

Dr. Daniel Seely

### The Syntax and Interpretation of Double Negatives and Negative Concord

Two negatives in a sentence are considered to either have a double negative (DN) interpretation or a negative concord (NC) interpretation, and some claim that languages are either NC or DN and that their use does not coexist in a language. Consider the sentence, "The dog didn't eat nothing today". For a NC reading, only one negative is interpreted and results in the meaning "The dog didn't eat anything today". For a DC reading, both negatives are interpreted, counteracting the other and results in the meaning "The dog ate something today". So-called 'Standard English' is considered to be a DN language and NC is more associated with non-standard varieties. However, in some cases, the NC interpretation is available for standard English as well. Although it is expected that the context of the speech and acoustic cues such as stress play a role in the interpretation, this presentation will examine how the deep syntactic structure of phrases with two negatives determines the DN or NC interpretations in English.

## Usmonova, Nasiba

Oral Presentation

MS, Applied Econometrics

Economics

Mehmet Yaya; James Saunoris

### Gender Pay Gap in the Banking Sector: Has the Great Recession Changed the Obvious?

In a highly competitive global economy, employee diversity offers a proven route for innovation and organizational performance. While it is generally accepted that gender should not be a barrier on equal pay for work requiring equal skills, efforts, responsibilities, and working conditions, women are still under-represented at all levels of the companies around the world. Furthermore, unequal pay for equal job implemented by both qualified men and women results in gender discrimination in the career development of women in the labor market. Gender discrimination holds capable women from further personal growth and contribution to economic development. This problem particularly reveals itself in the banking and financial sector. This study examines the impact of the Great Recession on the gender wage gap. Using the U.S. Census American Community Survey microdata for bank employees from 2001 to 2017, the study will analyze the changes in the pay gap between male and female employees in the financial

sector, before and after the Great Recession.

## VanScoyoc, Haley

Oral Presentation

MS, Ecology, Evolution and Organismal Biology

Biology

Dr. Cara Shillington

### Assessing Behavioral Differences Between Social and Sub-social Tarantula Species

The survival of an organism is directly dependent upon their physiological characteristics and how they behave within their environment. The pace-of-life syndrome links these two important concepts, in that the physiology drives behavioral responses. In this study we used a combination of life history and metabolism to understand how various tarantula species behave. To determine if there was a correlation between metabolism and behavioral responses, we compared old- and new-world lineages as well as solitary and sub-social species. Old-world species typically exhibit more aggressive and active behavioral phenotypes; therefore, we predicted these species will have higher metabolic rates (MRs) compared to new-world species. In addition, we expected lower levels of activity and aggression among social species, as previous work has suggested living in social groups lowers individual's MR. We tested this by using a combination of physiological data and behavioral assays. We used an open-flow respirometry system to measure resting metabolic rate (RMR) as our physiological component. Next we conducted two assays to examine behavioral responses: 1) a classic open-arena test to examine exploratory behaviors when presented with a novel environment, simulating perceived predation risks, and 2) a prod test to observe direct responses to a stimulus, simulating a predator. We expected individuals with higher MRs to explore far more in the open arena and exhibit more aggressive responses to the stimulus when compared to individuals with lower MRs. Our current metabolic data showed that indeed old-world species had higher RMRs compared to new-world species, however, interestingly, the sub-social species actually had higher RMRs than the solitary species. Future steps include adding behavioral data which is still being collected. Understanding the relationship between RMR and behavior will offer greater insight to how these elusive and understudied organisms live and evolved.

## Venglarcik, Brittany

Poster Presentation

MS, Polymers and Coatings Technology

Engineering Technology

Vijaykumar Mannari

### Investigation of Small Molecule Migration of Additives in Multi-Layer Coatings

Many automotive coating applications require the use of multiple layers to provide different specific roles to help the full system. In addition to the typical pigments, binders, and solvents, many coatings require the use of additives to overcome issues in supporting the multi-layer application process and/or their performance. The additives used are generally small molecules, thus increasing mobility within and between coating layers. This

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mobility, however, is not always understood and is typically unable to be traced or tracked throughout the coatings. Formulators would benefit from a mechanistic understanding of how these small molecules migrate between layers of wet-on-wet multi-layer coating systems. This research aims to identify molecule migration between wet-on-wet applied coatings, aiming to understand how the migration can change with partial cure of the individual layers, and how different analytical means that may be employed to investigate this migration.

