

2018

Celebration 2018 Abstract Booklet and Student Presentation Schedule

Xavier University - Cincinnati

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Celebration of Student Research and Creative Activity

April 20th 2018

*Sponsored by the College of Arts and
Sciences, Office of Undergraduate Research and March Gladness*

On behalf of the College of Arts and Sciences and the Office of Undergraduate Research, we'd like to welcome you to Celebration of Student Research and Creative Activity. Once again, the Celebration is being funded completely through donations from students, friends and alumni of the University through the March Gladness Campaign. This successful fund-raising campaign, which saw undergraduate research receive the fourth largest number of donations, gives concrete evidence of the value of undergraduate research and its power to transform the lives and future careers of our students.

Undergraduate research provides the opportunity for students to become practitioners of a discipline. In the classroom, students study theology, biology and art; in research, they become theologians, biologists and artists. Importantly, undergraduate research strengthens the bond between students and their faculty mentors. These relationships, forged doing field work, painting in the artist's studio, or reading classic works in the library archives, are relationships that continue long after the research is complete and students have left the University to make their own mark on the world.

The abstracts showcased herein represent the work of over 160 students, working with nearly 40 faculty mentors from numerous departments and all three colleges.

To the student presenters: Congratulations on the work you have completed on your projects. Know that your influence on your project, your research group, and Xavier University is significant.

To the faculty mentors: Undergraduate research does not exist without the support of faculty research mentors who place the development of their own students above their own professional goals. Know that your efforts are noticed and greatly appreciated.

To the supporters of undergraduate research: Thank you for the support, financial and otherwise, that allows us to celebrate and recognize the work done over the past year, while continuing to make these opportunities available to all interested students.

And finally, to the student attendees: May you be inspired by the work of your fellow students such that one day you will take advantage of similar opportunities to more deeply engage with your chosen discipline.

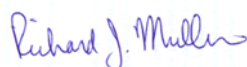
Sincerely,

Dr. David Mengel



Dean, College of Arts and Sciences

Dr. Richard Mullins



Director, Office of Undergraduate Research

KEYNOTE SPEAKER

Jennifer Fellingner

Jennifer Fellingner, currently serves as the vice president for marketing and communications at Hope College in Holland, Michigan, where she leads a 25-person division that leads brand management, creative services, events and conferences, and internal and external communications. Her path to that role was filled with a few twists and turns (for which she was well prepared, thanks to a strong liberal arts education from Xavier University!)

As a student at Xavier, Jennifer participated in the National Conference of Undergraduate Research at Union College (Schenectady, NY), University of North Carolina at Asheville and University of Texas at Austin. After earning a Bachelor of Fine Arts from Xavier University in 1996, she lived in Ireland and England for a year, spending a summer as an artist-in-residence at the Burren College of Art in Ballyvaughan. In 2002, she earned a Master of Arts in art history at the Ohio State University, then returned to England to work in the British Museum's Department of Prints and Drawings, where she conducted independent research as a Michael Bromberg Fellow.

Throughout her career, Jennifer has been motivated by a passion for visual and written communications. That passion drove her work as curatorial assistant in the Department of Prints, Drawings and Photographs with the Cincinnati Art Museum and an editor with F+W Publications. She moved to Olympia, Washington, in 2005, and discovered another passion — K-12 and higher education. She served as assistant director of communications for the Washington State School Directors' Association, director of communications for the Association of Washington School Principals and vice president for marketing and communication at Saint Martin's University. While in Olympia, she had the opportunity to serve on the board of the award-winning Hands On Children's Museum and was named to The Business Examiner's "40 Under Forty" list for the South Puget Sound.

In 2014, she returned to the Midwest to become vice president at Hope College. Today, she enjoys living by beautiful Lake Michigan, being close(r) to family in Cincinnati and teaching her husband and their 6- and 8-year-old sons to be Michigan's biggest Xavier fans.

UNDERGRADUATE RESEARCH AWARD RECIPIENT

Zenab Saeed

Zenab Saeed, a senior Biology and Psychology double major with minors in Chemistry and Peace and Justice Studies, began her research involvement with the Department of Psychology during her sophomore year under the supervision and guidance of her research mentor and professor, Dr. Tammy Sonnentag. She studied the impacts of social and dimensional peer comparisons on individuals' self-evaluations and affect, focusing on the moderating role of self-compassion. Her research project was presented at the 2018 Midwestern Psychological Association meeting and will be published in the upcoming issue of the Psi Chi Journal of Psychological Research. In addition to her research involvement at Xavier University, Zenab is involved in research experiences at the Cincinnati Children's Hospital Medical Center, where she works at a gastroenterology lab that studies the molecular and cellular mechanisms of liver development, regeneration, and disease pathogenesis via genetic, molecular, embryology, biochemical, and cell biological methods through the zebrafish model. Additionally, Zenab was involved with a research project with the University of Cincinnati Division of Surgical Oncology in the summer of 2016 focused on examining the surgical resection criteria of intraductal pancreatic mucinous neoplasms by comparing patient data and malignancy. After graduating, Zenab is planning on attending medical school to pursue a career as a physician.

UNDERGRADUATE RESEARCH MENTOR OF THE YEAR (URMY)

Tammy Sonnentag, PhD.

Dr. Sonnentag earned her B.S. in psychology from the University of Wisconsin-Stevens Point in 2006. She then earned her M.S. and Ph.D. in psychology, with a focus in developmental science, from Kansas State University in 2010 and 2014, respectively. Dr. Sonnentag joined the faculty at Xavier University in fall 2014.

Dr. Tammy Sonnentag's research interests are primarily in the area of moral psychology, with specific interests in understanding the personal, social, and developmental factors that influence individuals' willingness to stand up for their beliefs and values despite the behavior of others. In addition to pursuing her own research interests, Dr. Sonnentag eagerly seeks collaborations with students, encouraging them to ask and answer novel research questions that advance the field of psychological science. Dr. Sonnentag's students have been highly successful, making important scientific contributions to the field of psychology. During her four years at Xavier, Dr. Sonnentag has mentored or co-mentored six peer-reviewed papers by undergraduate students, published in undergraduate journals. One paper, by Lindsey Mooney (2016), published in the Journal of Psychological Inquiry was recognized with the "Elizabeth A. Dahl, Ph.D. Award for Excellence in Undergraduate Research," which acknowledges exemplary scholarship by undergraduate students. Additionally, on two occasions, Dr. Sonnentag's students have earned authorship on peer-reviewed publications in professional journals. Finally, students who work with Dr. Sonnentag

are encouraged to disseminate their findings through presentations at regional and national conferences. Since fall 2014, Dr. Sonnentag's students have presented 26 independent research projects at conferences such as the Midwestern Psychological Association and Society for Personality and Social Psychology. Dr. Sonnentag has a passion for research, and her passion is sustained by supporting students as they experience the inherently challenging and intellectually stimulating nature of research process.

MARCH GLADNESS SUMMER RESEARCH FELLOWS

Over the course of two days in March, nearly 200 students, alumni, professors, staff members, and friends of the University came together to show their support for undergraduate research at Xavier through participation in the March Gladness fundraising campaign. Attracting the fourth largest number of donations on campus, undergraduate research received nearly \$10,000. These funds are going directly back to students through the funding of the Celebration of Student Research and Creative Activity, partial support of student travel to meetings, the funding of the Xavier Undergraduate Research Award, and the support of two March Gladness Summer Research Fellows. The recipients of this year's March Gladness Summer Research Fellowships are Kelly Delano and Nicholas Lubanski.

Kelly Delano, a graduate of East Grand Rapids High School in Grand Rapids, MI, is a first year Mathematics major as well as the Financial Chair of Alternative Breaks and a member of the Student Alumni Association at Xavier. She will work with Dr. David Gerberry of the Department of Mathematics. During the summer, she and Dr. Gerberry will design and implement algorithms that create fair and competitive Congressional districts in order to address the issue of partisan gerrymandering.

Nicholas Lubanski is a graduate of Turpin High School in Cincinnati, Ohio, is a third-year Political Science major with a minor in Natural Sciences. He will work with Dr. Mack Mariani of the Department of Biology. This summer, he will be updating and extending the Ohio General Assembly Service Database, 1951-2016, to include district-level demographic data. In his research, Nick will be assessing the impact of the Supreme Court's one-man, one-vote rulings from the 1960s on the constituencies represented by Republicans and Democrats in the Ohio House of Representatives and Senate.

ART

Frank Geiser	<u>ASKESIS: IMAGES OF CONTEMPORARY ASCETICISM</u>
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Gabrielle Sapata	<u>SAUDADE: LONGING FOR CULTURE</u>
Susana Duffy	<u>TAXONOMY OF THE MIND</u>
Clare Dunn	<u>THE INTERNSHIP</u>

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Victoria DiMattio	<u>FEMORAL ACETABULAR IMPINGEMENT AND LABRUM TEAR IN ADOLESCENT MALE FOOTBALL PLAYER</u>
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Anna Chipman , Erin McNicholas	<u>COMPARISON OF MATERNAL BEHAVIOR OF ZOO CAPTIVE BONOBOS IN INDOOR AND OUTDOOR EXHIBITS</u>
Alyssa Gehring	<u>COMPARISON OF SIMULTANEOUS MEASURES OF ACCOMMODATION USING THE POWERREF 3 AND GRAND SEIKO WAM-5500</u>
Kyra Bufi	<u>CRANIAL INDICES OF THE COMPLEXITY OF SOCIAL BEHAVIOR IN EXTANT AND EXTINCT CANIDS</u>
Blaine Griffiths, Phil Cleves, Kion Rashidi	<u>DETERMINING BEER COLOR AND DENSITY DUE TO VARIATION IN STRAINS OF YEAST DURING FERMENTATION</u>
Nicole Broner, Seth Buchholz, Adonis Hawari, Heather Little	<u>DETERMINING THE EFFECTIVENESS OF OVIPOSITION TRAPS FOR COLLECTING LARVAL MOSQUITOES IN URBAN ENVIRONMENTS OF CINCINNATI, OHIO</u>
Clayton Traylor	<u>EFFECT OF INVASIVE ASIAN LONGHORNED BEETLE (<i>ANOPIPHORA GLABRIPENNIS</i> [MOTSCHULSKY]) ERADICATION ON DIVERSITY OF NATIVE CERAMBYCIDS IN SOUTHWESTERN OHIO</u>
Dan Sedlacek	<u>EFFECT OF STREPTOMYCES ON SOIL AGGREGATION</u>
Ashley Reinert	<u>EFFECT OF STREPTOMYCES ON SOIL AGGREGATION LEVELS</u>
Akhil Kavuri, Carly Alfano, Libby Acker, Roger Gusloff	<u>METHICILLIN-RESISTANT <i>STAPHYLOCOCCUS AUREUS</i> PREVALENCE IN SOCCER PLAYERS AT XAVIER UNIVERSITY</u>
Samantha Estes	<u>PERSISTENCE OF <i>METARHIZIUM BRUNNEUM</i> <i>MICROSCLEROTIA</i> UNDER FOREST CONDITIONS</u>

Francis Billena, Katherine Chadwick, Ashleigh Nuñez	<u>RAINFALL AND FECAL COLIFORM LEVELS IN MILL CREEK</u>
Ellery McElfresh	<u>SKULL AND MANDIBULAR MORPHOLOGY IN EXTANT AND EXTINCT COYOTES</u>
Rachel Neff, Alyssa Shafor, Ryan Villaver	<u>TEMPORAL ASSESSMENT OF HABITAT QUALITY AND AQUATIC MACROINVERTEBRATE COMMUNITIES IN THE MILL CREEK WATERSHED, CINCINNATI, OHIO</u>
Moira Smith, Riley Benson, Joshua Menke, Patrick Williams, Seth Tirrell	<u>THE EFFECTS OF CANOPY GAP VARIATION ON SAPLING SPECIES RICHNESS</u>
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Ashley Hardee, Gabrielle Dangel	<u>DEVELOPMENT OF ANALYTICAL METHODS FOR BUTYLORGANOTIN COMPOUNDS</u>
Eric Siegesmund	<u>MICROFLUIDIC DESIGN FOR CHEMICAL ANALYSIS</u>
Walter Fitschen	<u>NEW α-HYDROXY-ACID LIGANDS AND THEIR Al^{3+}, Fe^{3+}, AND Ga^{3+} COMPLEXES</u>
Thomas Martin, Jordan Seibold	<u>OPTIMIZING TRACE HEAVY METAL DETECTION THROUGH CLOUD POINT EXTRACTION</u>
Cody Beldon	<u>POLYMER CHEMISTRY IN A CLASSROOM SETTING</u>
Tyler Gibson, Robert Anderson, Connor Lauth, Ryan Kosturko	<u>STEREODIVERGENT SYNTHESIS OF (+) - AND (-) -PILOSININE</u>
Mario Cribari	<u>UNDERSTANDING SCHIZOPHRENIA: NEURONAL NITRIC OXIDE SYNTHASE</u>

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Emily Lewis	<u>PIECING TOGETHER ROMAN LIFE AND ART: THE IMPACT OF SOCIETAL CHANGES ON DEVELOPMENTS IN ROMAN MOSAICS</u>
Brian Long	<u>THE DEATH OF TRAGEDY: EXAMINING NIETZSCHE'S RETURN TO THE GREEKS</u>
Courtney Garside	<u>THE MEANING AND VALUE OF A LIBERAL ARTS EDUCATION: FROM CICERO, JEFFERSON, AND CONTEMPORARY LIBERAL ARTS COLLEGES</u>

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Emily Lowe	<u>NAMI AD CAMPAIGN</u>
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Eseoghene Obrimah	<u>WHO NEEDS A PLAN?</u>
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Chase Seiller	<u>SOCIAL AND LEGAL INFLUENCES ON COLLEGE STUDENTS' PERCEPTIONS OF DRUG RISK AND SOCIAL ACCEPTABILITY</u>
Katherine Frank, Blair Verfurth	<u>SPORTS FANS' PERCEPTIONS OF INTIMATE PARTNER VIOLENCE</u>
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Sharon Jarmusik	<u>THE EFFECT OF COGNITIVE OR PHYSICAL EXERCISE ON IMPULSIVITY RATES</u>
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Joe Finke

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[SOCIAL WORK](#)

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Colleen Culley

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ASKESIS: IMAGES OF CONTEMPORARY ASCETICISM

Frank Geiser (Ms. Suzanne Chouteau)
Department of Art

My project, titled “Askesis” is an ongoing photographic exploration of contemporary asceticism documenting the daily lives of those living within ascetic traditions. Askesis is the Greek word from which we get the English word “Asceticism.” It originally referred to the exercise or training a warrior does to strengthen her/his body. Breaking down the body gives it the chance to grow stronger. Contemporary asceticism can be understood in a similar manner: Rather than understanding the phenomena of asceticism as the process of shunning an external world, ascetics live in a way designed to fully engage with impactful aspects of their life, excluding action unrelated to mystical or salvific importance. My project is related to, and continuing the work of, Sebastiao Salgado’s recent photographic series “Genesis.” The social documentary photographer’s project saw a shift in emphasis away from the raw portrayal of the harms stemming from global industry and greed towards an attempt to portray the parts of our earth which are untouched by it. As such, Salgado’s work is a rejection of human social weaknesses. He finds an answer to injustices present in his previous work by asserting the importance of connecting to nature on a global scale. “Genesis” provides the imagery for beginning to disassemble the narrative of unfettered global consumption. “Askesis” provides a working method for the continuation of this idea by attempting to portray the compelling aspects of simplicity, mindfulness, and a search for mystical truth in contrast to narratives present in consumerist cultures.



DISCONNECTIONS

Ryan Collins (Ms. Suzanne Chouteau)
Department of Art

Through various printmaking and graphic design processes, I am exploring hookup culture as defined by Donna Freitas in her book *The End of Sex: How Hookup Culture is Leaving a Generation Unhappy, Sexually Unfulfilled, and Confused About Intimacy*. My representations are empathetic to both men and women as hookup culture ultimately undermines our generation’s ability to develop meaningful relationships. We struggle with direct communication and truly valuing one another as human beings. My subject matter is meant to show the various layers within this discussion. How people are acting due to the culture that they’re forced to live in versus the type of culture they wish live in: one of mutual respect, understanding, and vulnerability. The disconnections bred by hookup culture do not have to be perpetuated; my work aims to rekindle a notion of culture where loving connections breed meaningful lives.



SAUDADE: LONGING FOR CULTURE

Gabrielle Sapata (Ms. Suzanne Chouteau)
Department of Art

As identity and nationality are in the forefront of today's societal issues, it is essential that we remember where we come from. I hope to encourage individuals to reflect on their own heritage and others' by sharing the legends and traditions from my own Portuguese ancestry. Through printmaking and design, I aim to answer an essential question: why is culture important? My work examines this question by bringing old cultural practices into the present through the utilization of modern technology. All of my works are hand carved and laser etched woodcuts. Once manually printed, a traditional method, the prints are then digitally animated. This combination of the present and the past makes an antiquated culture more accessible. Culture too often is extinguished as society evolves. Through innovation, I hope to highlight Portuguese culture — and to encourage others to reflect on their own roots, advocating for the preservation of cultural identity even in this evermore globalized world.



TAXONOMY OF THE MIND

Susana Duffy (Mr. Bruce Erikson, Mr. Kellp Phelps)
Department of Art

The purpose of my work has been to explore the vastly expanding realms of my subconscious through the utilization of aspects seen in the automatic surrealist art movement. A movement made popular in the early 20th century in which artists suppressed conscious control over the making process. The results of my work both in painting and in sculpture have seemingly biomorphic forms closely resembling objects seen in nature. Only after the finalization of a piece do I attempt to interpret its meaning and identify the outside influences involved in the design. I aim to likewise allow the viewer the ability to interpret my work with whatever subjectivity their subconscious chooses to see.



THE INTERNSHIP

Clare Dunn (Ms. Suzanne Chouteau)
Department of Art

The best narratives reflect the real world in some way. That is the idea at the core of this suite of work. "The Internship", as a group of works and in its final book form, disassembles current events that I find disturbing, intriguing, or worth addressing and reassembles them into the narrative of an imagined world. Most of the pieces in this show are meant as concept pieces not the final story but pieces displaying the thought process of my work. They all have a quality of hand craftsmanship all hand drawn, hand pulled, and hand sculpted. This

further presents that while the final story told is definitely science fiction, it's grounded in reality both physically, and conceptually. The book itself is entirely self-written, self-illustrated, and self-published, with myself having overseen and executed the entire process from story conception to final printing. Set in an alternate universe where people with special abilities have warranted legislation and education to protect themselves, "The Internship" is a book about a young group of "Modmen" trying to supplement ineffectively taught schooling by applying to a newly formed internship program in a local philanthropic organization. It reflects our world in its commentary on the failure of standardized schooling in educating America's youth, the harmfulness of whitewashing history, and the general dismissal of people who are not white, heteronormative, or members of the upper class. Through this exhibition, I'm presenting an understanding of how narrative and society shape each other, and the importance of finding truth in both.

ATHLETIC TRAINING



FEMORAL ACETABULAR IMPINGEMENT AND LABRUM TEAR IN ADOLESCENT MALE FOOTBALL PLAYER

Victoria DiMattio (Dr. Lisa Jutte)
Department of Sports Medicine

An eighteen-year-old, male, football player with history of a right anterior superior iliac spine avulsion fracture one year ago, reported right hip pain to his athletic trainer and denied any new mechanism of injury. The athletic trainer evaluated the patient and noted decreased right hip extension flexibility. Based on the patient's history, the athletic trainer assessed him with a hip flexor strain, and began conservative treatment: rest; pain management with ice and high-volt electrical stimulation; hip strengthening with elastic resistance for hip flexion, extension, abduction, and adduction; and stretching the hip flexors. After two weeks of treatment, the patient showed little improvement. Upon reevaluation the athletic trainer noted significant bilateral decreases in right AROM and PROM for hip flexion, extension, internal and external rotation, abduction and adduction due to pain. The patient's resisted hip flexion was decreased on the right, 3+/5. The hip scouring test, the Patrick test, and the "C" sign were positive. His athletic trainer referred him to the team physician. Differential Diagnosis: Hip labral tear, femoral acetabular impingement (FAI), Legg-Calve-Perthes, or hip flexor strain, non-union healing of avulsion fracture Treatment: Team physician ordered an X-ray and diagnosed the patient with a hip flexor strain. The team physician prescribed naproxen 220mg BID, ice, and advised the patient to improve his right hip flexor flexibility. No improvements were noted after two additional weeks of conservative treatment, so the patient was referred to an orthopedist who ordered a contrast MRI of the right hip. The orthopedist prescribed the patient 75 mg diclofenac BID, and methylprednisolone 4mg package in addition to the naproxen that was prescribed by the team physician. The MRI revealed a chronic labral injury and a Cam-type FAI. The orthopedist diagnosed the patient with an acetabular labrum tear and FAI. The orthopedist also noted the patient had both an increased anterior pelvic tilt and lumbar lordosis. The orthopedic ordered an ultrasound guided cortisone injection and physical therapy with an emphasis on increasing core strength and hip flexibility to reduce the pelvic tilt and lumbar lordosis. After the cortisone injection, the patient reported decreased hip pain. After two weeks of physical therapy, the patient showed improved hip flexibility, core strength, athletic function, and posture. The athletic training staff noted increased hip flexion strength (4+/5) approximately six weeks after the initial report of hip pain. The orthopedist allowed the patient to gradually return to football practice with a hip flexor elastic wrap. Uniqueness: There is little information in the literature on non-operative treatment for hip labral tears and FAI. This patient found positive results with conservative treatment despite his co-morbidities of FAI and labral damage. Conclusion: This 18 year-old-patient was diagnosed with FAI and a labral tear. The combination of FAI and labral tears are rarely treated non-surgically. This patient experienced positive results with conservative treatment, and was able to return to competition in less than eight weeks. Clinical Implications: Clinicians should consider conservative treatment options when treating patients with FAI and labral tears.



**COMPARISON OF MATERNAL BEHAVIOR OF ZOO CAPTIVE BONOBOS
IN INDOOR AND OUTDOOR EXHIBITS**

Anna Chipman, Erin McNicholas (Dr. Jennifer Robbins)
Department of Biology

Bonobos are the closest living relative to humans and, as such, can be studied to discover more about maternal behavior in the primate family. Bonobo maternal behavior are the interactions between the mother bonobo or non-mother bonobo and the infant. This study looked at the difference in maternal behavior by comparing the actions in the indoor and outdoor exhibits. It was hypothesized that there would be a significant difference between the indoor and outdoor bonobo exhibits due to the difference in exhibit size and interaction with zoo visitors. The behaviors were recorded and tallied according to exhibit. Three observations were made for each exhibit and lasted for an hour. These observations were done once a week in October and November of 2017. There was no significance found between the maternal behaviors in the indoor and outdoor exhibit. There was a large percent difference especially in protectiveness and proximity to non-mother. The indoor exhibit did have a trend that was not significant, for the protective behavior in the indoor exhibit. While there was no significance found, the percent differences were large enough to show that future studies could expand on this subject to learn more about the maternal behavior of the bonobos in indoor and outdoor exhibits.



**COMPARISON OF SIMULTANEOUS MEASURES OF ACCOMMODATION USING THE POWERREF
3 AND GRAND SEIKO WAM-5500**

Alyssa Gehring (Dr. Dorothy Engle, Dr. Tawna Roberts)
Department of Biology; Akron Children's Hospital Vision Center

Refractive error is the relative difference between the location of the focused image and the retina, resulting in myopia (near-sightedness) or hyperopia (far-sightedness). Accurate measures of refractive error are crucial for understanding retinal image quality and how it impacts the ability for people to see clearly. Currently, the gold standard for measuring refractive error is a subjective refraction. However, that is not always the case, especially in children. Objective measures of refractive error are able to be obtained using autorefractometry. The gold-standard for autorefractometry in adults is the Grand Seiko WAM-5500 autorefractor. The PowerRef 3 is a newer instrument that also measures refractive error, but it has been designed to be used in children. Thus, it is important to validate the PowerRef 3 by comparing the two instruments. The purpose of the study was to assess the agreement of accommodative measures between the PowerRef 3 and the WAM-5500. Monocular, simultaneous measures of refractive error were obtained from the right eye by the WAM-5500 and the PowerRef 3 with a hot mirror placed 45 degrees in front of the eye. Subjects (n=32, 15-46 years old) viewed a high-contrast Maltese cross at 3M (OD) and five near distances 50, 40, 33, 25, and 20cm (2, 2.5, 3, 4, and 5D demands, respectively). Bland Altman plots showed the total mean difference (bias) of -0.02 ± 0.51 with a 95% LOA of ± 1.00 D. There was no significant relationship between the differences in measures and mean refractive error ($P = 0.77$). Bland Altman plot using the absolute mean difference showed no significant relationship between the differences in measures ($P=0.227$) and the mean refractive error. Agreement was high between the two instruments for all demands tested. The agreement between the two instruments is similar to previously

reported levels of agreement between the WAM-5500 autorefractor and subjective refraction, retinoscopy, and autorefraction.



CRANIAL INDICES OF THE COMPLEXITY OF SOCIAL BEHAVIOR IN EXTANT AND EXTINCT CANIDS

Kyra Bui (Dr. William Anyonge)
Department of Biology

The social behavior of extant species of wild dogs (Canidae) is readily observable for scientific study. However, the social behavior of extinct Canids is not possible to observe, and therefore must be inferred from the remaining fossilized evidence of these species. This study was undertaken to determine possible cranial indicators of social behavior in extinct Canids. Several cranial features that have been shown to correspond with brain size were measured and analyzed for correlations with increased complexity in social behavior among the extant and extinct canids. Extant genera under investigation included *Canis* (wolves, coyotes, and jackals) and *Vulpes* (foxes), as well as one species each of *Cuon*, *Alopex*, *Otocyon*, and *Lycaon*. Extinct genera included *Canis* (wolves and coyotes), *Desmocyon*, *Epicyon*, *Aelurodon*, and *Borophagus* (bone-crushing dogs). All measurements were made on various aspects of the skulls from each species using an image processing and analyzing software (ImageJ). Several cranial indices were computed and subjected to statistical analysis. Inferences were then made on social behavior based on observed significant differences in cranial indices between extant and extinct Canids.



DETERMINING BEER COLOR AND DENSITY DUE TO VARIATION IN STRAINS OF YEAST DURING FERMENTATION

Blaine Griffiths, Phil Cleves, Kion Rashidi
(Dr. Jennifer Robbins)
Department of Biology

Color significantly affects the beer people choose. Visual senses are even more important than taste in appreciating a beer (Lelievre, et al. 2015). In brewing, yeast is added to wort, or unfermented beer. The yeast ferments the sugars to produce alcohol. The main two types of yeast that can be used as variables are ale yeast and lager yeast. We undertook this study to examine the effects yeast have on final beer color. We divided a single batch of wort into ten jugs for fermentation with different yeasts. Using a spectrophotometer, we measured the SRM after anaerobic fermentation. We found that yeast choice did alter the color of the beer, albeit slightly and not because of which group they belong to (ale vs lager).



DETERMINING THE EFFECTIVENESS OF OVIPOSITION TRAPS FOR COLLECTING LARVAL MOSQUITOES IN URBAN ENVIRONMENTS OF CINCINNATI, OHIO

Nicole Broner, Seth Buchholz, Adonis Hawari, Heather Little (Dr. Mollie McIntosh)
Department of Biology

The ability to transmit viruses from adult, female mosquito to larvae is a potential component in the ecology of some vectored diseases, such as Zika and West Nile Virus. A common collection technique for mosquito larvae has been through the deployment of oviposition traps. These traps attract gravid female mosquitoes to oviposit eggs which can then be collected at a later developmental stage, such as larvae. The objective of this study was to evaluate the effectiveness of oviposition traps for collecting larval mosquitoes in urban environments of Cincinnati, Ohio. Oviposition traps using hay infusions were constructed and initially deployed in urban wooded and residential areas on September 27, 2017. After 7 days, trap samples were harvested and immediately redeployed with new infusions. A total of three sampling events occurred (October 4, 11 and 18). In the laboratory, trap samples were sorted and mosquito larvae identified using dissecting microscopes. Trap effectiveness was evaluated by mosquito larval abundance. Of all deployed traps, 57% contained mosquito larvae; however, abundance within each trap was highly variable. The traps had similar effectiveness in both environments, wooded and residential with 56% and 58% of the traps containing mosquitoes, respectively. These results will provide helpful information for future studies monitoring mosquito larvae and potential disease dynamics in urban areas.



**EFFECT OF INVASIVE ASIAN LONGHORNED BEETLE
(*ANOPLOPHORA GLABRIPENNIS* [MOTSCHULSKY])
ERADICATION ON DIVERSITY OF NATIVE CERAMBYCIDS IN SOUTHWESTERN OHIO**

Clayton Traylor (Dr. Ann Ray, Dr. Dorothy Engle)
Department of Biology

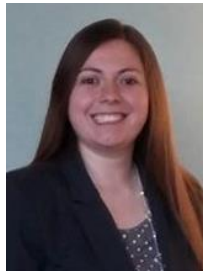
An infestation of the invasive Asian longhorned beetle (*Anoplophora glabripennis* [Motschulsky]) was first reported in Tate Township in Clermont County, Ohio in 2011. Asian longhorned beetle (ALB) is a wood-boring beetle in family Cerambycidae. ALB has 11 potential host genera native to North America. Larvae feed in the heartwood of trees, causing structural damage and eventual death. If left uncontrolled, an infestation could result in mortality of 30% of forest trees in the United States, with an estimated cost of \$669 billion. Eradication efforts in Tate Township are underway and include removal of infested and potential host trees. These efforts risk damaging biodiversity of native wildlife, as it alters the native habitat. This study investigates the effect of host tree removal on the diversity and abundance of native cerambycid species inside of the ALB quarantine zone in Clermont Co., Ohio. Cerambycids were collected at two sites inside and outside the quarantine zone from April to September 2017 using a variety of trapping methods. We evaluated differences in biodiversity within and between sites using the Shannon-Weiner Index. The Bray-Curtis Dissimilarity Index was used to determine differences in overall abundance. Differences between sites were negligible overall. However, removal of host trees may have been a factor in differences abundance of several species, especially *Anelaphus pumilis* (Newman) and *Megacyllene caryae* (Gahan).



EFFECT OF STREPTOMYCES ON SOIL AGGREGATION

Dan Sedlacek (Dr. Kathryn Morris)
Department of Biology

Experiments were conducted to assess the potential for Streptomyces bacteria to aggregate soil. Soil microbes known to stabilize soils are abundant and have filamentous growth habits that allow for enmeshing soil particles. Streptomyces have both of these characteristics. Soil aggregation is an important ecosystem function provided by some soil microbes. Well-aggregated soils hold more air and water supporting greater plant growth. Well-aggregated soils also resist erosion, and sequester large amounts of carbon. The purpose of this study was to observe and quantify the ability of eight Streptomyces strains to create soil aggregates from unstructured soil. Soil was broken down to 500 μ m particles and partially sterilized before being inoculated with Streptomyces colonies. After inoculation, the soil samples were monitored, dried, and measured for soil aggregation. This was done by placing the soil samples in a set of four sieves of decreasing mesh size, which were repeatedly submerged in a pail of water. The sieves were agitated, and the soil particles settled until trapped in a given sieve. The total mass of aggregates on each sieve was used to calculate the amount of soil aggregation, which was compared to the controls to determine aggregation effectiveness of the Streptomyces strains. The data were analyzed using an ANOVA with treatment as the factor. Three of the four Streptomyces isolates examined significantly increased the size of the aggregates produced in only four weeks ($F=4.64$, $df= 5,24$, $p=0.0042$). This research has important implications for soil conservation, soil nutrient retention, and carbon sequestration.



EFFECT OF STREPTOMYCES ON SOIL AGGREGATION LEVELS

Ashley Reinert (Dr. Kathryn Morris)
Department of Biology

Soil aggregation plays a large role in maintaining soil quality and preventing erosion. It has been shown that organisms such as plants, fungi, and various microbes impact soil aggregation, but no prior studies have been performed to investigate the specific role Streptomyces bacteria play in this process. It was hypothesized that samples of soil inoculated with Streptomyces isolates would result in greater percentages of aggregation than soil without added Streptomyces. Analysis of the aggregative activities of four isolates of Streptomyces bacteria in mixed soil over a month-long incubation period was performed, followed by a sieving procedure in order to compare soil samples' water stable aggregate (WSA) and coarse matter compositions. Samples in which there were significantly greater soil amounts in larger-pored sieves when compared with control soils were concluded to be indicative of further soil aggregation due to Streptomyces presence. Results showed that mean weight diameter was significantly greater in several cases where Streptomyces was present in soil, and the 2-4mm level sieve demonstrated a WSA proportion which was greater in cases where certain isolates of Streptomyces were added. It was concluded that some strains of Streptomyces did demonstrate a correlation between bacterial presence and increased soil aggregation, though further work is needed to understand the potential mechanisms by which Streptomyces may bring about greater soil aggregation levels.



METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS* PREVALENCE IN SOCCER PLAYERS AT XAVIER UNIVERSITY

Akhil Kavuri, Carly Alfano, Libby Acker, Roger Gusloff
(Dr. Jennifer Robbins)
Department of Biology

Methicillin-resistant *Staphylococcus aureus* is most commonly known as MRSA. It is a gram-positive bacteria that is becoming a great concern because of its resistance to several antibiotics. Upon entering into the body, MRSA can cause superficial skin infections, sepsis, pneumonia, and even life-threatening bloodstream infections. MRSA was once confined to health-care settings but a recent explosion among the general population has resulted in the discovery of Community Associated-MRSA (CA-MRSA). CA-MRSA in the field of athletics is a topic of interest due to the direct contact athletes have with each other, contaminated surfaces in locker rooms, and field turf. Synthetic turf is being questioned on the health risks it poses to humans due to high amounts of bacterial colonization.

PERSISTENCE OF *METARHIZIUM BRUNNEUM MICROSCLEROTIA* UNDER FOREST CONDITIONS

Samantha Estes (Dr. Ann Ray)
Department of Biology

The Asian Longhorned Beetle (ALB ; *Anoplophora glabripennis* [Motschulsky]; Coleoptera: Cerambycidae: Lamiinae), is a polyphagous, arboreal pest native to China and the Korean peninsula. It is likely that ALB was introduced to the United States via solid wood packing material as a result of the international shipping of goods. If allowed to continue this behavior, ALB will be responsible for the deaths of up to 30% of all trees and an estimated \$669 billion dollars in damages within American hardwood forests.

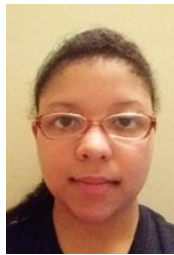
The current pesticide being used to control harmful infestations of a myriad of organisms is a commercial insecticide called imidacloprid. This compound, while generally effective, has been known to cause harm to off-target organisms. The alternative method we are investigating is the use of a pathogenic species of fungus, *Metarhizium brunneum* [Petch] strain F52 (Hypocreales: Clavicipitaceae), to infect and kill the beetles. This fungus is native to North America, and has minimal effects on non-target arthropods, infecting only three known organisms: filth flies, mosquitoes, and ticks . The fungus is not known to harm any trees, plants, animals, or insects other than those listed. As such, *M. brunneum* is considered a safe alternative to synthetic pesticides that are employed to control infestations of ALB. In instances when it is not lethal, an infection will reduce the beetle's ability to reproduce, limiting the population and spread of ALB. We hypothesize that the application of *M. brunneum* microsclerotia to infested host trees will kill and/or significantly reduce fecundity of ALB adults. For the present study, we will collaborate with researchers from Cornell University (Ithaca, NY) to test the lifespan of the conidia (spore-forming structure) within the fungal media. Further experimentation will be conducted at Cornell University to determine the persistence and efficacy of the fungus under forest conditions over time to optimize timing of application for control of ALB populations in the field.



RAINFALL AND FECAL COLIFORM LEVELS IN MILL CREEK

Francis Billena, Katherine Chadwick, Ashleigh Nuñez (Dr. Jennifer Robbins)
Department of Biology

The goal of this study was to analyze the impact that rainfall has on fecal coliform count in Mill Creek, a tributary of the Ohio River that runs from West Chester, Ohio to Over-the-Rhine in downtown Cincinnati, Ohio. Water samples were collected from three sites along Mill Creek: upstream Koenig Park, midstream Caldwell Playground, and downstream Salway Park. The samples were subject to serial dilution and lactose broth fermentation to confirm the presence of coliform bacteria. The resulting solutions were plated and incubated. Afterwards, colony count was completed. The before rainfall collection yielded 209 colonies and 840 colonies on 10 μ l and 100 μ l plates respectively at midstream. The after rainfall collection yielded 47 colonies and over 900 colonies on 10 μ l and 100 μ l plates respectively at downstream. Due to color and size of the colonies, they are suspected to be *Enterobacter* spp. We found similar colony counts in both before and after rainfall collections. According to the data collected, rainfall did not have an impact on bacterial colony count in Mill Creek.



SKULL AND MANDIBULAR MORPHOLOGY IN EXTANT AND EXTINCT COYOTES

Ellery McElfresh (Dr. William Anyonge)
Department of Biology

Modern coyotes are medium sized, nocturnal canids, whereas their ancestors have been hypothesized to be large ferocious predators. Previous work has attributed this difference to the mass faunal extinctions and predator interactions during the evolutionary history of the species. This study compares several mandibular and cranial characteristics in the living coyote (*Canis latrans*) and the extinct Pleistocene coyote (*Canis latrans orcutti*). It was hypothesized that the extinct coyotes will exhibit larger craniomandibular features associated with enhanced jaw musculature and biting forces than their modern counterparts.

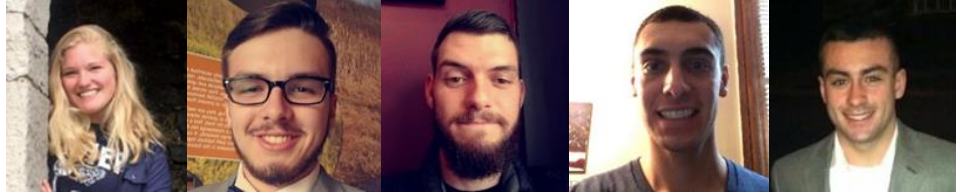


TEMPORAL ASSESSMENT OF HABITAT QUALITY AND AQUATIC MACROINVERTEBRATE COMMUNITIES IN THE MILL CREEK WATERSHED, CINCINNATI, OHIO

Rachel Neff, Alyssa Shafor, Ryan Villaver (Dr. Mollie McIntosh)
Department of Biology

Urban streams are often impacted by multiple stressors that can lead to ecosystem degradation. The Mill Creek Watershed, located in Cincinnati, Ohio, has been historically implicated as a degraded urban watershed due to cumulative effects of industrial effluents, combined sewage overflows and channelization. Since the establishment of the Clean Water Act, local and state efforts to monitor and improve water quality have been ongoing, however, more

baseline data on current stream conditions are needed. The main objective of this study was to assess habitat quality and macroinvertebrate communities within the Mill Creek Watershed overtime. Single assessments were conducted at nine different sites along four streams within the watershed from 2014 to 2017. Quantitative (riffle) and qualitative (multi-habitat) aquatic macroinvertebrate samples were collected and Ohio Qualitative Habitat Evaluation Index (QHEI) scores were determined for each site. Preliminary results indicate little variation in habitat quality and the aquatic macroinvertebrate community overtime; however, high variation was observed across sites for all study years. Information gained from this study will help to better understand the current condition, detect future impairments, and guide management decisions for this urban watershed.



THE EFFECTS OF CANOPY GAP VARIATION ON SAPLING SPECIES RICHNESS

Moira Smith, Riley Benson, Joshua Menke, Patrick Williams, Seth Tirrell (Dr. George Farnsworth)
Department of Biology

The Emerald ash borer (*Agrilus planipennis*) was introduced into North America in the 1990s, and was initially detected in Canton, Michigan, in 2002. Since then it has spread through the Midwest, levelling Ash populations, and has pushed the most abundant species of Ash into endangered species status according to the IUCN Red List. As much as one-third of the trees in some of Cincinnati's parks were some species of Ash, and as a result, these forests have been left significantly barer and open to new species moving into areas that were once populated by decades-old Ash trees. The focus of this project has been to determine just how small patches of a forest has changed in the absence of these formerly established trees relative to the area around living trees of comparable size. The hypothesis being observed is that dead, standing, ash trees in a forest increase both numbers of seedlings and relative abundance of seedlings within the immediate area. Trees of comparable DBH were identified to serve as analogues to the measurements provided by the Ash trees. Standardized measurements were used to compare species richness and diversity within each sample site. Comparisons between the diversity seedlings under dead ash and non-ash trees showed no significant differences. No significant difference was found between diversity of seedlings within different species of non-ash trees. These findings suggest there is little to no change in the ground ecology of Cincinnati forests due to the sudden death of ash trees. With time, however, a more obvious impact could be revealed. Future studies should be conducted to further explore the effects of the sudden canopy gap of Cincinnati forests due to the death of ash trees in relation to time.