## Vigliotti, Zachary

Oral Presentation

BS+MATR, Athletic Training Combined

Health Promotion and Human Performance

Aaron Struminger

### Using Reaction Time as an Identifier for Future Concussion Risk

**Introduction:** The number of reported concussions increased to 3.8 million in 2014. This steady rise in concussions calls for health care providers to determine effective prevention techniques so that long-term consequences can be reduced. Reaction time may be one method of identifying athletes who go on to suffer a concussion, as athletes who are unprepared for blows are at greater risk of suffering these injuries. This study will attempt to determine if Division I collegiate athletes with slower reaction times are more likely to suffer a concussion compared to those with a faster reaction time. **Hypothesis:** We hypothesize that athletes who go on to suffer a concussion will have slower pre-injury reaction times than those that do not go on to suffer a concussion. **Methods:** This retrospective analysis will be initiated by identifying athletes who suffered a concussion in their career at a specific Division I University. Researchers will analyze the data and participants will be separated into four groups based on concussion prior to and after university enrollment. Participants will then be matched based on sport, position, sex, weight, and height. ANOVA analyses will be run between groups to determine differences in reaction time among groups. **Conclusion:** The researchers expect to find that athletes with a slower reaction time are more likely to receive a concussion in their collegiate careers than those with a faster reaction time. If this hypothesis holds true, reaction time can be used as a predictor of concussion, and preventative programs can be investigated in an attempt to improve reaction time and potentially reduce the number of concussions annually.

## Wallen, Leslie

Poster Presentation

MA, Special Education

Special Education

John Palladino

### A Phenomenological Study on the Inequality of Students with IEP's in the Secondary Music Classroom

In March 2017, the Supreme Court of the United States (SCOTUS) issued a unanimous decision in the Endrew F. v Douglas County School District of Colorado case about the scope of what should constitute inclusive special education programming in

K-12 schools. In response to the ruling, this proposed study will explore how music educators in secondary schools view working with students with special needs in their performance based classes, their teacher preparation program as it relates to working with such students, and how we can increase the number of students with disabilities in the music classroom extending beyond K-5 general music. Through this in-depth, qualitative study, interviews with educators will be conducted. The collected data will be analyzed as part of this proposed phenomenological study. Dissemination of the findings will offer a unique contribution to the literature that has not otherwise appeared, but for which scholars and educators need to further enhance the education of all students.

## Werner-Tschoeke, Patricia

Oral Presentation

MS, Interior Design

Visual & Built Environment

Shinming Shyu

### Energy Analysis of a Residential Building in Curitiba, Brazil, using Passive Design Strategies

As the impact of global warming on climate has increased over the years, energy efficiency in buildings is a current research topic. The International Energy Agency and United Nations Environment Programme (2018) reported that residential buildings are the third largest source of emissions in the building and construction sector. This sector is responsible for 36% of the final energy use and 39% of the entire energy-related carbon dioxide emissions. As a result of the high levels of greenhouse emissions, the Paris Agreement was signed. The agreement was settled to comprise countries to mainly reduce greenhouse gas emission. It would help to hold the increased average temperature below 2°C (Rogelj et al., 2016) and mitigate the climate changes. For that purpose, research on how to decrease energy consumption should be performed in residential buildings in countries like Brazil, that signed the agreement. The proposed study adopts computational simulation to understand and analyze the thermal performance of different insulation materials, and to compare results between attached and detached residential building types. To further address the environmental and feasibility challenges, environmentally friendly materials will be examined for the insulation layer and their costs will be compared.