THE PREVALENCE OF METHICILLIN-RESISTANT STAPHYLOCOCCUS AUREUS (MRSA) ON XAVIER UNIVERSITY NURSING STUDENTS

Anna Klunk, Joe Kavanaugh, Kevin Feldhaus, Andrew Thyen (Dr. Jennifer Robbins)
Department of Biology

This study was conducted in order to further our understanding of the possible relationships between nursing students, their cell phones, and methicillin-resistant *Staphylococcus aureus* (MRSA). A sample of 146 nursing students, and their cell phones, at Xavier University in Cincinnati, Ohio was used in order to conduct this study. The participants were divided by their nursing academic year and tested for the colonization of *S. aureus* on their fingers and their cell phones by placing their fingers on Mannitol salt agar (MSA) plates. The colonies which were identified as *S. aureus* were transferred onto Chromagar plates to test for methicillin resistance. The control group of freshmen nursing students had 88.5% (31 of 35) of the participants colonize MRSA. The sophomore students had 68% (17 of 25), the juniors had 79.6% (43 of 54), and the seniors had 75% (24 of 32) of the participants colonize MRSA. Furthermore, the freshmen students cell phones had an 11.4% (4 of 35) colonization rate of MRSA, while the sophomores had 16% (4 of 25), the juniors had 16.7% (9 of 54), and the seniors had 18.8% (6 of 32). No statistically

significant data was found using a Chi squared test for the colonization of the students ($p = 0.91$) or for the cell phones of the students ($p = 0.86$). It was found that nursing students exposed to clinical health care settings were 1.6 times more likely to have MRSA colonize their cell phones when compared to the non-clinical freshmen nursing students.

CENTER FOR INNOVATION



HUMAN CENTERED ACTUARIAL SCIENCE

Seth Junion (Dr. Tom Merrill, Dr. Hem Raj Joshi)
Department of Mathematics -Actuarial Science
Center for Innovation

Human-centered design is a multifaceted and creative approach to problem solving and is applied to a variety of different industries. This project attempts to systematize the innovation process from an undergraduate perspective, as well as a summary of an intensive, challenging, and hands-on learning experience that was reviewed by a private corporation's SPRINT series and resources that were dedicated to training in research design as well as design classes and forums. This project shows a mastery of the four different steps of the human-centered design process to create solution to real-world challenges, how to build an effective interview guide to learn and document research, how to practice effective rapid prototyping techniques, and testing solutions within the community and the corporate offices (C-suites). The other aim of this project is to illustrate the variety of issues and topics and problems that are solved by an actuary or parallel consulting agency.

MORINGA LEAF GRINDER

Morgan Bradford (Dr. Gary Lewandowski)
Center for Innovation – Human Centered Making

The Moringa Tree which does best in hot dry climates is known for its health benefits and nutrition in areas where malnutrition is a big problem. It has 46 types of antioxidants, 18 amino acids, along with countless other vitamins and minerals. For this project, Morgan Bradford a senior Human Centered Design major was paired with a farmer in Haiti to design and build a grinder for Moringa leaves. Kenel the farmer she was working with wanted specifically to help pregnant women and babies in his community by giving them the nutrition they need in hopes to reduce the number of child deaths. Using the design thinking process; empathize, define, ideate, prototype, and test, rapid prototyping, CAD 3D designs and 3D prints Morgan was able to create a working prototype. Hopefully with this design Moringa leaves can be ground with a natural power source. Bring your own leaves to try it for yourself!



CHARACTERIZATION OF CPE METAL CONCENTRATION USING SPECTROSCOPIC AND ELECTROCHEMICAL METHODS

Mary York, Addie Keating-Zaid (Dr. Adam Bange)
Department of Chemistry

Cloud point extraction (CPE) is a well-established method given its avoidance of halogenated and carcinogenic organic solvents. The extraction allows metal complexes to be concentrated into a micellar phase through the use of a surfactant and chelating agent in an aqueous media. In order to assess the overall efficacy of the extraction, a series of spectroscopic and electrochemical instrumentation are implemented. The intended goal of this research is to optimize a highly sensitive electrochemical detection of lead and cadmium in biological samples. Though the ideal method of detection is anodic stripping voltammetry, as it while minimizes sample volumes, cost, and time of analysis, complications have arisen stemming from surfactant interference. Further, the co-extraction of Pb^{2+} and Cd^{2+} using CPE must be optimized for overall percent recovery. Initially, extracts were analyzed using flame and graphite furnace atomic absorption spectroscopy. Due to decreased sensitivity of the AAS at the ppb level, relatively long run times, and the need for concentrated acid, a spectrophotometric approach using the UV-Vis is currently being investigated as a fast, safe, and easy method for determining the efficacy of the CPE. Dithizone, a sulfur-containing organic compound, is commonly used as a chelating agent for various heavy metals, such as lead and cadmium. Dithizone, dissolved in ethanol, is a dark blue-green solution; however, upon dithizone-metal binding in an aqueous media, a pink-orange solution is observed instead. Given that the intensity of the color observed is concentration dependent, the purpose of this study is to investigate whether the efficacy of the cloud point extraction can be determined spectrophotometrically.



CRYPTOCHROME: AN ANALYSIS OF SECONDARY STRUCTURE OF LIGHT SENSITIVE PROTEIN AND ASSOCIATED MUTANTS

Carlos Munoz, Joseph Robles (Dr. Justin Link)
Department of Chemistry/Department of Physics

Cryptochromes are a series of light sensitive Flavo proteins that are found in plants, mammals, and insects which respond to blue light (wavelength 450 nm). Blue light causes the reduction of a cofactor, flavin adenine dinucleotide (FAD). In mammals, Flavoproteins are found in areas of the body that do not directly expose light. Therefore, there may be other biological functions of these proteins that account for their location in non-light areas. Such biological functions could be messenger systems, which would make them of relevance to drug development and other physiological pathways. The N terminus region of Cryptochrome is well studied and documented. However, the structure of the C terminus remains unknown. A growing theory in the field of Crpytochrome study is that the C terminus folds into the active site pocket (located in the N terminus of the protein) during the conformational change which occurs when Flavin is reduced. In order to explore these ideas, experimenters mapped the protein's primary structure (sequence of Amino Acids) and created single amino acid mutations. Mutant proteins were then isolated in order to see individual affect on Flavin's blue light dependent redox reactions through a Visible spectrophotometer. Such a method was followed in order to determine the

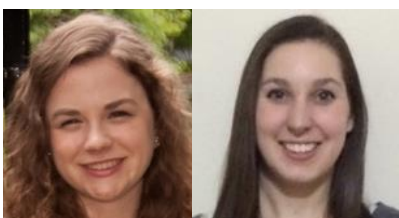
relationship between absorbance and concentration and ultimately study the rate of Flavin reduction. Additionally, the protein's fluorescence was determined using a complex red assay in order to further determine changes in structure. Finally, experimenters used difference spectroscopy in order to see relative changes in Flavin- such changes allowed a qualitative approach to determine Flavin changes and allowed an analysis of robin CRY as well as other non stable mutants that were unable to be prepared through the aforementioned method. An additional method of analysis was utilizing Circular Dichroism (CD) in order to determine secondary structure changes of Cryptochrome. Overall, this allows experimenters to see biologically relevant Amino Acids and further determine the structure of the C terminus of Cryptochrome.



DEVELOPMENT OF ANALYTICAL METHODS FOR AN ORGANOARSENIC COMPOUND

Richard Herbers (Dr. Barbara Hopkins)
Department of Chemistry

Organoarsenic compounds, such as phenylarsonic acid (PAA), are a hazard in the workplace and are known to cause skin irritation and respiratory tract irritation. PAA is also very hazardous to aquatic life because it can contaminate the water table. Therefore, the National Institute for Occupational Safety and Health (NIOSH) requires a simple and user-friendly method to detect organoarsenic compounds in the air. Current methods of detection for these compounds, however, are more complicated and not all laboratory settings have access to the necessary instrumentation. Previous work in this laboratory developed a method using High Performance Liquid Chromatography (HPLC) to detect organoarsenic compounds in the air in accordance with NIOSH standards. A NIOSH method requires the following eight components: a literature search, an analyte characterization, a sample procedure, analytical techniques, a determination of instrumental limit of detection (LOD), recovery studies, stability studies, and a method LOD. The purpose of this project is to validate the previous work done in the laboratory. Thus far, a literature search, an analyte characterization, a sample procedure, recovery study, and method limit of detection have been completed for PAA. Analyses on the HPLC were performed at a wavelength of 263 nm, using a mobile phase of 48% methanol, 50% deionized water, and 2% glacial acetic acid by volume. The method limit of detection was 0.002 x Permissible Exposure Limit (PEL). The recovery study was performed for PAA for concentrations of 0.5, 1.0, 1.5, and 2.0 x PEL. The average recoveries for these concentrations fall within NIOSH accepted range of 75-125%.

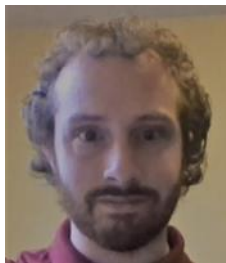


DEVELOPMENT OF ANALYTICAL METHODS FOR BUTYLRGANOTIN COMPOUNDS

Ashley Hardee, Gabrielle Dangel (Dr. Barbara Hopkins)
Department of Chemistry

Organotin compounds, such as mono- and di-butylorganotin, are a hazard in the workplace and are known to cause skin irritation, respiratory tract irritation, vomiting, seizures, and violent pain. Therefore, the National Institute for Occupational Safety and Health (NIOSH) requires a simple user-friendly method to detect butylorganotin compounds in the air. Current methods of detection for these compounds, however, are more complicated and not all laboratory settings have access to the necessary instrumentation. Previous work in this laboratory developed a method using High Performance Liquid Chromatography (HPLC) to detect butylorganotin compounds in the air in accordance with NIOSH standards. A NIOSH method requires the following eight components: a literature search, an analyte characterization, a sample procedure, analytical techniques, a

determination of instrumental limit of detection (LOD), recovery studies, stability studies, and a method LOD. The purpose of this project is to validate the previous work done in the laboratory. Thus far, a literature search, an analyte characterization, a sample procedure, and a determination of the linear ranges for both monobutyltin and dibutyltin have been completed. Analyses on the HPLC were performed at a wavelength of 386 nm, using a mobile phase of 81% methanol, 13% deionized water, 6% glacial acetic acid, and 0.02% tropolone by mass. The instrumental limit of detection was 0.006 x Permissible Exposure Limit (PEL). Further analysis performed also indicated that sonication of filters spiked with organotin compounds produced better results as opposed to the rotation of filters. The recovery study was performed for DBT for concentrations of 0.5, 1.0, 1.5, and 2.0 x PEL. The average recoveries for these concentrations fall within NIOSH accepted range of 75-125%. A stability study was run for DBT determining that DBT is stable on the filters for up to four weeks.



MICROFLUIDIC DESIGN FOR CHEMICAL ANALYSIS

Eric Siegesmund (Dr. Supaporn Kradtap)
Department of Chemistry

A microfluidic device is composed of a pattern of microchannel network molded or engraved on a solid substrate that allows a small volume of liquid to flow which can be used in down scaling chemical analysis. It offers the benefits of minimizing chemical consumption, producing little waste, and decreasing analysis time. Its small size and portability are also suitable for on-site analysis. The selected designs of microchannel patterns were created with software Openscad, Tinkercad and CorelDraw and then laser engraved onto hard plastic polymethyl methacrylate (PMMA) and glass plates. Molds of the same patterns for soft plastic polydimethylsiloxane (PDMS) were also made using a 3D printer. The simplest way to assemble the microfluidic device and the most effective method to determine volume of the microchannel pattern were investigated. Super glue, Epoxy and double sided PMMA tape were tested as alternative tools to overcome disadvantages of using traditional assembling method with nuts and bolts. It was found that the double sided PMMA tape works best for assembling PMMA-PMMA plates and PMMA-PDMS plates, but not effective for PDMS-PDMS plates. Among different methods i.e. Microscope and software for measuring length, Surface profiler, Slow flow rate pump, and Spectrophotometric based technique, the spectrophotometric technique is the most effective in estimating volume of a microchannel.



NEW α -HYDROXY-ACID LIGANDS AND THEIR Al^{3+} , Fe^{3+} , AND Ga^{3+} COMPLEXES

Walter Fitschen (Dr. Craig Davis)
Department of Chemistry

α -Hydroxy acids (AHA's) are a common component of siderophores, low weight molecules produced by organisms to bind to nutrients available in very low concentrations and sequester them for use. Dr. Michael Baldwin and coworkers at the University of Cincinnati have previously observed AHA's binding to Fe(III) in trimeric clusters. These complexes undergo photochemical reactions, lysing the ligand and possibly reducing the Fe(III) to Fe(II) depending on the reaction environment. The Baldwin group has focused primarily on Fe(III) complexes, but is also investigating Ga(III) and Al(III) complexes with AHA ligands.

The Davis group has been working in collaboration with the Baldwin group to determine the effects of different donor atoms on the chemical shift of the Al^{3+} center in ^{27}Al -NMR spectra. Studies were performed in a pH

range of 2-3 using $\text{Al}(\text{NO}_3)_3$ as the source of Al^{3+} ions. The ligands oxalate, acetate, ethylenediamine, THF, and ethylene glycol were selected. Only oxalate was observed to bind to Al^{3+} ions. The inability of acetate and ethylenediamine to bind can be explained by entropy and the chelating effect and Hard-Soft Acid-Base Theory, respectively. Attempts to produce THF complexes resulted in formation of the $[\text{AlCl}_4]^-$ ion. Ethylene glycol surprisingly failed to bind, as all AHA's can use non-carbonyl O atoms as donor atoms. Molecular-modeling calculations (Semi-Empirical PM3) show the binding of ethylene glycol to be unfavorable ($\Delta H = +99 \text{ kJ/mol}$).



OPTIMIZING TRACE HEAVY METAL DETECTION THROUGH CLOUD POINT EXTRACTION

Thomas Martin, Jordan Seibold (Dr. Adam Bange)
Department of Chemistry

The inspiration of our research is due to the fact that exposure to heavy metals is common in several occupations, such as welding, construction, battery production, and others. Thus, it is important to develop a technique in order to detect whether or not heavy metals poisoning is a risk relevant to factories and areas. This technique must be adequately sensitive and accurate, as well as cost and time efficient. While there is a current method to do this, it takes large sample sizes and requires expensive techniques for analysis. We are investigating ways that Cloud Point Extraction can be optimized to serve as an efficient extraction technique. This particular technique is already well-established for the separation of preconcentrated hydrophobic species from water in the form of micelles, but the overall yield and robustness of technique must be improved. Currently, we are focusing on determining the optimum concentration of Dithizone that is used as the chelating agent. Ultimately, the goal is to optimize CPE in order for it to be paired with voltammetry to analyze low concentrations of heavy metals.



POLYMER CHEMISTRY IN A CLASSROOM SETTING

Cody Beldon (Dr. Craig Davis)
Department of Chemistry

In January 2015, the American Chemical Society's (ACS) Committee on Professional Training (CPT) announced new guidelines for the curriculum within ACS-certified programs. In addition to the five sub-disciplines (analytical, biochemistry, inorganic, organic, and physical), ACS-certified programs must now include polymer chemistry. This change was implemented in response to current trends in the chemical enterprise. The ACS emphasizes that the guidelines are intended to maintain a certain level of flexibility within the certified programs; hence, departments have options on how to integrate polymer chemistry topics into their curriculum. For example, this can be accomplished either through a stand-alone class or by including polymer topics in existing classes. My research on polymer chemistry includes an in-depth look at the history and development of polymers, various types of polymers, structural and thermal properties, small-scale polymers, and most importantly, polymer growth and synthesis. Classroom exercises based on existing polymer worksheets, current news articles, and the research previously mentioned are being developed for the polymer curriculum in the Xavier University chemistry program. Sample questions will be presented to the audience.

STEREODIVERGENT SYNTHESIS OF (+) - AND (-) -PILOSININE

Tyler Gibson, Robert Anderson, Connor Lauth,
Ryan Kosturko (Dr. Richard Mullins)
Department of Chemistry

The plant species *Pilocarpus jaborandi* produces two alkaloids named Pilocarpine and Pilocarpine. These compounds have received substantial attention as molecules that act as partial agonists of the muscarinic-M3 receptors. Recently, asymmetric conjugate addition reactions to nonracemic 4-phenyl-N-enoyl-1,3-oxazolidinones have shown different stereochemical outcomes depending on the conditions of the reactions. These stereodivergent reactions are able to help provide the synthesis of (+)- and (-)-pilosinine from a single enantiomer of the oxazolidinone chiral auxiliary. The complete synthesis of both enantiomers utilizing this flexible strategy will be shown.



UNDERSTANDING SCHIZOPHRENIA: NEURONAL NITRIC OXIDE SYNTHASE

Mario Cribari (Dr. Stephen Mills, Dr. Justin Link)
Department of Chemistry/Department of Physics

Schizophrenia is one of the most debilitating psychological disorders. If left untreated, it can completely destroy a person's life and make them unable to function in society. The current cause of schizophrenia is not fully known, but it is thought to be a combination of environmental and genetic factors. Recently, it was found that the amounts of certain metabolites of nitric oxide were irregular in schizophrenia nervous tissue. The protein neuronal nitric oxide synthase (nNOS) is responsible for creating nitric oxide in neurons. Therefore, it was hypothesized that nNOS could be malfunctioning in schizophrenia. To study this, the mRNA expression levels of nNOS and various interacting proteins were analyzed through qPCR. This involved extracting RNA from post-mortem brain tissue of both schizophrenia and control samples. Preliminary results suggest that the expression of nNOS may actually be significantly different in schizophrenia, however further corroboration is needed.

CLASSICS AND MODERN LANGUAGES



CHRISTIAN SERVICE IN THE CONTEXT OF THE ANCIENT WORLD

Ovwoioise Omoijuanfo (Dr. Thomas Strunk)
Department of Classics and Modern Languages

The early Christian Church was a paradigm shift when it came to how they treated both one another and those around them in terms of altruistic service. They served both Christians and pagans alike, especially in regards to healthcare. The most striking example of this would be the Christians choice to not flee a series of plagues that struck the Roman Empire beginning in in the second century, and instead attended to the sick. Often times the Christians who stayed behind succumbed to the very sickness they were treating. This widespread

service of those whom one was not affiliated with was particularly unique in the ancient world. However, the service of the Christians was not limited to just taking care of the sick but rather covered a vast array of services from taking care of orphans to food distribution. At times the uniqueness of the service of the Christians was noticed by the Pagans and even emulated. Emperor Julian noticed the effectiveness of the service of the Christians in terms of proselytization and attempted to emulate the Christians in an effort to bring about a resurgence of Paganism. Jesus, the founder of the Christian faith, first established the precedent of serving as a healer and in the way he accepted martyrdom. Jesus also encouraged self-sacrifice to others, which again was a fairly unique concept in the ancient world. Aspects of this service tradition live on today in modern Christianity.



PIECING TOGETHER ROMAN LIFE AND ART: THE IMPACT OF SOCIETAL CHANGES ON DEVELOPMENTS IN ROMAN MOSAICS

Emily Lewis (Dr. Thomas Strunk)
Department of Classics and Modern Languages

During the Late Republic and Early Empire (2nd century BC-2nd century AD), Roman figural mosaics changed both stylistically and technologically. Appearing as luxury decorations in houses during the Late Republic, mosaics helped assert and define the social status of elite members. The mosaics found during at this time are known as polychrome opus vermiculatum. These highly expensive mosaics were the most elaborate in form and the most labor intensive of all mosaic techniques. Towards the beginning of the Empire, however, mosaics adapted into a style known as black and white opus tessellatum. While this style still denotes luxury and were displayed in upper class houses, black and white mosaics were not nearly as expensive or as detailed as polychrome mosaics. Further, black and white opus tessellatum were found in non-elite houses, whereas polychrome opus vermiculatum were strictly in elite houses. This development between an expensive polychromatic mosaic to the less expensive black and white mosaic and spread of black and white mosaics is something for which I will be relating to sumptuary laws, Augustus' personal example at the founding of the Principate, and the commercialization of cities during the Early Empire.

THE DEATH OF TRAGEDY: EXAMINING NIETZSCHE'S RETURN TO THE GREEKS

Brian Long (Dr. Timothy Quinn)
Department of Classics and Modern Languages

In his essay *On the Advantage and Disadvantage of History for Life*, Friedrich Nietzsche outlines an analysis of history based upon use. He proposes that history is only valuable if it is useful. He proposes this idea in contrast to the popular theory of history, which sees it as an exact science. He favors usefulness over factual accuracy. Even though Nietzsche published this essay after *The Birth of Tragedy*, it serves as a good context for his theorizing on Attic Tragedy. The picture of the Greeks that Nietzsche paints in *The Birth of Tragedy* is overly romantic and at times inaccurate. This is not in itself problematic, since he has stated that accuracy is not his primary concern. However, he does hold up the Greeks as inspiration for action, so that we can be strengthened by the "knowledge that the great which once existed was at least possible once" (History 16). This is problematic because the greatness of the Greeks, at least as Nietzsche describes it, did not exist. Nietzsche wants us to return to the Greeks; how can we do this if they never existed? I propose that Nietzsche's return is impossible, not solely on the basis of the difficulties presented by the monumental horizon, but due also to the role Euripides played in the death of tragedy. His search for rational knowledge at the expense of the Silenic wisdom destroyed the balance that existed in Greek art in an irreparable way.



THE MEANING AND VALUE OF A LIBERAL ARTS EDUCATION: FROM CICERO, JEFFERSON, AND CONTEMPORARY LIBERAL ARTS COLLEGES

Courtney Garside (Dr. Shannon Byrne)
Department of Classics and Modern Languages

Liberal arts education has been a cornerstone of the American education system. The idea that all citizens should be well-versed in a wide breadth and depth of knowledge goes back to the Roman Republic, when Cicero argued for the expansive education of the orator in his work *De Oratore*. For him, an educated person was one who could articulate and explain complicated ideas in any subject matter. This model of education was advocated for by Thomas Jefferson during the birth of the United States as a safeguard for freedom and a necessity for successful democracy. For Jefferson, an educated person was one who could weigh in on complicated issues, regardless of their background or profession. An educated person was essential for voting citizens, as they would be required to understand and make decisions concerning important issues for the society. This model of an inclusive liberal arts education has formed the basis for the modern education system, but in recent years the value of a liberal arts education has come into question. What makes an educated person in today's society? In the fast-paced and ever-changing world we live, a liberal arts education equips students with the ability to think critically, creatively, and adaptively. In other words, liberal arts education is arguably more useful today than it was in the Roman Republic and during the early years of the United States. Therefore, we must look critically and carefully at the institutions that are keeping this tradition alive.

COMMUNICATION



NAMI AD CAMPAIGN

Emily Lowe (Dr. Wendy Maxian)
Department of Communication

When a person is suffering from mental illness, it is easy for them to feel alone, isolated, and unloved. Sometimes, it can seem like they will never be able to feel better. NAMI provides a solution for the isolation and stigma of mental illness by creating a community of support for those affected by mental illness, including the family and friends of those involved. In short, NAMI can help those affected by mental illness feel better. All three of my ad's creative concepts stemmed from my creative brief because I focused on the key insight and the key consumer benefits that NAMI provides to its members. To position my campaign to the people of Southwest Ohio, I had to ask myself: "What do the people of Southwest Ohio want to see or have the most?" After reflecting on my creative brief, I decided to target their values of community and solidarity. The feel better campaign shows exactly what a community of support can do for a person, and how much better it can make them feel. The campaign shows cohesion, consistency, and connection through the repeating message and imagery used in each ad's design. Each ad is different and unique, but they all come together to make one cohesive campaign. The consistent elements in each campaign are the yellow NAMI logo in the bottom right corner of each ad as well as the messaging. The font choices are all repeating, as well as the "Feel Better," headline. All of the ads show a transition from sadness to happiness featuring bright colors and simple graphics. The message gets across that NAMI will help you transition from sadness to happiness.

ECONOMICS



NEOLIBERALISM, AIRLINE DEREGULATION & INEQUALITY

Jonathan Pickman (Dr. Amit Sen)

Department of Economics/ Philosophy, Politics and the Public

Following the trend of Neoliberalism in the 20th century, the United States eliminated regulations in various industries, beginning with airline deregulation during the 1970s and 1980s. This deregulation changed the route structure of domestic and international flights in the US, affecting, price and access to air travel. I posit that a restriction or change in transportation access should create new and disparate economic incentives, and that an analysis of the secondary economic effects of such a policy could be linked to a change in economic inequality at a regional level. I follow the philosophical justifications of deregulation through the mid to late 20th century, and examine economic indicators of wealth to gauge the impact of deregulation, to analyze the efficacy of Neoliberal theory.



THE EFFECT OF SOCIAL WELFARE ON FEMALE LABOR OUTCOMES

Shelby Lauter (Dr. Edward Kosack)

Department of Economics/ Philosophy, Politics and the Public

This paper explores the philosophic origins and economic developments of the modern welfare system to argue the continued importance of strong welfare programs in the health and economic wellbeing of low-income women. My discussion also incorporates feminist theories on the role of welfare in achieving gender equality. Following an intertextual philosophical analysis, I present an economic case study of one of the six primary American welfare programs, Medicaid, to explore the relationship between such programs and the economic vitality of women. I use the Difference-in-differences methodology to examine the effect of state Medicaid expansion under the Affordable Care Act on female labor outcomes, measured by the number of absences from work and the number of hours worked per week. The results of this economic study are inconclusive; however, research on this topic still carries important political implications in the argument surrounding social welfare programs and federal funding for such programs.

GREEN CINCINNATI PLAN: BIGGEST CARBON EMISSIONS REDUCTION FOR THE LOWEST COSTS

Sam Settlemyre, Lucy Schroder, Hugh Schmelzer,
Jack Parkinson, Sarah Wallace (Dr. Nancy Bertaux)
Economics, Sustainability and Society

In the Spring 2018 semester, 18 advanced undergraduate Xavier University students enrolled in Environment, Economics and Policy, incorporating a significant emphasis on the new paradigms in ecological economics (representing the “union of ecology and economics”). Students undertook a class project of determining the dollar per ton that it would take to have a significant impact throughout the update of the city’s resilience plan. The group will be focusing on the issues of Food, Waste, Transportation, and Education. For a series of specific

recommendations put forth by the city, the students will be looking at the economic costs in terms of carbon emission reduction that each recommendation lists.

ENTREPRENEURSHIP



WHO NEEDS A PLAN?

Eseoghene Obrimah (Dr. Chris Welter)
Department of Entrepreneurship

Consumer interviews, prototypes and pivoting, elements of Eric Ries' lean startup method, have become commonly practiced techniques in the startup community since introduced in 2011. These practices currently exist parallel to business planning, the more traditional method new businesses, as well as venture capitalists, have used to determine the viability of a startup. There is currently no clear research about the effectiveness of utilizing lean startup methods when starting a business, and the research on business plans is equivocal. This study aims to assess the relationship between lean startup methods, business planning and a startup's success and whether success is influenced by what kind of business the startup is. Findings reveal that allowing customers to preorder products before production, an element of lean startup, is highly correlated with success.

FINE ARTS



ANONYMITY AND IDENTITY: THE WORK AND LIFE OF MAGDALENA ABAKANOWICZ

Trisha Brockmeyer (Ms. Suzanne Chouteau)
Department of Art

The childhood and early adulthood of Abakanowicz was marred by fear due to the prominent identity of her father in a country embroiled in war and political unrest. At the same time, the Communist control of Poland fostered an environment that deemphasized the individual for the sake of the state. These two forces of anonymity both paralleled and clashed with each other throughout the life of Abakanowicz, especially given the rise of her personal success and involvement in the Fiber Arts movement. Throughout her work, she explored themes of identity and anonymity that were directly influenced by the conflicts and government that shaped some of the most impressionable years of her life. As evinced by her incomplete figures, repurposing of materials, and relative anonymity of her "Crowds," Abakanowicz explored her identity and her relationship with others through her art.

HEALTH SERVICES ADMINISTRATION



APPLYING QUALITY IMPROVEMENT STRATEGIES TO IMPROVE STUDENT EVALUATIONS OF CRITICAL THINKING, ORGANIZATION AND CLARITY OF EXPECTATIONS IN A CAPSTONE COMMUNITY SERVICE PARTNERSHIP

Emily Lanning (Dr. Eileen Alexander)
Department of Health Service Administration

Traditional classroom methods have limited impact on sustainable student learning outcomes. Conversely, “real world” experiences bring classroom concepts to life for students, and support Ignatian values. However, faculty need replicable experiences, concrete skills, tools and exercises to coach students and improve their marketability to employers. Community partners are in need of data to support business and public health objectives and requirements. Specifically, mandates by the U.S. Health & Human Services’ Centers for Medicare and Medicaid Services (CMS) require improvement in measures, such as cancer and behavioral health screening, to improve population health. Further, AUPHA program certification requirements include an integrative experience, such as a capstone project. Consulting projects achieve these objectives. Based on these needs, a major course redesign was undertaken in 2015 to add “local-global” community service learning projects to a section of HESA380 Quality Management and Process Improvement (QM&PI). Results of this XU IRB-approved study found that 90% of students in a community service learning partnership agreed strongly or somewhat that service learning helped them to learn to work better in a team, compared to 40% in a traditional lecture format. Students in Consulting Teams performed 25% (mean) higher on team phases & roles, in a survey-type exam, compared to traditional lecture. Students in Consulting Teams performed 19% (mean) higher on final survey exam, compared to traditional lecture. Students in Consulting Teams feel well prepared to work in teams and interact with administration, providers and staff. Despite these gains in learning, scores on final student course evaluations lagged in several important areas: course organization at 3.31 on a 5 point scale, and clear expectations at 4.10 on a 5 point scale. In addition, growth in the capstone program partnerships and difficulty administering a multi-site and multi-partner community service learning capstone, while teaching and evaluating course content, necessitated another course redesign for Spring 2018. To measure and improve student evaluation scores in the community service learning capstone section of the BS-HSA course HESA380 Quality Management and Process Improvement, faculty partnered with Xavier University’s Student Chapter of the Institute for Healthcare Improvement. We aimed to provide the students in the BS-HSA course HESA380 Quality Management and Process Improvement with a set of well-defined, concise, and clear questions comparable to ones seen on the current Xavier student course evaluation. We expect that surveying students earlier in the course, and providing a brief intervention and explanation, will increase evaluation scores on targeted questions now, and at the end of the course.



CREATING AN ANALYZABLE DATASET FOR THE TRIHEALTH CANCER INSTITUTE

Mikaela Dougherty (Ms. Courtney Rice, Ms. Karen Huelsman)
(Dr. Eileen Alexander)
Department of Health Service Administration

Cancer is one of the leading causes of mortality in the United States. In 2017, it was estimated that 1.7 million people were diagnosed with cancer in the United States. Cancerous tumors undergo a cascade of genetic

changes. Genetic testing is used to discern somatic versus germ-cell line genetic traits. Genetic traits help oncologists discern which cancer treatment is best for each patient. Eight genes were identified and used to identify co-morbid conditions, such as tumor burden mutation: BRAC1, BRAC2, MSH2, MSH6, PALB2, PTEN, TSC2, and RB1. By identifying the genes that have a higher germ-line percentage it has allowed genetic counselors to more accurately identify patients that could benefit from more extensive testing. In addition, cancer patients with high risk germ-cell line genetic traits may choose to invite their family members for genetic testing. The overall objective of this project is to partner with and support the TriHealth Cancer Institute's Genomic Workgroup to create an up-to-date analyzable dataset with clinical and genetic report data to improve the care of their patients. Students from Xavier University's Quality Management and Performance Improvement service learning course worked with TriHealth Cancer Institute's genetic counselors. The purpose of service learning is to learn by doing and provide valuable student work to our community. To meet this objective, we aimed to create a real-time analyzable dataset. As a first step, we created a SMART aim objective to improve the efficiency of data entry, and update the dataset for real-time data entry.

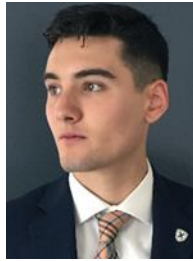


GHANAIAN HOSPITALS' SANITARY FACILITIES AND POPULATION HEALTH: KORLE BU TEACHING HOSPITAL PARTNERSHIP

Amelia Bedri (Dr. Eileen Alexander)
Department of Health Service Administration

Approximately 19,000 Ghanaians, including 5,100 children under 5, die each year from diarrhea, nearly 90% of which is directly attributed to poor water, sanitation and hygiene (WASH). According to the water and sanitation program of the World Bank, it's estimated that Ghana loses about US\$290 million because of lack of improved sanitation systems. Additionally, according to the World Health Organization (WHO), nearly 90% of the population lack adequate toilet facilities, which results in open defecation. "In Ghana, sanitation investment is around 1.6% GDP, which is lower than several estimates recommend" (World Bank Group). Ghana has been named one of the top 10 countries worldwide with the highest percentage of its population without decent toilets. If waste is inadequately managed, organisms in waste will enter the local water and food supplies and lead to a high incidence of infections linked to contaminated water, such as diarrheal illnesses and bilharzia /schistosomiasis. Poor sanitation is a spiral effect which leads to high malnutrition rates, malaria and numerous other infectious diseases. According to the Health and Safety Executive, for every 5 people in a facility, there should be at least 1 toilet and 1 wash-basin. Ghanaian medical facilities and hospitals have not been evaluated for adequate facilities to meet recommendations for prevention of infectious diseases spread via human waste. All over the world, hospital visits are usually accompanied visits. Minors, the aged, emergency and non-emergency patients often seek healthcare services with accompanying relation(s). Being often high-occupancy and high disease burden institutions, hospitals need to concern themselves with the cleanliness of their service environment to assure the safety and health of caregivers, clients and guests. Although WHO recommends toilets for visitors, hospitals primarily focus on providing sanitation facilities for staff and patients to the neglect of guests who should be recognized for the important support they provide to patients. The availability, accessibility, and condition of basic sanitary facilities have not been formally studied in hospitals in Ghana and indeed across the West African sub region, even though the need to maintain a minimum standard of sanitation in health facilities has gained attention of government and international donor agencies as well as the global public health community. This study seeks to close the information and knowledge gap relating to sanitary facilities within Ghana's healthcare sector. The proposed study site is Ghana's foremost referral hospital, the Korle Bu Teaching Hospital (KBTH) which serves both Ghana and the West African sub region. With an estimated daily attendance of about 1500 patient visits and 250 daily admissions (3), the hospital receives at least 1000 guests daily, a number significant enough to make the facility appropriate to undertake such a study in support of guests and general population health.

HISTORY



A LETTER TO A NATION: ON THE BROTHERS GRIMM AND THEIR FAIRYTALES

Owen Grieves (Dr. Amy Whipple)
Department of History/ Philosophy, Politics and the Public

The Brothers Grimm, Jacob and Wilhelm, were German academics, philologists, cultural researchers, and politicians. In modern times, they are most remembered primarily for their collection of fairytales – Children's and Household Tales (Kinder und Hausmärchen). The final, and seventh edition of Kinder und Hausmärchen, released in 1857, was composed of over 200 fairytales. A selection of famous fairytales in Kinder und Hausmärchen include: Cinderella, Little Red Riding Hood, Hansel and Gretel, Rapunzel, and Sleeping Beauty. However, an esoteric and contextualized understanding of the Brothers Grimm reveals Kinder und Hausmärchen to be a politically motivated text, and possibly a letter to a newly emerging German Nation. This paper-presentation, “A Letter to a Nation: On the Brothers Grimm and their Fairytales,” is divided into four sections: the nature of a letter, the German Romanticist movement, the Brothers Grimm’s epistolary correspondence, and the implications of the Brother’s Grimm’s text. The manner in which this paper is divided is reflective of the argument of this paper. Summarily, this paper-presentation philosophically composes a normative definition of a letter, and then contextualizes the Brothers Grimm as Romanticists, operating in a fragmented, pre-unified, Germany. By doing so, and also examining the Brother’s Grimm epistolary correspondence with John Kemble, who was a folklorist, it becomes evident that the Brothers Grimm wanted to use their fairytales to illuminate a shared German culture. Thus the Brothers Grimm’s fairytales can be understood as a letter to the German people, prescribing Germanic values. Consequently, by understanding the Brother’s Grimm in this way – as active participants in Germany’s unification and prescribers of Germanic values – I conclude it can be conceived that they were prescribing a sort of civic religion for a newly formed German nation.



THE AMERICAN DREAM: A DEEPER LOOK INTO FLINT WATER CRISIS

Lydia Glover (Dr. Suparna Chatterjee)
Department of History/ Philosophy, Politics and the Public

On December 14, 2015, Flint, Michigan’s Mayor takes a stand for her people and declares Flint in a State of Emergency. It took two years and several months of denial before preventative measures were taken to help the water crisis in Flint, Michigan. By the time they started to take the testing and complaints seriously, over 2.1 percent of children were affected by lead poisoning from drinking the water. MDEQ had multiple opportunities to fix the problem, but because they were so focused on proving everyone wrong, they caused more people to be contaminated for a longer amount of time. The EPA knew that Flint did not have a corrosion control planned and did nothing to push the officials to have one. That lack of accountability, also, caused unsuitable testing on the water to be done. There is a long list of blame to go around for who is responsible for this crisis. But what if the blame is on America? These are American citizens who are being mistreated by the government who is put in place to protect them. There seemed to be no sense of urgency. The testing in children happened in the early months of 2015 and it still took almost the rest of the year to provide the water filters and going back to DWSD. It almost begs the question what is the American Dream? Here we have a city that was once

considered a flourishing one with even a decent schooling system that had its economy ruined by a motor company and later had half its population poisoned by the government.

HONORS BACHELOR OF ARTS



DEMOCRACY VS. LIBERTY: THE TELOS OF GOVERNMENT

Ryan Yeazell (Dr. Thomas Strunk)

Honors Bachelor of Arts

Democracies are known for being relatively stable and for ensuring freedom for their citizens. However, those assumptions are called into question by the various failures of modern democracies to both maintain authority and enshrine liberty. By comparing the Roman Republic (arguably the world's longest-lived democratic government) with several failed modern democracies, several issues regarding different institutional approaches to liberty come to light. The Roman Republic produced a free and democratic society, but its freedom must be qualified. Of the two types of freedom, freedom from tyranny (negative freedom) and freedom to participate in government (positive freedom), the Republic placed an emphasis on the former and kept the latter somewhat restricted. The modern cases of Zimbabwe and Cambodia demonstrate democracy's potential weakness in the face of demagoguery and the tyranny of the majority. These problems seem exacerbated, if not caused, by an excessive emphasis on the freedom to participate in government, to the detriment of freedom from tyranny. Aristotle and Mill provide a solution by shifting the purpose of government from freedom to virtue. A virtuous government is maintained by virtuous citizens, but they cannot be forced to live excellent lives; negative freedom is necessary for citizens to achieve virtue. Positive freedom, though it may satisfy our desire for political efficacy, does not ultimately create a good government. Therefore, while negative freedom is a necessary prerequisite for a good government, it ought not be the highest purpose of democracy.

PINDAR AND PEDS: HOW CULTURES OF SHAME DIFFER FROM THE ANCIENT OLYMPIC ATHLETE TO THE MODERN PROFESSIONAL ATHLETE

Patrick McGuire (Dr. Thomas Strunk)

Honors Bachelor of Arts

Unethical behavior in athletic competitions has been ever-present since some of the earliest recorded games at sites like Olympia. From bribery of judges to deceitful actions within the events themselves, there were innumerable less-than-moral ways for an athlete to gain the upper hand over his opponent. As a result athletic competitions became a constant struggle to attain and preserve one's own honor in the eyes of the public. This same pursuit for glory and fame also seems to occur in our modern athletics from about the 1990s onward—albeit with a bit of a twist. Though many contemporary athletes still hold strong to noble pursuits like the love of their respective sports, countless others have adopted more duplicitous strategies to try to attain that same glory (and money). In the past two to three decades of professional sports, there has been a seemingly exponential rise in the money within sports markets through television, advertisement and other venues. In turn this has led to widespread cheating in sports because the fact of the matter is that there are more monetary rewards than potential risks for a myriad of athletes. Specific examples like Alex Rodriguez, Roger Clemens, and Lance Armstrong highlight the harsh fact that the fame, notoriety, and most of all money they receive in their successes vastly outweigh the fall from grace they sustain. I assert that the modern journalistic standards and strategies in contemporary sports media ameliorate the dishonor an athlete would face from Homer or Pindar.