## Winkelseth, Meagan

Oral Presentation

MA, Communication

Communication, Media, & Theatre Arts

Dennis O'Grady

### The Stigma Management Strategies of Prison Inmates Ages 50-Plus Seeking Pen Pal

Prison inmates are a highly stigmatized group. Incarceration constitutes their deviant entitativity and marginalizes them from mainstream society. Many inmates seek diverse interpersonal relationships with non-incarcerated individuals in online contexts

## Abstracts Cont'd

to cope with social isolation and (re)construct a distinct voice to counteract the homogeneous identity prison begets. However, the difficulties some inmates face when branding this virtual representation of self may be compounded by negative perceptions of their middle or old age. This study employed Meisenbach's (2010) Stigma Management Communication Theory (SMCT) to investigate how inmates ages 50-plus communicatively manage their stigmatized status and persuasively garner responses from non-incarcerated individuals in online personal ads. Forty inmate profiles from <https://www.meet-an-inmate.com> were examined using rhetorical and qualitative methods. The data analysis revealed four overarching themes: (a) accepting the stigma of incarceration, (b) avoiding the stigma of incarceration, (c) reducing the offensiveness of incarcerated stigma, and (d) playing into the ideology of forsaken loneliness. The findings illuminate how inmates ages 50-plus wield stigma management strategies that accept and/or challenge the relations of power and privilege between them and non-incarcerated individuals to increase the likelihood of interpersonal interaction. The discussion extends understandings of stigma management communication and demonstrates a need for future research beyond and in relation to the inmate population, thus augmenting the heuristic value of SMCT.

### **Yelonek, Christopher**

MS, Historic Preservation

Geography & Geology

Danny Bonenberger

### **Motor City Transit**

Many people ask is Detroit still the Motor City? The people who ask Detroit's current role in the automotive industry, may be surprised to hear Detroit was once well known for its streetcar system. Local historic districts inform locals and visitors alike, what is important to the community, i.e., a sense of place. With a sense of place, locals are able to create an unique identity for and a reason to invest themselves in their community. By focusing on Detroit's historical districts, particularly Downtown, that the sense of place was influenced by the city's streetcar system. Creating a map of Detroit's 1950 streetcar lines imposed upon modern day Detroit with its buildings, roads, Downtown parking lots, and parks, is key to understanding transit's role in the city. However, Detroit's streetcar system was removed in 1956. To understand Detroit's slow decline, the city's population, urban renewal, and economic trends from 1956 to today will be examined. Through the city's focus on the automotive industry, Detroit's sense of place has slowly eroded away.

### **Zareanshahraki, Forough**

MS, Polymers and Coatings Technology

Engineering Technology

Vijay Mannari

### **"Green" Wood Coatings: Leveraging Experimental Design in Optimizing Coating Performance**

Radiation-curable urethane acrylates have been extensively used and successfully implemented in the wood coatings industry thanks to providing proper balances of mechanical and chemical properties. However, isocyanates, as one of the main building

blocks in the conventional synthesis of the urethane acrylates, are highly hazardous both in the manufacturing and the application, and therefore, are targeted for environmental regulations such as limited occupational exposures. In this regard, this study proposes the development of urethane acrylate oligomers through non-isocyanate approaches and their application in wood coatings.

Two non-isocyanate polyurethane acrylate oligomers (NIPU-ACs), NIPU-AC-2 with longer urethane chains and higher flexibility, and NIPU-AC-1 with lower urethane chains, were synthesized as main building blocks of radiation-curable wood coatings. Next, 20 series of wood coating systems were formulated using a D-optimal mixture experimental design method to find the optimized quaternary mixtures composed of the two synthetic NIPU-ACs, and TMPTA and DPGDA as reactive diluents.

Results revealed that the formulations rich in NIPU-AC-2 showed higher impact resistance, scratch resistance, and pull-off adhesion, which was attributed to the flexible structure of this oligomer. On the other hand, coatings including higher contents of NIPU-AC-1, which induces XLD to the system, demonstrated higher Tg and pendulum hardness. Finally, the coatings rich in DPGDA and NIPU-AC-1, were found to have the highest solvent-resistances. Evaluation of the optimal coatings not only validated the predictability of models, but determined that the coatings have promising stain and abrasion resistance, and good thermal stability. Radiation-curable NIPU-ACs have a great potential for development of low-VOC wood coating applications as a sustainable alternative for conventional wood coatings.



# Thank you!!

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