POETRY OF THE MIND: PRAXIS OF THE THEORY OF PHILOSOPHY AS POETRY

Max Bruns (Dr. Thomas Strunk)
Honors Bachelor of Arts

Martin Heidegger and Wallace Stevens both write and think about the nature of philosophy and poetry. Through an analysis of their writings, it is apparent that certain poems are acts of philosophy. Within this thesis, a lens through which poems can be read as philosophy is developed through the writings of Heidegger and Stevens, and it is thus labelled the HS lens. Then various poems, written by poets such as Shel Silverstein and Wallace Stevens himself, are read through the lens, providing a more robust understanding of how poems can be acts of philosophy. The final aim of this thesis conceives of the possibility of analyzing many radical forms of poetry as philosophy as well.

MATHEMATICS

THE ZERO FORCING NUMBER AND MINIMUM RANK

Aaron Moehring (Dr. Minnie Catral)
Department of Mathematics

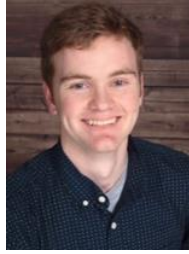
A zero forcing set of a graph, G , is a set of vertices such that when colored will color all other vertices following the color change rule. The graph parameter $Z(G)$ is the least number of vertices necessary to produce a zero forcing set. As it turns out, this graph parameter allows for the computation of the minimum rank of specific families of matrices associated with G by providing an upper bound for the maximum nullity of such matrices.

MUSIC

"NOTHING WAS DONE": A CHORAL PIECE ABOUT SEXUAL ASSAULT

Violet Midla, Lily Walsh (Dr. Kaleel Skeirik)
Department of Music

The purpose of this research and writing this choral piece was to make sure people could truly hear and begin to understand how a sexual assault or rape survivor feels. "Nothing Was Done" is a choral piece written in eight part harmony, SSAATTBB, and is accompanied merely by the testimonials of survivors, perpetrators, and even quotes from a parent of a perpetrator. What makes this song much different than most is the immersion experience and the overwhelming output of information. The fact that people are being surrounded by a wall of sound and hearing quotes directly from the testimonials in the song was a really vital thing. Also, the dynamic contrast and overwhelming feelings within the piece were essential to give almost an "anxiety attack" feel to the audience, the feeling that nothing can ever be resolved with such turmoil and stress to the brain. By the time this project was finished, the singers were all very happy with the outcome and found themselves quite impacted and in love with the piece.



A HISTORY OF MAN: LOOKING BACK AS A WAY TO SEE FORWARD

Alexander Browne, (Dr. Kaleel Skeirik)
Department of Music

History of man is a series of piano miniatures accompanied by text that examines the history of western culture through the lens of the Promethean creation myth. When Prometheus gave fire to humanity, it made people self-sufficient from the gods and able to build knowledge and power. This effected people through out history in good and bad ways. This work highlights important moments like the fall of the Roman Empire, the Renaissance, the Industrial Revolution, and World War I. It begins with Prometheus stealing the fire from the gods and giving it to humanity. After humanity is given the flame, they begin developing knowledge and innovating. Eventually that knowledge was lost dues to ignorance, corruption and fear. It was not until years later that the knowledge began to be rediscovered. With this new found knowledge, people began industrializing and creating machines with unimaginable uses. Once again ignorance and fear caused people to wage war with another, shaking the world. This left the survivors with the question, “what now?” This work is to meant to examine the successes and failures of western history and to apply those lessons to our current political and societal events

PHILOSOPHY, POLITCS, AND THE PUBLIC



AMERICAN OTHERS: THE DENIAL OF EQUALITY IN UNITED STATES TERRITORIES

Anthony Sciacca (Dr. Suparna Chatterjee)
Philosophy, Politics and the Public

This work examines conceptions of American Identity and the denial of constitutional citizenship to American Samoans, Guamanians, Puerto Ricans, and US Virgin Islanders. These territories have been possessions of the United States for over a century, notions of the otherness of native inhabitants have barred over 3.5 million Americans from true citizenship. This thesis provides a brief history of The Insular Cases and the evolution of the political administration and status of these territories, in order to examine how differences in culture, language, and religion decided the fate of US territories and the citizens born there. The US is predicted to become majority non-white by mid-century, and the political status of American territorials is the last rooted in conceptions of race and culture. This thesis aims to demonstrate how the idea of the otherness of certain Americans is one that needs to be addressed, as contemporary American identity has shifted away from the outdated ideals that defined American citizenship in the era of territorial acquisition.



DOES THE BLACK LIVES MATTER MOVEMENT MATTER TO SUPREME COURT JUSTICES?

Lia Mazzarella (Dr. Mack Mariani)
Philosophy, Politics and the Public

The question of the relationship between the Supreme Court and the public has been widely debated among philosophers, political scientists, and legal scholars, with most arguing that the public opinion influences Supreme Court decisions. The gap in the literature lies in the lack of specifics i.e. specific events that have played a significant role in impacting decisions and specific justices' opinions (rather than just the final vote) that may indicate how such events influence the Court's reasoning behind decision. My study observes conservative and liberal justices' opinions to find if the Court's incorporates race in its reasoning for Fourth Amendment policing cases more now than it did before the Black Lives Matter movement. I hypothesize that while both conservative and liberal justices increase their discussion of race after the movement, liberal justices will discuss race more both before and after Black Lives Matter. In conclusion, this project addresses the widely debated topic of police brutality and sheds new light on the relationship between the public and the judicial branch.



EDMUND BURKE AND POLITICAL REVOLUTION

Martin McNulty (Dr. Steven Frankel)
Philosophy, Politics and the Public

In contemporary political thought, revolution is often reduced to a simple, seemingly one-dimensional phenomenon. This understanding is especially prevalent in the United States, given its unique national origin. This paper will argue that the writings of Edmund Burke can help us to understand revolution in a more nuanced way. Edmund Burke left behind writings on three different revolutions and had a different opinion about each. He enthusiastically approved of the Glorious Revolution. He cautiously accepted the American Revolution. He reviled the French Revolution. The reasons Burke gave for reacting to these revolutions in such dramatically different ways can shed light not only on the nature of revolution, but also on what it means to be a healthy polity in general.

ENGAGING BLACK MASCULINITY: THE AFRICAN-AMERICAN MALE'S STRUGGLE FOR IDENTITY

Adrian Parker (Dr. Kyra Shahid)
Philosophy, Politics and the Public

This thesis explores the relationship between African-American Males and sources throughout history that have attempted to aid them in their search for identity. These sources have largely consisted of African-American females and have largely been ignored or remained hidden to the African-American male collective. Topics included: the importance of spirituality and understanding it from an African worldview, African-American male versus African-American female identity development, and the role of politics in the African-American male collective's loss of identity.



FREE SPEECH AND ITS CONTEMPORARY CHALLENGES

Evan Ward (Dr. Steven Frankel)
Philosophy, Politics and the Public

Free speech is a necessary component of civil society. The principle of free speech should, by definition, allow and even invite criticism, lest it be a hypocritical principle. However, this does not mean the opinions expressed under this principle are equally correct or good. Therefore, the recent challenges to free speech—especially those emanating from academia— should be of great concern to those who value human progress. In this thesis I will argue that free speech is worth defending and in need of defending by recounting the widespread and sometimes violent attacks on free speech and those who defend it in the public square. I will then proceed to describe and evaluate the underlying philosophies from whence these challenges come and the more specific ideas that are derived from the underlying philosophies that prominently manifest themselves today. Lastly, I will define and offer a defense of free speech, concluding that free speech should be desired and is a prerequisite for a thriving civilization.

GENTRIFICATION: A POLITICAL STRATEGY OR UNSEEN EFFECT

Aaron Rance (Dr. Mack Mariani)
Philosophy, Politics and the Public

Gentrification is an economic phenomenon that has played a critical role in the American political sphere for the last sixty years. This paper is an attempt to better understand the effects of gentrification on political representation, public policy, and political ideology of a given urban center. A historical analysis of Gentrification highlights the foundational experiences and literature that is at the forefront of understanding Gentrification. This paper hopes to provide a cohesive understanding of the rationale for gentrification while addressing the pros and cons of the gentrification debate. Finally, a conclusive articulation of a research question and design will be presented to help illuminate the research study that will be undertaken after this semester.



RUMORS, GENDER, AND RACE: THE DETROIT RIOTS OF 1943

Guilford Guthrie (Dr. Paul O'Hara)
Philosophy, Politics and the Public

The Detroit Riots of 1943 offer insight into the irony of racial tensions in the “Arsenal of Democracy.” To understand the philosophical components of the Riots, this study introduces Giambattista Vico’s New Science as an exploration into rumors and the imagination. Sally Haslanger’s “Gender and Race: (What) Are They? (What) Do We Want Them To Be?” also contributes a framework for understanding the subjugating nature of gender and race: the lived realities of womanhood and blackness in Detroit. Furthermore, despite the city’s patriotic wartime nickname, the sociopolitical situation leading up to the Riots involves automobile, union, and race politics, which divided the city as the population diversified. Finally, the study explores the implications of racial tensions in Detroit following the Riots of 1943, including the more widely-covered Riots of 1967. This study contributes to previous scholarship about the Riots of 1943 by using philosophies of rumor, imagination, gender, and race as frameworks to understand the human causes of rioting. Vico’s New Science, Sigmund

Freud's Group Psychology, and Sally Haslanger's "Gender and Race" provide these theoretical frameworks, and result in a new interpretation of Detroit's racial tensions during, and after, World War II.



THE RELATIONSHIP BETWEEN CHURCH AND STATE IN THE FRENCH REVOLUTION

Alexander Hale (Dr. Steven Frankel)
Philosophy, Politics and the Public

The French Revolution is often defined among other things as an anti-religious event. Yet, at the same time as the revolutionaries were cutting off the heads of Christian people, the Revolution was working towards some basic Christian goals. The reason for this antagonism towards Christianity was because the Church became tied too closely with the State, effectively making the Church a civil religion instead of a spiritual religion. This change resulted in the Church losing track of its own spiritual beliefs. Priests lived in opulence and still charged the people tithes. There was no consideration of the poor and the vulnerable. The Revolutionaries were inspired largely by the philosophy of Jean-Jacques Rousseau among others who called for the setting of high political goals to overthrow societal standards completely, which led to consequentialism and therefore the Terror. Yet, the Church cannot remove itself completely from the State because without some sort of moral framework founded upon a religious framework, it can be too easy for the state to either give in to complete hedonism, or consequentialism. The question that follows from this line of reasoning is what is the best role for faith to play in society so that it isn't damaging itself by being too tied to the State. At the same time, it asks how the Church guide the State towards a true morality that makes life better for all.

PHYSICS



COMPARISON OF CAVITATION IN MULTIPLE LIQUIDS THROUGH SUDDEN ACCELERATION

Matthew Karnes (Dr. Heidrun Schmitzer)
Department of Physics

When forced to suddenly accelerate, liquids have a tendency to undergo cavitation, which can prove to be catastrophic for the liquid's container. Whether this cavitation will occur or not can be determined using a formula which takes into account the acceleration of the container as well as the vapor pressure of the liquid, density, and fill height. In this project we investigate the dependence of cavitation on the viscosity, vapor pressure, and surface tension of the liquids. To do this, the cavitation that is produced in deionized water, fructose corn syrup, and isopropyl alcohol is compared. A free falling weight which strikes the container is used to induce cavitation by sudden acceleration. A high speed camera records the created void(s) in the container. From these recordings the size and number of the bubbles induced in the two liquids are compared. We then attempt to find how the viscosity, the vapor pressure, and the surface tension influence cavitation.

COMPUTATIONAL OPTIMIZATION OF MONTE-CARLO SIMULATIONS OF MAGNETIC ISING MODELS

Patrick Gemperline

(Dr. Jonathan Morris and Dr. David Gerberry)

Department of Physics / Department of Mathematics

Sodium cobaltate, NaXCoO_2 , has versatile characteristics that have been studied as potentially being used as a battery cathode, good thermoelectric material, and a superconductor when hydrated. Mobile sodium ions in NaXCoO_2 can occupy two energetically different neighboring sites in the crystal structure. By mapping the neighboring sites onto Ising spins we are able to study the ground-state structures using Monte-Carlo simulations. Models of this type fall into the category of computationally intensive due to the amount of time and CPU resources needed to complete them. As the number of atoms in the crystal being modeled increase the number of calculations increases at an exponential rate. In order to deal with this behavior of the model, several optimizations were performed. In addition to general computational optimizations, various sampling methods of parameter space (i.e. uniform grid, Monte Carlo sampling and Latin Hypercube sampling) are compared to show how computational efficiency can be improved while retaining the completeness of the simulation results.



DEVELOPMENT OF A LASER BEAM PROFILER USING A RASPBERRY PI MICROCOMPUTER AND PI NOIR CAMERA ATTACHMENT

Andrew Fisher (Dr. Heidrun Schmitzer)

Department of Physics

To reduce laboratory costs, an attempt was made to mimic beam profiler functionality (i.e. collection of data about incident laser beam cross-sectional shape) using a microcomputer and camera attachment, with Python software. A Raspberry Pi microcomputer and Pi NoIR Camera were purchased and Raspbian was installed on the computer. Code written by Anthony Ransford (UCLA) was modified to remove unwanted functionality, and allow the profiler to take faster, low-resolution video for alignment, then change to high-resolution imaging for a single snapshot of the incident beam. Data for relative light intensity per pixel was calculated based on RGB values, and was outputted as a matrix that represents the screen as a set of pixels. While the software functions as intended, initial tests with the camera under a HeNe laser reveal flaws in the sensor architecture that create unwanted interference patterns, reducing the ability of the software to output accurate data.



IONIZATION OF CIRCUMSTELLAR ACCRETION DISKS BY COSMIC RAYS

Chris Sievers (Dr. Marco Fatuzzo)

Department of Physics

Our galaxy is filled with cosmic rays - charged particles (mostly protons) that are believed to be produced in the shocks that form when supernovae remnants interact with dense molecular material in the interstellar medium. When cosmic rays impinge upon circumstellar disks surrounding T Tauri stars, they ionize the gas and dust in the disk, which in turn helps drive planet formation. However, cosmic rays can be reflected by the magnetic field that threads through the circumstellar disks, thereby limiting their ability to ionize the disk. This paper provides a detailed analysis and simulation of the trajectories of the cosmic rays through accretion disks in order to determine how much of the disk can be ionized by an incident flux of cosmic rays.



MODELING GLACIER RESPONSE TO CLIMATE CHANGE

Maggie Burlingame (Dr. Marco Fatuzzo)
Department of Physics

Changes in sea temperature, natural disasters, sea ice and glaciers have long served as indicators of disruptions in normal climate patterns. Glaciers typically melt during the warmer months and then regain mass through winter precipitation resulting in fluctuations about a mean mass and length. The rising temperatures and changes in rainfall patterns which result from increasing anthropogenic climate change have created unpredictability in global glacier behavior. These changes in behavior can be studied to provide insight into global climate conditions. Our work addresses modeling the variations in glaciers in response to changing conditions in climate. We will consider the mathematical equations used for tracking and predicting glacier length variability and how these projections can be used to forecast future impacts of climate change.



OBSERVING REDOX EVENTS AND REACTIVE OXYGEN SPECIES PRODUCTION IN CRYPTOCHROME MUTANTS

Joseph Robles (Dr. Justin Link)
Department of Physics

Cryptochrome is a Flavo protein found throughout the animal kingdom. While its function varies slightly according to species, it serves primarily as a blue light detector. Within plants, Cryptochrome senses light in order to determine how the plant will grow via interaction with downstream signaling molecules. However, the mechanism of conformational change as this photoreceptor detects blue light in plants remains to be unknown. Currently it is hypothesized that Flavin detects blue light becoming reduced via an electron transport chain in turn causing a conformational change in the C-terminal of Cryptochrome. Reactive oxygen species are created as a by-product of this reaction. To better understand the nature of this folding mechanism, Cryptochrome mutants of *Arabidopsis thaliana* were studied using Ultraviolet-Visible spectrophotometry to detect redox events of protein isolates as well as spectrofluorescence assays to measure the concentration of reactive oxygen species within photoreduced samples. Furthermore the whether or not Cryptochrome is magnetically sensitive has been a topic of debate in the field. Cryptochrome mutant D396N was observed to have a higher rate of re-oxidation following reduction in the presence of a constant 9 gauss magnetic field. An electron transport chain mutant, Trp triad, was recorded to have a linearly increasing concentration of ROS according to duration of time exposed to blue light. Further analysis is needed to draw conclusions from this data.



X-BOT

Anthony Luster, Josh Young, Taylor Kaake, Tyler Wallace (Dr. Haider Raad)
Department of Physics

Seniors in the Engineering Physics program at Xavier University are conducting the research, design, building, and implementation of a fully functional and autonomously moving, helpful robot. This robot will be able to move around the halls of the Lindner Hall physics building and be capable of interacting with students, faculty, and guest. The project was chosen because it encompasses three of the main areas under which the students have studied over the course of their time at Xavier. It is also an extension and combination of previous projects through the extraction of certain features they possess. These include the X-Glass, Thermostat and Digital Lock1. Those three main areas of coursework will also be the three domains of design and implementation that the project work will be divided up. These three domains are computer, electrical, and mechanical engineering. While each senior student has his own topic of interest and specialty among these, all four will work across all three domains including the project management domain. The last purpose of this robot will be to have a reoccurring project for the next class of Engineering Physics seniors to build upon and improve.

POLITICAL SCIENCE

BAKER VS. CARR

Nicholas Lubanski (Dr. Mack Mariani)
Department of Political Science

Baker vs. Carr was a landmark Supreme Court case in 1962 that decided that redistricting (attempts to change the way voting districts are delineated) issues present justiciable questions, thus enabling federal courts to intervene in and to decide redistricting cases. This ruling was the one-man one-vote concept. In the years preceding Baker vs. Carr there was an influx in urbanization and after the court case there was a flight of the middle class and wealthy out of urban areas. There is a large gap in the research of state level districts because a majority of the research done on this particular topic is generally focused on a national level. There lays copious amounts of knowledge to be gained from the state level on this topic. My analysis will focus on the effect that Baker vs. Carr had on state level congressional districts and will focus on the demography of the districts before and after the court case. The specific material being analyzed in this paper will be the demography of congressional districts before the Supreme Court ruling in Baker vs. Carr and the demography after the verdict in Baker vs. Carr. A large emphasis will be placed on what happened to the congressional districts with respect to race, income, and party affiliation. The more urban communities became further polarized in democratic political ideology causing the Democratic Party to further polarize their ideology in order to receive votes. The redistricting also caused a flight out of the urban communities for middle class and upper class individuals and families to suburban and rural communities that would better suit their political interests. I will be using the one-man one-vote ruling in Baker vs. Carr (the proxy being time and comparison of before and after the verdict took place in the mid 1960's) as my independent variable and my dependent variables will be race, income, and urban/rural/suburban composition of the districts. My theory is that Baker vs. Carr led to a shift in the demography of democratic interests, which led to a rapid shift in the politics of the party towards minority and urban interests. This political change was accelerated by the flight of the middle class and wealthy out of urban areas. The Supreme Court ruling in Baker vs. Carr led to a rapid shift in demography, which expedited polarization of the two major political parties.



BUDDING MINDS: RELAXED MARIJUANA POLICIES AND TEENAGE DRUG USE

Brendan McCarthy (Dr. Mack Mariani)
Department of Political Science

In recent years many state governments have adopted legalized medical marijuana and other forms of relaxed cannabis policy. Opponents of medical marijuana claim that relaxed policies will increase the prevalence of teenage drug use, whereas proponents claim there's no effect. Scholars examining the effects of legal medical marijuana have found mixed results, with some finding significant changes in levels of drug use amongst teens, and some finding no change. The research uses data from the Youth Risk Behavior Survey to examine how changes in medical marijuana policy affected behaviors of adolescents from 1991-2015 across all 50 states. This research adds a layer of scholarship to the ongoing effort examining MML's affect on populations.

DEBT'S EFFECT ON TRUST IN GOVERNMENT

Robert Richards (Dr. Mack Mariani)
Department of Political Science

The federal debt, deficit, and spending is a hot topic in every congressional and presidential campaign in the United States. However, most economists agree that the United States is not in danger of defaulting. On the other hand, large debt limits the government's spending endeavors. This is true for any government. So, I seek to discover if the size of a country's debt has any correlation with the citizens' trust in their government institutions. Large debt means that the government's investment is relatively large which I believe would lead to more effective institutions and more trust. On the other hand, large debt also means that the government may have a hard time maintaining their spending which makes investment less reliable. In turn, trust would decrease. Although, some have argued that debt is irrelevant to trust. If citizens believe that their money is being spent on worthwhile projects, then they will trust their institutions. Ultimately, trust in government is a very broad variable so it will be hard to gage how debt affects it. Despite politicians' rhetoric, it is unclear whether the level of national debt has an effect on the citizens' confidence in their government. Debt can paralyze a government in many ways. It can discourage a government from taking on a large spending endeavor. It can lead to default which can cause a government to be reliant or at the mercy of another country. However, does debt really effect citizens' faith in their government. Originally, I hypothesized that it would. Overwhelming debt can cause a government to be less effective and I thought that would in turn decrease the trust. However, this hypothesis had not been tested. My project will aim to see if debt has any effect on trust in government. It may only effect trust if it also effects another aspect of the government. I will examine how a government's debt to GDP ratio effects citizens' trust in government institutions. Debt to GDP ratio is a very good indicator of a government's chances of defaulting on its debt. That is what I'd really like to study, but the debt to GDP ratio will serve as a good proxy. I will also look at how other variables may effect this relationship: such as the regime type, effectiveness of the government, the GDP per capita, and others. I believe that as the debt to GDP ratio rises, confidence in government institutions will fall. In other words, they will be negatively correlated. I assume that the relationship, if any exists, will be hard to see because many variables effect the confidence in government institutions. Also, I will be looking at many different countries at one time instead of one country over time. One country over time would be easier because it would be easier to hold all else equal. In conclusion, this project will shine light on the effects of debt on countries' trust from their citizens which is important in governing effectively.



DESCRIPTIVE REPRESENTATION OF LATINOS

Fernando Salinas (Dr. Mack Mariani)
Department of Political Science

Previous research suggests that people are more likely to view government positively when they are descriptively represented. Moreover, trust in representatives has been found to be linked to peace and satisfaction in a multi-cultural government (Kenworthy, 2015). With the majority of congressional representatives in the United States being white, these findings raise questions about whether non-whites feel better represented when their legislator shares their ethnic or racial background. I hypothesize that in a comparison of non-white individuals, those represented by non-white representatives are more satisfied with the government's work than those who are represented by white representatives. To test my hypothesis, I examine levels of trust among a group of Hispanic voters in 2016 using the American National Election Study, comparing those represented by Hispanic legislators with those who are represented by non-Hispanic legislators. This is important because it gives congressional legislators insight on whether race plays a role in the approval of congressional action.



DIFFERENCES BETWEEN MEN AND WOMEN SENATORS' COMMUNICATION ON TWITTER

Lia Mazzarella (Dr. Mack Mariani)
Department of Political Science

Scholars have found that in order to present the most favorable image of themselves, U.S. Senators manipulate gender stereotypes in their communication with constituents. Previous studies have found that both men and women senators enhance stereotypes when discussing policy and offset stereotypes when discussing matters more related to their personality traits. However, there is a lack of research on senators' communications with constituents on social media. My study examines 15 men and women senators' Tweets over a one-month period to find whether gender differences and use of stereotypes in formal communication extends into Twitter.



DIFFERENCES IN NATIONAL PRIORITIES IN THE URBAN/RURAL DIVIDE

Miles Tiemeyer (Dr. Mack Mariani)
Department of Political Science

My project aims to examine the differences in national priorities between those living in urban, suburban, and rural communities. A majority of the literature debating the differences being urban, suburban, and rural communities discusses the differences in political affiliations and voting tendencies. I believe another essential

way to analyze this relationship is to look at the self-described national priorities. The American National Election Study has been asking voters questions about what they view as the nation's top priority since the middle of the 20th century starting in the 1940s. In order to truly understand this data, one must view the results in the historical context of the time. I believe that the data will show that urban residents are more likely to be in tune with social issue while suburban and rural residents are more likely to rank economic and foreign affairs issues as higher on their priority scale. I believe that this trend will be consistent throughout the data set even if the political parties changes alliances and issues they are supporting. I believe that national priorities are a more effect way of measuring attitudes and their context in history than voting patterns.



HOW COLONIALISM AFFECTS AFRICA'S MENTAL HEALTH

Charese Foster (Dr. Mack Mariani)
Department of Political Science

The main idea of my project is that colonialism has a long-term impact on mental health in Africa. Previous research on colonialism argued that all colonial powers had the same methods of controlling colonized nations. But through further research, I realized that each colonial power had different control methods. My research question is: to what extent does colonial legacy impact the mental health of people living in formerly colonized countries today? I am examining the impact of colonial legacies by analyzing the relationship between colonization and the suicide rates of African countries in 2015. . My hypothesis is that countries colonized by the British, French, Belgian, Spanish and Portuguese will have higher rates of suicide today than countries that were not colonized by those nations. Secondarily, countries that were colonized by Belgium will have higher suicide rates than countries colonized by other nations. Belgian colonial citizens were treated worse because of the degree to which colonies those were controlled and citizens were displaced and forced to change their ideologies.



HOW GENDER AFFECTS SUPPORT FOR EDUCATION LEGISLATION

Cormac Cashner (Dr. Mack Mariani)
Department of Political Science

The overall purpose of this study is to find out if there is a correlation between gender and support for education legislation. This idea comes from various gendered stereotypes. Typically, females show more female traits, such as compassion, understanding, and cooperation. On the other hand, males typically show much more aggression, are more demanding, and are more controlling. This study is trying to figure out if these stereotypes about how females and males act have an effect on their support for education legislation. My hypothesis is that female representatives will have greater support for education legislation than male representatives. I struggled to find sufficient data to analyze what exactly I wanted. I instead created my own dataset, specifically focusing on the 114th Congress. I used the House of Representatives, because the Senate had a much smaller sample size of females. The House, on the other hand, gives a much larger sample of female representatives, and therefore will hopefully yield a more accurate data. I also included a few other variables in my dataset. Because party affiliation often plays a major role in how representatives vote, I added what party every member aligns with. I also added state and representative name for better reference, which could also help see if there is any regional affect or any outliers in the data.



INCREASING INCUMBENCY ADVANTAGE OR PARTISAN REALIGNMENT? EVIDENCE FROM THE OHIO LEGISLATURE, 1966-2010

Gabrielle Mooney (Dr. Mack Mariani)
Department of Political Science

In the 1970s, Morris Fiorina and David Mayhew produced seminal works of political science that put forward the theory that the incumbency advantage enjoyed by congressional incumbents increased over time as a result of intentional efforts to take advantage of institutional resources and perquisites and the adoption of legislative styles that focused on casework and constituency service. The theory of incumbency advantage has been challenged in recent years by Jeff Stonecash and others who have demonstrated that trends in the traditional measures of incumbency advantage - the sophomore surge and retirement slump - are likely a function of party realignment, not increasing incumbency advantage. In this paper, I use Ohio election data, to assess changes in incumbency advantage for members of the Ohio House of Representatives from 1966 to 2010. In this analysis, I will examine changes in the average sophomore surge for incumbent members of the Ohio House over time. Given what we know, I expect that the Ohio legislatures will do better sophomore year than their freshman year and the average incumbency advantage as measured by the sophomore surge should increase over time. Next, I will analyze changes in incumbency advantage when controlling for party. I hypothesize that the evidence of increasing electoral success for incumbents over time will be better explained by changes in party competition, rather than the increased value of incumbency itself.



IS INCOME INEQUALITY MORE PREVALENT IN REPUBLICAN STATES?

Sean Frost (Dr. Mack Mariani)
Department of Political Science

The question of whether democratic or republican states have wider gaps of inequality is a widely debated topic in the political science field. The growing gap of economic inequality in the US and at a world scale is becoming a fundamental problem facing the welfare of every individual on this earth. This problem needs more attention from scholars, and my papers tries to shed light on the fundamental reasons this inequality exists. Scholars argue that democratic states often have greater urban and minorities populations, so they're level of inequality would be higher. Also with Republican states giving more tax cuts, and being less controlling of the market more competition should be pursued making items cheaper in these states, correct? More knowledge on this could be detrimental to solving the inequality that surrounds not only the U.S. but the world, and while there is research out there it often outdated and might not have the true effects of a real-world scenario. My paper addresses the issues of which states are more unequal, Democratic or Republican, by examining the income inequality with special attention to urban population, region in the US, state density, and minority population. In depth, I will be looking at a state level analysis of which states are the most unequal, while controlling for population, region, density, and minority population. I will look at the Gini Coefficient, which is statistic dispersion used to measure income or wealth distribution of a nation's constituents. Also, I look at average income per capita at a state level, to understand which states members make more money per year, and exactly what this has to do with contributing to economic inequality in certain states. I will discuss how republican states stand in comparison to democratic states while finding what factors stem the inequality the most; in order to correctly understand economic inequality, and reveal the previously possibly misunderstood

relationship between Democratic and Republican states and where their income inequality truly stems from. I argue that with all things similar and controlled for Republican states will have greater levels of income inequality. It my belief that economic inequality stems from market capitalism, a basic fundamental undertone of the republican party, and this therefore will contribute to higher levels of economic inequality in Republican states. In conclusion, this project, by analyzing states, sheds new light on one of the biggest problems facing the world, economic inequality.



IS PIPELINE THEORY ALWAYS APPLICABLE? HOW DOES MARYLAND STACK UP AGAINST OTHER STATE LEGISLATURES AND CONGRESS?

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Literature suggests that within the last 30 years there has been an increase in the number of women holding elected office. This could be due to the increase in women's involvement or participation in politics but also pipeline theory, using experiences in lower elected office to increase their chances of getting elected to higher office. My goal is to examine whether pipeline theory always holds true. I will examine my home state of Maryland, and put it in comparison to other state legislatures and the gender makeup of Congress in a time series. I will look at the data of state legislatures and Congress to see if legislators, specifically women use their lower office to bolster their careers into higher office. I will also look at whether female legislators are more likely to run for higher office in open elections than challenging incumbents. Ultimately, women are less likely to use their lower office as a springboard to higher office which could be due to different policy priorities or stereotyping among the electorate. Scholars argue that female legislators may have more influence on policy such as health care, at the state and local level. It is interesting because Maryland itself is a typically Democratic leaning, progressive state. But currently, there are no female legislators serving in the Maryland Delegation at the Federal level. The data will then be compared to states of large Congressional delegations, medium, and small and the differences and challenges that female candidates face that male candidates might not necessarily face and factors such as likelihood to get elected, age, marital status, and occupation.



MEDIA AND FEMALES IN POLITICS: IT WASN'T ENTIRELY HILLARY'S FAULT

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The internet has ushered in an age of infinitely expanding content with no signs of slowing down any time soon. There is an outlet for everyone; conservative, liberal, or somewhere in between or outside. Its always present, whether it be from the phones in our pockets or the screens in our living rooms. The influence of media has never been greater because the media's presence has never been larger. This being said, women have suffered at the hands of the media by being portrayed/confined to certain gender roles, exploited for their sexuality, stunted in political/social growth via mis-representation, and an overall grotesque yet profitable marketing scheme designed to morph the female image into that of the ideal female image from a man's perspective. The research gathered suggests that the independent variable (i.e. the media) and dependent variable (i.e. female political success) draw directly from each other from colonial newspapers to the modern media Goliath. This casual link has progressed in favor of equality since the colonial era, especially with new female rights and activist movements on the rise. Advertising's depiction of women, for example, has largely been schemed in

order to sell beauty products and household appliances along with exploit their sexuality so as to sell to male audiences (Ad Age). Other articles claim the affect is larger than simply marketing to particular audiences. Johansen-Schmidt and Hany discuss how these images and their associated gender roles have created preferred mating characteristics, which in turn has asked the entire concept of what it means to be a woman in 2018. These findings all point to the same conclusion, that being that the media's affect has left a damaging watermark on feminism which has spurred the need for women to express themselves boisterously in order to erase these misshapen ideas.



THE EFFECT OF OPIOID PERScription DRUG RATES ON MORTALITY RATE

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The opioid crisis is an ongoing catastrophe with 64,000 lives taken in the U.S. in 2016 (1). My question is what are the factors that led to the epidemic level of deaths. My project will look at the correlation between the frequency that doctors prescribe opioids and the number of overdose deaths on a state by state basis. The factors that will be controlled based on state data are: median household income, percent college educated, percent rural, and unemployment rate. Looking at the total number of overdose deaths is essential because many people who start out taking an opioid switch to using an illicit substance. Examining this relationship will show whether deaths occur simply as a result of illegal outside means or if more prescriptions is correlated to more deaths. This is asking if the simple act of doctors prescribing opioids is a form of a "death sentence" in terms of the results; or if the number of prescriptions has nothing to do with it. household appliances along with exploit their sexuality so as to sell to male audiences (Ad Age). Other articles claim the affect is larger than simply marketing to particular audiences. Johansen-Schmidt and Hany discuss how these images and their associated gender roles have created preferred mating characteristics, which in turn has asked the entire concept of what it means to be a woman in 2018. These findings all point to the same conclusion, that being that the media's affect has left a damaging watermark on feminism which has spurred the need for women to express themselves boisterously in order to erase these misshapen ideas.



THE IMPACT OF THE RULING PARTY'S IDEOLOGY ON INCOME INEQUALITY

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The dynamic between left and right wing governments and their policies regarding equality is the bedrock of archives of studies in Political Science. However, the majority of this literature focuses excessively on intrastate policies, is inconclusive, or examines only the relationships that exist between voting patterns and feelings on inequality. As global income inequality has grown in recent years, it has elicited renewed calls to prevent harmful economic disparities in politics, education, and other institutions. This paper addresses the issue of income inequality with regard to the ideology of legislatures. Through a comparison of thirty six European and North American democracies, I hypothesize that stronger left-wing governments will be associated with a decrease in income inequality. Controlling for other macroeconomic factors such as gross domestic product, openness of economy, debt, and unemployment, only the policies of left-wing parties in government such as higher taxes, welfare programs, and graduated income taxes remain. If the policies implemented by left-wing

governments reduce income inequality, voters and politicians can utilize this information to solve an increasingly crucial problem.



THE PERSISTENCE OF GENDER DISCRIMINATION IN POLITICS

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There is notable research that was conducted in the 1990s that suggests that male and female candidates actually have an equal chance of winning an election. Many believed (and still believe) that gender bias and discrimination has a significant effect on the outcome of elections. This research begged the question: are these scholars that believe bias plays a role in elections wrong? The answer is complicated but in short no they are not wrong. It is impossible to deny that gender discrimination is an incredibly powerful force and one that continues to affect our everyday lives today. Gender is an important factor that influences election outcomes whether or not the voters realize their biases or not. This research and countless others are incredibly misleading. It is clear that we are unable to see the full picture based on the results. Women are less likely to even run for a political position than men. This is largely due to the persistence of gender role ideologies combined with the firsthand traumatizing experience of explicit gender discrimination. In large, women are not encouraged or recruited to run for political positions. And when those few women do attempt to run for a political position, they are subjected to cruel double standards that their male opponents do not face. Our society has told women that they are monetarily less valuable than men. Even in occupations that consist of mostly female workers, the average male in that position makes more money than the average female. How can we study election outcomes in a comparison of genders while also fairly accounting for gender discrimination? This is the question that I seek to answer.



THE TYPES OF STATE CAMPAIGN FINANCE POLICIES AND THEIR EFFECTS ON INCUMBENCY

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The influence of money on politics and the policies that are put at the forefront have always been a concern that, at its heart, is reflective of the true workings of the American political system. Previous research on public financing has mixed reviews, but they all show that there have been improvements, albeit small, when this option is used. In this paper, I examine public financing and the two other main types of campaign finance laws to assess the impact of different campaign reforms on electoral competitiveness in state legislative elections in all 50 states during the 2012 election cycle. I hypothesize that there will be a greater reduction in the incumbency advantage when public financing is utilized. In conclusion, this paper shows the effectiveness of campaign finance policies, specifically the public financing option, on the incumbency advantage.



COLLEGE STUDENTS' PERCEPTIONS OF FAIRNESS IN ACADEMIC ACCOMMODATIONS: ROLE OF RESPONSIBILITY FOR THE ONSET AND VISIBILITY OF THE DISABILITY.

Vanessa Rosalez (Dr. Tammy Sonnentag)
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Research has demonstrated that “quality program[s] for disability support need to be in place for students with disabilities to succeed and graduate from a university” (Smith & Lafayatee 2004, p. 314). When academic support for students with disabilities is unavailable (or is, for whatever reason, not provided), students with disabilities can experience stress and lower quality of life. Academic accommodations allow students with disabilities the opportunity to demonstrate their academic abilities relative to their non-disabled peers. For example, Pariseau, Fabiano, Massetti, Hart, and Pelham (2010) examined whether extended time on classroom assignments impacted the rate and quality of work completed among students diagnosed with ADHD. Results revealed that students with ADHD offered extended time completed more assignments at a higher quality than students with ADHD not granted extended time. Although colleges and universities are required to offer reasonable academic accommodations to individuals with disabilities, little is known about college students’ attitudes toward the academic accommodations offered to peers with disabilities. The purpose of the current study was to examine college student’s perceptions of the fairness of academic accommodations offered to peers with (non)visible disabilities, for which the peers may or may not be responsible for causing the onset of their disability. A total of 102 Xavier students were randomly assigned to read a scenario about a college peer who was or was not responsible for the onset of his deafness. Each scenario was accompanied by a photograph of the student revealing his disability as visible (presence of hearing aid) or not visible (absence of hearing aid). All participants then responded to questionnaires assessing their perceptions of the fairness of various academic accommodations. Using a series of 2 x 2 between-subjects ANOVAs, results revealed that the perceived fairness of academic accommodations did not differ when the disability was visible or non-visible; however, results revealed that participants believe that peers with a visible disability should have more rights than peers with a non-visible disability. This study adds to the existing research on perceptions of, and willingness to assist, students with academic accommodations on college campuses.



EFFECTS OF EYEWITNESS ACCURACY AND PAST CRIMINAL RECORDS ON PERCEIVED CULPABILITY OF CRIME AND PUNISHMENT SEVERITY

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Previous research on eyewitness accuracy has demonstrated that defendants with accurate eyewitness accounts have been found culpable more frequently than cases with non-accurate eyewitness accounts (Berman & Cutler, 1996). The current study extends previous research by examining if eyewitness accuracy and prior criminal record affect perceived culpability of crime and punishment severity. A total of 153 participants were given one of six police reports describing an eyewitness account (accurate or non-accurate) and the suspect’s prior criminal record (relevant vs. non-relevant vs. none). Participants then completed a perceived culpability questionnaire adapted from Brewer and Burke (2002) and an offense severity scale adapted from Douglas and Ogloff (1996) and Okimoto and Wenzel (2011). Results revealed the suspect was perceived to be more culpable

for the crime, and was given a more severe punishment, when the eyewitness account was accurate rather than inaccurate. The suspect's prior criminal record had no effect on perceived culpability or punishment severity.



EFFECTS OF OFFENDER CHARACTERISTICS ON COLLEGE STUDENT'S SENTENCING RECOMMENDATIONS

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Department of Psychology

Due to the overrepresentation of African American men and low-income individuals in the criminal justice system, it is important to examine potential bias in criminal sentencing. The purpose of this study is to examine the effects of defendant race, socioeconomic status (SES; operationalized as individual income), and educational status on college students' jail sentencing recommendations. Participants were assigned to one of six conditions describing a male offender who was arrested for a minor drug possession offense. With the exception of the defender's race (African American vs. Caucasian) and SES (high vs. low vs. unknown), the six conditions were identical. Participants were then asked to assign a jail sentence to the offender. Following this, participants were told that the offender was pursuing a master's degree, and were asked if they would like to recommend a different jail sentence. It is hypothesized that defendant race and SES will interact, such that college students will recommend the most severe sentence to the low-SES African American offender and the least severe sentence to the high-SES Caucasian offender. It is also hypothesized that participants will recommend a less harsh sentence after the defendant's higher educational status is revealed. Findings will shed light on whether an offender's demographic characteristics can influence sentencing decisions.



EFFECTS ON PARENTS OF CHILDREN WITH AUTISM SPECTRUM DISORDER: PERCEPTIONS OF PARENTING STYLES

Esperanza Jostad (Dr. Cindy Dulaney)
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This study examined the negative perceptions that the public has on parenting styles of children with Autism Spectrum Disorder (ASD), a developmental disorder that is characterized by a variety of inhibited social skills and behavioral control problems. Participants included 45 Xavier undergraduate students who read vignettes describing disciplinary styles based on Baumrind's three parenting styles—authoritarian, permissive, and authoritative. Twenty-four participants read vignettes regarding a typically developing child (TD) and 21 participants read vignettes regarding a child with ASD. After reading each vignette, participants rated their perception of how effective, helpful, and caring each parent was at disciplining their child. It was hypothesized that parents of children with ASD would be perceived as less effective, helpful, and caring towards their children compared to parents of TD children. Additionally, it was hypothesized that parents of children with ASD would score lower overall on questionnaires. Finally, it was hypothesized that participants would rate the authoritarian parenting score lowest. Results indicate that participants rated parents of TD children as most effective and helpful for the authoritarian parenting style, whereas parents of children with ASD were rated as most effective and helpful for the permissive parenting style. Regarding the level of perceived caring, parents of TD children were consistently rated as more caring than parents of children with ASD. Regardless of child type, the

authoritative parenting style was consistently rated highest overall by participants. Child type did not have any significant effects on perceptions of participants for the study. These results suggest that there may be additional social pressures on parents of children with ASD or another type of disability that should be addressed by psychological researchers.



HOW TO GET BETTER: THE EFFECTS OF PRE-PERFORMANCE ROUTINES AND INSPIRATION ON PERFORMANCE

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This study examined the effects of inspiration and pre-performance routines (PPR) on closed skilled performance. The sample consisted of 80 undergraduate students randomly assigned to four groups: a control group, an inspiration only group, a PPR only group, and an inspiration and PPR group. The participants completed a pre-test questionnaire measuring current inspiration and then watched one of two clips from the film *Any Given Sunday*. The participants in the inspiration only and inspiration and PPR groups watched a clip of the coach giving an inspirational speech to his team. The other the participants watched a clip of the coach instructing fundamentals to his team. The participants then completed a post-test questionnaire measuring inspiration. Next, the participants in the PPR only and PPR and inspiration groups performed the PPR which was left-hand contractions of a ball. All participants then completed a dart throwing task. A 2 x 2 between-subject analysis of variance was conducted with dart scores as the dependent variable and PPR (using PPR vs not using PPR) and inspiration (inspirational clip vs neutral clip) as the independent variables. Contrary to the hypotheses, preliminary data suggest that there is no significant difference in total dart scores between any of the groups. These findings did not replicate previous research, however previous research has been conducted with athletes and more experienced dart players. Many of the participants in the current study did not have dart throwing experience, therefore inspirational intervention and PPRs may only be effective in tasks for which people have experience.

MATE POACHING: A RESPONSE TO SEXUAL AND ROMANTIC PRIMES?

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Although Western culture encourages monogamy through social contracts such as marriage, mate poaching may be a source of the disestablishment of exclusive relationships. Schmitt and Buss (2001) suggests that mate poaching behavior (i.e., attracting someone already in a relationship away from their significant other) is fairly common, with 85% of participants in their research reporting being mate poached in the past and approximately half attempting to mate poach others. Mate poaching may be a common behavior during the college years, as the collegiate setting is described by Lambert, Kahn, and Apple (2003) as a location where uncommitted sexual behaviors are normalized. Given college students' intimate relationships may be more sexual than romantic in nature, the present study examined the extent to which sexual, romantic, and neutral primes affect heterosexual female college students' intentions to mate poach an attractive male target. Data collection for the current study included 137 students. The study was conducted as a 3 (Prime: Sexual, Romantic, Neutral) x 2 (Relationship Status of Male Target: Single vs. In Relationship) between subjects design. Participants were randomly assigned to one of the study's six conditions, where they completed a word-search containing sexual, romantic, or neutral words and then wrote a personal essay based on the words in the word search. Participants were then asked to view a photo of and read a vignette about an attractive male student who is or is not in a relationship. All participants then responded to questionnaires about their attraction to and willingness to engage in various "relationship-initiating" behaviors with the male target. Results revealed that participants reported greater romantic and sexual intentions toward the single male target than the male target in a relationship. The sexual, romantic, and neutral primes did not influence participants' attraction to or

willingness to engage in various relationship behaviors with the male target. This study adds to the literature on factors explaining individuals' likelihood of engaging in mate poaching behaviors. Implications of the current work will be discussed.

MINDFULNESS AND ITS ABILITY TO REDUCE COLLEGE STUDENTS' STRESS

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College students may face many challenges, such as elevated levels of academic demand, interpersonal stressors with romantic partners or roommates, financial stress, and decreased interaction with family members and friends from home. The main purpose of this study is to explore if a hyper-condensed version of a mindfulness intervention can effectively alleviate college students' stress levels. Lan, Subramaniam, Rahmat and Kar (2014) evaluated the effectiveness of a mindfulness-based training program in reducing participants' (N = 37) stress and promoting well-being. Participants underwent a condensed version of Mindfulness-based Cognitive Therapy using a treatment schedule of two hours per week. Although effective at reducing stress, one might question the feasibility/likelihood of college students dedicating two hours a week to therapy. The researcher hypothesized that a simple five-minute mindfulness activity can effectively reduce stress. In this study, participants (N=94) were undergraduate students randomly assigned to a control condition, silence condition (also serving as a control), or mindfulness activity condition. Participants assigned to the control condition completed the ten question Perceived Stress Scale (Cohen, Kamarck & Mermelstein, 1983). Participants assigned to the silence condition sat for five minutes in silence, and then completed the same perceived stress survey. Finally, the participants assigned to the mindfulness activity condition, listened to a five-minute version of mindfulness activity created by a clinical psychologist who specializes in mindfulness training, and then completed the Perceived Stress Scale. The researcher hypothesized that the five-minute mindfulness activity will provide short-term improvement; specifically those in the mindfulness activity condition would report significantly less stress than the silence and control conditions. Consistent with the hypothesis, results of a one-way between-groups ANOVA indicated there was a significant effect of the condition on college students' perceived stress scores, $F(2, 91) = 61.82, p < .001$. Post hoc t-tests indicated a significant difference between the mindfulness activity condition ($M=18.18, SD=4.65$) and silence condition, ($M= 27.00, SD=3.87$) $t(61) = 8.14, p < .001$, as well as a difference between the mindfulness activity condition and the control condition ($M= 28.68, SD=3.56$), $t(62) = 10.10, p < .001$. In both instances participants in the mindfulness condition reported less perceived stress than the two control conditions. Future research should analyze the long-term effects of the five-minute mindfulness activity. If research proves this mindfulness activity to be effective, it may be something many college students can use daily.

ONLINE VERSUS IN PERSON DATA COLLECTION AND RESPONSE VARIATION ON MEASURES OF PERSONALITY AND BEHAVIOR

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As more outlets become available to reach participants, differing forms of data collection have received increasing attention. Specifically, online data collection has been proposed as an alternative to traditional face to face methods for its cost-effectiveness and ease in reaching diverse audiences (Davidov & Depner, 2011; Duffy & Smith, 2005). The current study will extend previous research that found that data collection methods influenced response extremity and item response rates (Liu, 2016; Norman et al., 2010). One hundred and sixty two traditional undergraduate students were asked to complete, in counterbalanced order via an online survey administration system, the ICU (Frick, et al., 2003), a measure of callousness, unemotionality and uncaring attitudes; the empathy subscale of the Interpersonal Reactivity Index (IRI; Davis, 1980), a measure of empathy; the Domain-Specific Risk Taking Scale (DOSPERT; Weber et al., 2002), which provides a measure of risk taking; and the Delinquency Measure (Belmi et al., 2015), on which respondents indicate their participation in illegal behavior. One hundred and eighteen traditional undergraduate students at the same university were asked to complete the same measures, also presented in counterbalanced order, during in person sessions. Data analysis will compare responses of the two administration formats using t-tests, with the expectation that responses gathered online will reflect less social desirability. Additionally, variables such as time to complete the measures and number of participants excluded due to incomplete data, will be compared to determine whether administration format results in differences in quality of the data. Findings from the current study will contribute to existing literature and clarify any differences as a result of online data collection compared to face to face data collection.



PERCEPTIONS OF VETERANS' VERSUS CIVILIANS' PTSD

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Research indicates civilians are biased towards veterans (Schreger & Kimble, 2016). To date, little research has compared the perceptions of civilians versus veterans diagnosed with PTSD induced by the same traumatic event. It was hypothesized those with military history (i.e. veterans) would be perceived less favorably than those without military history (i.e. civilians). Participants read a vignette describing either a veteran or a civilian with PTSD from either a natural disaster or an assault. Participants (N = 169) completed self-report measures regarding their impressions, likelihood of providing social support of the individual in the vignette, mental health stigmatization and mental health treatment stigmatization. Results of a between-subject two-way ANOVA indicate, inconsistent with the hypothesis, there was no main effect of military history. Additionally, inconsistent with the hypotheses, there was no significant interaction effect between military history and trauma source.



PERSON FIRST LANGUAGE'S EFFECT ON PERCEPTIONS

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Person First Labeling is a type of labeling that emphasizes the person and minimizes stereotypes (“People First Language,” n.d). Due to increased positive perceptions, Person First Labeling is the preferred label of people with disorders and disabilities (Tobin, 2011). Consistent with past research, it is hypothesized that there will be greater positive perceptions of a person with autism when compared to a person referred to with disabling language. It was hypothesized participants will perceive an individual described as “high functioning” more favorable and prefer less social distance compared to an individual whose functioning is excluded. Additionally, it was hypothesized that the “high functioning” person with autism would be perceived most favorably. College students (N=126) were randomly assigned to read a vignette (Reichle, Drager, & Davis, 2002) describing a person labeled as an “autistic person” or “person with autism” and either “high functioning” or functioning excluded. Participants then completed the Attitudes Towards Disabled People Form-O (Yuker, Block, & Young, 1970) and a Social Distance Measure (Friedrich, Taslak, Tomasovic, & Bielen, 2015). A two way between groups ANOVA, indicated there were no perceptual differences of nor a social distance preference for the “person with autism” and the “autistic person”. There was also no main effect of labeling on preferred social distance. Participants perceived “high functioning” target (M=57.37, SD = 8.08) significantly less favorably than the target whose functioning was excluded (M=60.64, SD=6.68). Additionally, participants preferred greater social distance from the “high functioning” (M= 16.51, SD=4.53) compared to when function level was excluded (M=14.73 SD=3.81).



PERSPECTIVE-TAKING AND ITS EFFECT ON EMPATHY AND SEX ROLE STEREOTYPING

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Little research has examined the strategies that may be used to improve people's attitudes toward women. One strategy that has been effective in reducing prejudicial attitudes toward marginalized groups is perspective taking. Perspective taking involves "imagining one's self in another person's shoes" (Galinsky & Moskowitz, 2000, p. 739). Research on perspective taking has shown that it reduces stereotypes and increases recognition of discrimination towards elderly people (Galinsky & Moskowitz, 2000; Todd, Bodenhausen, & Galinsky, 2011), as well as reduces bias toward racial minority groups (Todd, Bodenhausen, & Galinsky, 2011). Despite this literature, perspective-taking has not been examined as a method to reduce negative attitudes toward women. The current study examines how taking the perspective of a woman can help individuals, particularly men, decrease sex-role stereotyping and increase empathy towards women. A total of 160 undergraduate students (80 male, 79 female), ages 18 to 23 ($M = 19.93$, $SD = 1.02$), were randomly assigned to one of three perspective-taking conditions (adapted from Galinsky & Moskowitz, 2000), reflecting a 2 (Gender: Male, Female) x 3 (Perspective Taking: Active, Objective, None) between subjects design. Specifically, participants viewed a photograph of a woman and are asked to 1) describe what she may be feeling and experiencing and how it may impact her daily life (*active perspective taking*), 2) objectively describe a typical "day in the life" of the woman in the photograph (*objective perspective taking*), or 3) view the image of the woman but not write an essay (*no perspective taking control*). All participants then completed various measures, including the BEM Sex Role Inventory (Bem, 1974) and a measure of empathetic responding (Davis, 1980). Results revealed that perspective taking impacted participants' attributions of masculine and feminine characteristics of the woman in the photo. Specifically, participants in the active and objective perspective-taking condition rated the female as possessing more feminine sex-role characteristics than participants in the control condition. Further, females reported more empathy and perspective-taking compared to males. The current study has implications for promoting more positive (i.e., less prejudicial) attitudes toward women, which may, over time, improve individuals' recognition of and willingness to stand up for women's rights.



PHYSICIAN COMMUNICATION STRATEGIES: THE EFFECT OF DIAGNOSIS TERMINOLOGY AND PROGNOSIS FRAMING ON PERCEIVED CREDIBILITY

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Department of Psychology

Current research is focused on identifying variables that may influence whether patients will adhere to their medical provider's treatment plan, such as the effect prognosis framing (i.e., emphasizing the benefits of performing the treatment behavior or the costs associated with failing to perform the treatment behavior). Other variables such as use of unclarified medical terminology may also affect perceptions of physicians' credibility (Castro, Wilson, Want, & Schillinger, 2007) and, therefore, patients' likelihood of adhering to medical directives. The purpose of the current study was to examine whether prognosis framing (gain, loss) independently, or in combination with diagnosis terminology (complex, layman's, complex and layman's), affected patients' perceptions of a physician's credibility, necessity of the medical directive, and perceived risk of treatment. A total of 184 participants were randomly assigned to one of the study's six conditions, where they viewed an e-

mail recount of a clinic visit with a physician who utilized layman's, medical, or both layman's and medical terminology followed by a gain or loss framed prognosis, prior to completing a questionnaire assessing their perception of the physician's credibility, the necessity of the medical directive, and the perceived risk of treatment. Results revealed that physicians who utilized a medical and layman's termed diagnosis were perceived as significantly more credible than physicians who utilize only medical or only layman's terminology. In addition, physicians who utilized loss framed prognoses resulted in greater patient perceived necessity and risk of treatment compared to gain framed prognoses. Together, these findings suggest that subtle communication strategies may influence patients' intentions to adhere to their physician's medical directives, their perceived risk of the treatment plan, as well as their perception of the physician's credibility.



POSSIBILITY OF EXPULSION HAS DIVERGENT EFFECTS ON THE LIKELIHOOD OF PUNISHMENT AND PERCEIVED FUTURE SUCCESSES OF BLACK AND WHITE STUDENT

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Previous research has demonstrated that academic dishonesty on college campuses is a serious and chronic problem. Since the early 1960s, large-scale, national surveys have revealed that rates of academic dishonesty (e.g., plagiarism, feigned illness to avoid a test, attempts to bribe an instructor) range from 9 to 67 percent (Bowers, 1964; Davis et al., 1992; McCabe, 1992). Although the prevalence of academic dishonesty is concerning, what is more worrisome is the potential for racial disparity in the severity of punishments given to students. As early as elementary school, Black students are 2 to 3 times more likely to be sent to the principal's office than White students, and Black students are far more likely to be suspended or expelled for academic misconduct than White students (Wallace, Goodkind, Wallace, & Bachman, 2008). Despite research on racial disparities in punishments in elementary schools, little extant research has examined if differences exist between Black and White students' punishments for academic dishonesty in a college setting. Consequently, the purpose of the current study was to examine if the severity of a punishment for an academic violation differentially influences the perceived fairness of the punishment (and the perceived ability to change) for Black and White college students. The study was conducted as a 3 (Race: White, Black, Unspecified) x 2 (Punishment: Suspended, Expelled) between-subjects design. Participants were 180 undergraduate students (61 male, 116 female, 1 write in, 2 prefer not to respond) who were randomly assigned to read one of six student misconduct files describing a (Black, White, or race unspecified) student facing either suspension or expulsion for violating a university's student code of conduct. All participants then completed questionnaires assessing their perception of the fairness of the punishment (as well as their beliefs that the student wants to change, will try to change, and will be successful in changing his misconduct). Analyses included 2 x 3 between-subjects ANOVAs, with the race of the student and the highest available punishment as the independent variables. Although race of the student did not significantly affect perceived likelihood of punishment for student misconduct, for Black students, participants believed the student would be more likely to change his temper when he was suspended versus expelled. There was no difference in participants' expectations that the White student or student whose race was unspecified would change his temper whether he was suspended or expelled.



RACIAL DIFFERENTIATION AND FACTORS PERTAINING TO THE PERCEPTIONS OF THE HOMELESS

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The purpose of this study was to examine racial difference (i.e. Black or White) and homelessness category (i.e. control, drug addict, and veteran) in order to determine participants' willingness to help, levels of responsibility, perceptions of the homeless, and attitudes towards homelessness. Researchers randomly assigned participants to read a vignette in the form of a newspaper from one of the six conditions. Then they answered the four questionnaires. The college participants failed to differentiate the homeless people based on race nor did they find an interaction between the race and any condition. However, they did report a difference between veterans and drug addicts as well as the control and drug addicts in the responsibility condition. These findings suggest that these students would be equally willing to help (in some capacity) a homeless person regardless of their race or condition and the participants would find the drug addict more responsible than the control and veteran.



ROLE OF SELF-COMPASSION ON COLLEGE STUDENTS' SOCIAL SELF-EVALUATIONS AND AFFECT ACROSS TWO DOMAINS

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Students regularly engage in self-evaluations by comparing their performance to their peers' performance (Strickhouser & Zell, 2015), which may influence their feelings about themselves and willingness to persist in college. Because failure is a natural component of learning, it is important to examine how to promote students' development when performance is weak relative to their peers. The current study examined if self-compassion moderates the impact of social comparisons on students' self-evaluations and affect across two domains relevant to college life: academic and interpersonal competence. Students ($N = 245$) completed a test of academic or interpersonal skills and then received either no feedback or false feedback reporting their performance as below average, average, or above average relative to peers. Participants then completed measures of self-evaluation, affect, and self-compassion. In the academic, $F(4,103) = 9.20, p < .001, R^2 = .26, p < .001$, and interpersonal, $F(4,105) = 14.88, p < .001, R^2 = .36, p < .001$, domains, participants reported more negative affect (but not self-evaluations) when performance was below average compared to average, above average, or when no feedback was given. Self-compassion was associated with more positive affect, $\beta_s > .25, p < .001$, and less negative affect, $\beta_s < -.28, p < .001$, in both domains, with the impact of self-compassion in the interpersonal domain particularly important for positive affect, $F(7, 102) = 13.74, \Delta R^2 = .15, p < .001$, when performance was average or above average. Increasing students' self-compassion shows potential for shaping their reactions to social comparisons.



SOCIAL AND LEGAL INFLUENCES ON COLLEGE STUDENTS' PERCEPTIONS OF DRUG RISK AND SOCIAL ACCEPTABILITY

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Previous studies have shown that the decision to use substances is multifaceted and is influenced by the people present during the decision-making process and the legal status of the substance (Gallupe & Buchard, 2013). The influence of others on individuals' substance use is apparently so strong that researcher have demonstrated that the rate at which individuals drink alcohol can be influenced by a confederate, such that the confederate can moderate the participants' rate of drinking, up or down, over the course of a study (Dericco & Garlington, 1977; Garlington & Dericco, 1977). In addition to the influence of others, the legality of a substance influences

use. For example, among Oregon youth, rates of marijuana usage increased when marijuana became legal for medical purposes (Paschall, Grube, & Biglan, 2017). Further, among Washington state youth, marijuana was perceived as more risky after legalization than before legalization (Estoup et al., 2016). The present study examined how the person who presents a drug (i.e., friend, peer, or family member) and the legal status of a drug influences individuals' perceived drug risk and perceived social acceptability of drug use. A total of 87 Xavier undergraduate students were randomly assigned to one of the study's six conditions, where they read a vignette about a new legal or illegal drug, offered to them by a peer (i.e., acquaintance), friend, or family member. All participants then respond to two questionnaires about the perceived risk and social acceptability of the drug. Analyses included a series of 2 (Legal Status of Drug) x 3 (Who Offers the Drug) ANOVAs were conducted on perceived risk of drug use and perceived social acceptability of drug use. Results revealed a main effect of Legal Status significant, $F(1, 81) = 5.56, p = .02$, such that illegal drugs were perceived as riskier ($M = 5.40, SD = .74$) than legal drugs ($M = 5.05, SD = .72$). The main effect of Who Offers the Drug was not significant, $F(2, 81) = 0.64, p = .53$. Perceived risk of drug use was not different when offered by a friend ($M = 5.36, SD = .58$), peer ($M = 5.21, SD = .81$), or family member ($M = 5.14, SD = .79$). The interaction between Legal Status and Who Offers the Drug was not significant, $F(2, 81) = 0.52, p = .60$.



SPORTS FANS' PERCEPTIONS OF INTIMATE PARTNER VIOLENCE

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Studies focusing on professional athletes' non-violent criminal transgressions present a similar trend; sports fans often favor athletes from their favorite teams who have committed crimes when compared to members of rival teams (Dietz-Uhler, End, Demakakos, Dickirson, & Grantz, 2002). With seemingly more incidents of professional athletes' intimate partner violence occurring, it is important to understand how sports fans react to athletes' aggressive behaviors that occur off the field. Consistent with previous research which demonstrates that sports fans identify with professional sports teams and therefore are more likely motivated to protect these players, (Dietz-Uhler et al., 2002), researchers hypothesize that sports fans will be more willing to justify the criminal actions of professional athletes in comparison to recreational athletes, resulting in less blame and shorter recommended punishments. Because fans may attribute the athlete's aggressive behavior to the aggressive culture of the athlete's sport, the current study hypothesizes that sports fans will recommend longer punishments, paired with fewer justifications for the intimate partner violence and greater blame placed on the individual, for the conditions involving non-aggressive sports players (NBA player, recreational basketball player) over conditions involving aggressive sports players (NFL player, recreational football players). Undergraduate students ($N = 140$) will be randomly assigned to one of four "newspaper" articles depicting intimate partner violence. These four articles describe either a NFL player, a NBA player, a recreational football player or a recreational basketball player committing intimate partner violence. Participants will read one of the articles and complete Gudjonsson's Attribution of Blame Scale (Gudjonsson, 1984) assessing the amount of criminal blame placed on the individual in the vignette as well as a punishment scale based on the Federal Sentencing Guidelines Manual (2012). Following data collection, a two-way ANOVA will be performed on the Gudjonsson Attribution of Blame Scale, specifically an aggregate blame score apart from the punishment scale.



STUDENT PERCEPTIONS OF SUBSTANCE USE: THE EFFECTS OF RULE BREAKING ON ACCEPTANCE

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The objective of this study was to examine how rule-breaking behavior influences perceptions of substance use in college students. Add something related to social/ so ties into ending of abstract; as of now the two are not connected in focus Thus far, 82 of 150 undergraduate students have participated in a Rule Breaking Group (rule breaking/confederate present vs. non rulebreaking/ confederate-absent) x Substance (alcohol, cannabis, and opioids) between-subject, factorial design measuring students' perceived acceptance of substance use and how they rate the severity of each substance. During the study, confederates broke rules in half of the groups (e.g., walked in late and neglected instructions of the researcher) and participants' acceptance score of substance use was compared between this group and the confederate-absent group. Preliminary results indicate that the acceptance scores and severity scores of the confederate-present group were not significantly different than the scores in confederate-absent group. Overall, opioid use was rated as significantly less acceptable and significantly more severe than cannabis and alcohol use, but there was no significant difference between alcohol and cannabis use. The preliminary results do not support previous research (Teunissen et al., 2014, Steinberg, 2007) about substance use that suggests that use in adolescents and young adults is based on behavior of peers rather than exposure to a substance. These preliminary results suggest that rule-breaking does not lead to greater acceptance of substance use.



STUDENTS' PERCEPTIONS OF TEACHERS' CREDIBILITY TO TEACH DIVERSITY COURSES: ROLE OF STUDENTS' AND TEACHERS' RACE

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The student population in the United States (U.S.) educational system is racially diverse, yet this diversity is not observed among the teachers. Specifically, in a recent poll conducted by the U.S Department of Education, 82% of the current U.S. teaching force is White. By 2024, students of color are expected to comprise 56% of the student population in public U.S. schools (www2.ed.gov). Research has demonstrated that students of color believe that a teachers' race impacts their academic experiences, with teachers of color holding higher expectations for students of color than White teachers (Postell, 2011). Further students who "identify with" the race of their teachers report greater academic success and perceive better mentoring experiences than students who do not identify with the race of their teachers (Hudson, 2015). Consequently, there is a need to examine how race of a professor affects students' (of different races) perceptions of the professor, and expectations about the courses taught by the professor. The current study examined if teachers' race (White or Teacher of Color) affects students' perceptions of the quality of a diversity course. Using a 2 (Race of Professor: Professor of Color vs. White Professor) x 2 (Race of Students: Students of Color vs. White Students) between-subjects design, participants were assigned to one of two conditions, where they read a syllabus about a Black American Studies course taught by either a White professor or professor of color. Subsequently, all participants completed a questionnaire assessing their expected sense of belongingness, engagement, and self-confidence in the course and their perceptions of the credibility of the professor. Results revealed that Black students expected a greater

sense of belongingness and engagement in the diversity course than White students. All students (regardless of race) perceived the Black professor as more credible to teach the diversity course than the White professor, and this effect was especially true for Black students. Results also revealed that Black students expected to have greater self-confidence in taking a diversity course compared to White students, especially with a Black professor than a White professor. However, for White students, there was no difference in expected self-confidence in the course based on the professor's race.

THE EFFECT OF COGNITIVE OR PHYSICAL EXERCISE ON IMPULSIVITY RATES

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Various forms of exercise have been shown to be effective in increasing impulsive control and enhancing executive functioning skills (Bigorra et al. 2016; Hoza et al, 2015). Maintaining focus, sustained attention, and engaging in topic related behaviors are common issues that both clinical and non-clinical populations experience. The current study evaluated whether acute physical or cognitive exercise conditions are effective interventions for increasing impulsive control on a go/no go task. Seventy-eight traditional undergraduate students were administered the Letter Sequence Task (a go/no go task), assigned to one of three 5 minute exercise interventions (physical, cognitive, or no exercise), re-administered the Letter Sequence Task and then given the Barrett Impulsiveness Scale (Patton, Stanford, & Barrett, 1995). A 3 x 2 analysis of variance will be used to measure participants' levels of impulsivity with a covariate of the Barrett Impulsiveness Scale. Findings from this study will increase understanding of how various forms of exercise influence impulsive control. This is important in developing an effective treatment strategy for impulse control issues.



THE EFFECTS OF BEING WOKEN ABRUPTLY ON BEHAVIORAL ALERTNESS AND PERCEIVED STRESS

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Previous research indicates that sleep deprivation has negative effects on cognitive ability (Killgore, et al., 2008), shiftwork experience affects cognitive ability (Rouch, Wild, Ansiau & Marquie, 2005), and sleep disturbances can increase stress (Eslami, Zimmerman, Grewal, Katz & Lipton, 2016). This study was designed to find the effects of being woken abruptly on firefighters' behavioral alertness and perceived stress. Men and women from a local fire department participated in this study. During a shift, the participants completed (N=40) the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983; Appendix C), and the two-minute Psychomotor Vigilance Test (PVT; Grant, Honn, Layton, Riedy & Van Dongen, 2017; Appendix D) to establish a baseline condition. Participants were then assigned to either the no response condition or the response condition based off of their schedules. In the no response condition, after being woken by the fire tones, participants again took the PSS and the PVT but did not respond to an emergency. In the response condition, after being woken by the fire tones and after responding to an emergency call, participants again took the PSS and the PVT. Significant increases in stress were found between the control condition and when participants were woken abruptly and significant increases in reaction times were found between the no response and the responding conditions.



THE EFFECTS OF CANDIDATE APPEARANCE ON EMPLOYABILITY

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The present study examined whether female candidates' weight would affect their perceived levels of employability, and whether clothing would affect the candidate's chance of being hired. The study manipulated a female candidate's weight (average weight versus overweight) and attire (business casual or casual attire). Participants (N = 178) were randomly assigned to one of four conditions: average weight casual or business casual attire, or overweight casual or business casual attire, and were asked to read a job description, candidate resume, that were both standardized across all four conditions, and then an interview transcript that contained the manipulation, and finally to complete a few measures. The results indicated no main effect of weight or attire, but indicated significant interactions of weight and attire on both the Hire Decision and Hireability Measure. Results supported the hypothesis that in the business casual condition, the average weight candidate would more likely be hired than the overweight candidate. The results failed to support the hypothesis that the overweight candidate wearing business casual would more likely be hired than the average weight and overweight candidate in business casual.



THE EFFECTS OF DISTRESS TOLERANCE TRAINING ON ANXIETY LEVELS AND POSITIVE AFFECT AFTER SOCIAL REJECTION

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According to the National Institute of Mental Health (2016), one in five adults in the United States (18.5%) experience mental illness each year. For example, anxiety disorders affect over 40 million adults (18.1%) between the ages of 18 and 54, and according to the American Health Association (2015), nearly one in six college students (15.8%) in the United States have been diagnosed or treated for anxiety (Brown, 2016). Though most college students are not diagnosed with anxiety-related disorders, many undergraduate students experience anxiety. Social stressors such as peer rejection occur frequently in the college setting and have been associated with symptoms of emotional dysregulation and distress intolerance, including anxiety (Zimmer-Gembeck, 2016). Zimmer-Gembeck (2016) defined distress tolerance as the enduring of negative affective states, the ability to cope with negative feelings, and the eagerness to change one's own emotional state when distressed. However, because the ability to manage emotions is not fully developed during the college years, the skill of distress tolerance may lack strength if not effectively learned (Van Eck, Warren, & Flory, 2016). Though social rejection and anxiety may be two inevitable aspects of college life, there is little research examining how distress tolerance training, a component of Dialectical Behavioral Therapy (DBT), may affect anxiety among college students after social rejection. Given this gap in the literature, the current study examined how coaching two forms of distress tolerance may affect college students' anxiety and increase positive affect following social rejection. The study was conducted as a 2 (Time: Pretest, Posttest) x 3 (Distress Tolerance Training: Survival, Reality Acceptance, No Training) mixed design. A total of 124 university students participated. After writing about a personal experience of social rejection, participants were randomly assigned to one of the study's three conditions, Survival (cold water), Reality Acceptance (half-smile, willing hands), or No Training. To examine if distress tolerance training (DTT) effectively reduced individuals' anxiety following social rejection, a 2 x 3 mixed-subjects ANOVA was conducted. Results revealed that university students experience decreased anxiety in response to practicing a reality acceptance technique compared to survival or no training. Additionally, results revealed that positive affect was not impacted by DTT. The findings suggest that DBT, particularly DTT, may be effective in decreasing anxiety in a nonclinical sample.



THE EFFECTS OF INSTAGRAM #FITSPIRATION ON FEMALES' SELF-EVALUATIONS

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Social networking sites (SNSs) are becoming one of the easiest and, arguably, most convenient ways to interact with others, with female adolescents spending about 31-60 minutes a day on Instagram, a widely known and popular photograph-based SNS (Slater, Varsani, & Diedrich, 2017). A popular hashtag on Instagram is #Fitspiration, which is a word, accompanied by fitness-related photographs, meant to inspire and motivate individuals to exercise. Because 50 to 88 percent of adolescent females report a negative view of their body shape or size after viewing SNSs (Croll, 2005;), including Instagram (Tiggeman & Zaccardo, 2015), it is important to examine the impact of #Fitspiration photographs on female Instagram users' self-evaluations. Given the limited number of empirical studies on #Fitspiration, the present study examines if #Fitspiration photographs affect female college students' self-esteem, body satisfaction, body image, and motivation to exercise. Participants included 131 female undergraduate students, ages 18-34 ($M = 19.93$, $SD = 1.95$), who were randomly assigned to one of four #Fitspiration Instagram photograph conditions: Idealistic Bodies, Realistic Bodies, Idealistic & Realistic Contrasted Bodies, and No Photograph. After exposure to one of the four conditions, the participants completed a 10-item Self-Esteem questionnaire (Rosenberg, 1965), a 5-item Body Satisfaction questionnaire (Bird, Halliwell, Diedrichs, & Harcourt, 2013), a 4-item Body Image questionnaire (Holsen, Jones, Birkeland, 2012), and a 21-item Motivation to Exercise questionnaire (Newson & Kemps, 2007). A series of one-way between-subjects ANOVAs revealed no significant difference in participants' self-esteem, $F(3,127) = 1.17$, $p = .32$, body satisfaction, $F(3,127) = .143$, $p = .93$, body image, $F(3,127) = .914$, $p = .44$, or motivation to exercise, $F(3,127) = .914$, $p = .44$, after exposure to idealistic, realistic, or comparison portraits, or no photograph. This study contributes to advancing scientific understanding of how messages on social media, especially #Fitspiration, affect females' self-evaluations, which may have implications for the development of disorders like body dysmorphic and eating disorders.



THE EFFECTS OF LABELING ON PERCEPTIONS OF INDIVIDUALS WITH AUTISM SPECTRUM DISORDER

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Department of Psychology

Previous research has demonstrated that labeling oneself as having ASD can lead to more positive interactions with, and acceptance by, peers (Matthews & Goldberg, 2015). In addition, it has been found that minority group individuals are perceived as more powerful when they self-label as part of the minority group rather than when another individual provides the label (other-label) (Galinsky et al., 2013). The purpose of the current study is to examine if the presence or absence of an ASD label, and who "delivers" the label, affects college students' perceptions of a peer with ASD. A total of 124 students were randomly assigned to one of the study's four conditions, examining the effect of the presence or absence of an ASD label, and whether the individual with ASD self-labeled or was labeled by a professor. After reading the vignette, all participants were asked to complete the 34 item Multidimensional Attitudes Scale towards Persons with Disabilities (Findler, Vilchinsky, & Werner, 2007), measuring their emotions, thoughts, and behavioral intentions. The presence of an ASD label increased individuals' positive thoughts, though it did not affect emotions or behavioral intentions. Whether the individual with ASD self-labeled or was labeled by a professor did not significantly affect peer perceptions.



THE EXTENT OF THE RELATIONSHIPS BETWEEN LOW RACE-RELATED FEAR AND ANTI-RACIST ACTIONS

Tianna Vozar, Ayarri Moore (Donna-lyn Braun J.D)
(Dr. Anna Ghee)
Department of Psychology

Research by Rattel, Midl, Blechert, and Wilhelm (2017) has suggested that fear relief is the driving force of avoidance. Individuals with high race-related fear may perceive individuals of another race as threatening, which can lead to avoidance, and in effect, reduce the likelihood of acting as an effective ally. An anti-racist ally is a person who joins people of color to eradicate racism by engaging in activities such as educating others. This research aims to better understand the various characteristics and actions of an effective anti-racist ally using an undergraduate sample. Specifically, this study explores the relationships between the race-related fear, and three types of anti-racist actions: self-directed, other-directed, and intergroup collaborative action (Alimo, 2012; Nagda, Kim, & Truelove, 2004). It is hypothesized that race-related fear will be negatively related to all action variables.



THINKING OUTSIDE THE BOX; ARE CHILDREN BETTER AT SOLVING FUNCTIONAL FIXEDNESS TASKS?

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The present study explores the differences between adults and children in functional fixedness. The experiment tested 25 children aged 3 – 5 years and 60 adults aged 18 – 34 years. Adults were randomly assigned to the child-like mindset or control conditions. In the child-like mindset condition participants completed a prompt designed to place them in a child-like mentality to improve creativity, whereas the control group completed a neutral prompt. All participants were then instructed to build a tower reaching a designated height using specific objects. The most efficient way to build the tower is by using the box which contained the objects. Based on previous research, it was hypothesized that children would utilize the box in their tower more often than all adults, and adults in a child-like mindset would utilize the box more often than adults in the control condition. Of participants who built the tower to the designated height, there was significant difference of which group utilized the box; $\chi^2(2) = 7.45, p = .02$. Of those successful, children (77%) utilized the box the most. These results are similar to previous research and could indicate that children demonstrate less functional fixedness during problem solving. Contrary to the hypothesis, of those successful, adults in the control condition (54%) utilized the box more often than the adults in a child-like mindset (30%). These findings suggest that a child-like mindset was ineffective against functional fixedness for adults.

SOCIAL WORK



OHIO GRADUATION PATHWAYS
Alban Schnieder (Dr. Jaylene Schaefer)
Department of Social Work

In the state of Ohio students that enrolled in 9th grade, in the summer of 2014, are subject to the graduation pathways created by Ohio House Bill 49. This bill was focused to improve the education budget for the year of 2018. In addition to this bill, Ohio House Bill 410 changes the requirement and process for students to be considered present, from days to hours in school. The focus of this project is to compare the previous graduation and attendance rates of Oyler High School, to the projected graduation and attendance rates of 2018.



**THE CORRELATION BETWEEN INTEGRATED CARE AND THE IMPROVEMENT IN MENTAL HEALTH:
MULTIPLE PROVIDERS AND OHIO SCALES RESULTS**
Colleen Culley (Dr. Jaylene Schaefer)
Department of Social Work

The Ohio Scales is an outcome measurement of youth receiving mental health services. In this study, results of the Y-form (the Ohio Scales form self-administered by the youth ages 12-18 receiving services) are analyzed and correlations between improved results and the number of providers seen is looked for. For the purpose of this study, multiple providers are considered an indirect measure of integrated care, the notion of combining care practices in order to consider all health-related concerns, whether physical or mental, at the same time. In this way, I will discover if such has a positive impact on mental health, as understood through a decrease in problem severity score, decrease in hopefulness score, and an increase in functioning score, as such is the determinant of improvement in the Ohio Scales. This study is descriptive in nature, unable to confirm if multiple providers or integrated care are a cause of decreased problem severity, increased functioning, and increased hopefulness. It utilizes a non-probable, convenience sample. Ohio Scale Y-form total scores of the Problem Severity, Functioning, and Hopefulness sections at intake (when the client began services at Solutions) to one year later, are contrasted. The clients whose scores will be chosen for analysis will be youth with a depression and/or anxiety diagnosis and at least two administrations of the Ohio Scales, referred to me by therapists at Solutions Community Counseling and Recovery Centers. Scores will be gathered from electronic health records. In addition to gathering this existing data, the kinds of providers each client sees at Solutions, as mentioned above, is compiled into a spreadsheet. The entire group of people I am interested in generalizing my results to are all youth with the most common diagnoses (anxiety and/or depression) who are receiving some form of mental health care. My sample, however, consists of 25 clients in the Child and Adolescent department of Solutions Community Counseling and Recovery Centers with an anxiety and/or depression diagnosis, who have received at least two administrations of the Ohio Scales.

THEOLOGY

LIQUID COURAGE OR LIQUID COMFORT?
Lauren Cartone (Dr. Marcus Mescher)
Department of Theology

Think of a hookup. What do you see? In movies and parties, alcohol is in close to every hookup. When parties involve alcohol, there is bound to be some types of hookups that occur. Many people use the alcohol as an initiator to be able to open, cope with their problems, and social pressures. Robert D. Dvorak composed research on drinking motives related to hookup culture. “Specifically, coping motives were directly associated with hookups in the past 6 months, whereas enhancement and social motives were indirectly associated with hookups through alcohol use” (Dvorak 137). These can increase the chance of having a hookup with the use of alcohol. Johannes Thurl conducted research, in the article “Interactions Between Drinking Motives and Friends in Predicting Youth Adults’ Alcohol Use”, relating to how friends and interactions play into alcohol consumption. He states, “Kairouz et al. (2002) sampled drinking occasions through a retrospective survey among college students and found that various reasons for drinking, such as to be sociable, to conform with others, to feel good, or to forget worries (all compared to drinking to enjoy the taste or to enhance a meal) increased alcohol use, as did a larger drinking group size” (Thurl 627). The yearning of fitting in and being social plays a role in alcohol consumption. The more alcohol and the more a person wants to fit in will increase the chances of hooking up. Jamie S. Bodenlos PhD., Marleah Noonan BA, and Stephanie Y. Wells BA conducted research, in “Mindfulness and Alcohol Problems in College Students: The Mediating Effects of Stress”, relating to the effects of stress with alcohol. In “Mindfulness and Alcohol Problems in College Students: The Mediating Effects of Stress” the authors explain how stress can impact alcohol use: “One risk factor for high rates of problematic drinking in college may be heightened stress levels. College students tend to endure particularly high levels of stress stemming from academic responsibilities and social pressures, 10–12 and those students who do not find healthy ways to cope with stressors can suffer from a variety of negative consequences” (Bodenlos, Noonan, Wells 371). Stress is a common thing for a college student to experience. However, it does make a difference on how they deal with stress. Bodenlos, Noonan, and Wells go on to explain the situations of high level stress, “13–15 In college students, high stress levels related to college life, greater hours worked daily, trauma, and post-traumatic stress disorder symptoms have been linked to alcohol use and alcohol-related problems” (Bondenlos, Noonan, Wells 371). College is a time of high stress which could increase the chances of drinking.

MLK: EDUCATION FOR SOCIAL CHANGE

Adrian Parker (Dr. Marcus Mescher)

Department of Theology

Independent study analysis that was based on THEO231 which focuses on the question: “How does the life and teachings of Martin Luther King, Jr. help us to effectively address faith and justice issues in our times?” In responding to this question I focused on 3 areas of my own study and experience: training in theological inquiry, analysis, and imagination, commitment to social justice as it relates to institutional levels, and education for inclusion and equity using experience of co teaching in Spring 2018. I will present on problems facing higher education classrooms as it relates to addressing racial justice/injustice, the most relevant and meaningful resources for theology, social justice, and education drawn from MLK, and proposals for educational principles/practices for college education that empowers students to be agents of racial justice.