

Undergraduate Research Symposium Poster Presenter Abstracts

Architecture and Environmental Design

Name: Ben Cook

Major(s): Architecture

Institution: Bowling Green State University

Faculty Advisor(s): Salim Elwazani, Architecture and Environmental Design

Poster #: 1

Formal Principles of Force-based Design

Force based design is a method which involves assigning a causal relationship between elements such as program, site, environment, systems, etc. and the finished design. This project seeks to analyze how each constraint and force influences the formal aspects of a specific project (Toledo Gateway Welcome Center) and in highlighting that relationship note the formal problems and resolutions within.

Name: Fadl Ageel

Major(s): Architecture

Institution: Bowling Green State University

Faculty Advisor(s): Farida Salim, Architecture and Environmental Design

Poster #: 2

Design Thinking: Integrating ORGANIZATIONAL Principles in Architectural Design

Design thinking is inseparable from any design endeavor in architecture and design fields. Designers as well as design students routinely practice design thinking but find the thinking thread in the design process challenging to trace and characterize.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Haley Evans

Major(s): Architecture

Institution: Bowling Green State University

Faculty Advisor(s): Sara Khorshidifard, Architecture

Poster #: 3

Empathy

Through the process of speaking with members of the community I defined what it means to be in need for each individual and used this information to design a community center that fits the community needs.

Name: Joel Dennis

Major(s): Architecture and Environmental Design

Institution: Bowling Green State University

Faculty Advisor(s): Salim Elwazani, Architecture and Environmental Design

Poster #: 4

Design Thinking: Integrating Environmental Principles in Architectural Design

Force based design is a method which involves assigning a causal relationship between elements such as program, site, environment, systems, etc. and the finished design. This project seeks to analyze how each constraint and force influences the formal aspects of a specific project (Toledo Gateway Welcome Center) and in highlighting that relationship note the formal problems and resolutions within.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Thomas Templin

Major(s): Architecture

Institution: Bowling Green State University

Faculty Advisor(s): Sara Khorshidifard, Architecture

Poster #: 5

Concatenation

This paper examines the problems with hunger worldwide, nationwide, and locally. These examinations put in perspective how large of a problem this is. Identifications of possible solutions are then made to benefit the hunger issues that are close to home. Maps are made to indicate where free and cheap food options are available, along with discount clothing stores. The conclusion to this paper, is that hunger should not go unnoticed, and its can be easy to do your part in your community, as many local franchises, grocery stores, companies, and governmental services are doing their part.

Name: Trayvone Mathis

Major(s): Architecture

Institution: Bowling Green State University

Faculty Advisor(s): Vibha Bhalla, Ethnicity

Poster #: 6

Executive Order

Executive Order is a proposal for an art installation that pulls from testimonials to capture the feelings and perspective of Asian Americans who were targeted for Internment. It seeks to give perspective to the viewer by showing them an objective scene they can understand without the bias of seeing people. Who are actually represented with wood

Undergraduate Research Symposium Poster Presenter Abstracts

Art

Name: Brianna Moore

Major(s): Digital Arts

Institution: Bowling Green State University

Faculty Advisor(s): Eileen Underwood, Life Sciences

Poster #: 7

Biology/Art Collaboration

How can science be shared with the public in more engaging ways than scientific papers? The Biology/Art Collaboration project provides an answer through the creation of an updated website and illustrative trading cards for the BGSU Herpetarium. The goals of the project are to promote the BGSU Herpetarium, establish better communication, increase public outreach and education, and encourage interaction between artists and scientists. Join the artist as she discusses the evolution of the website and trading cards for this unique collaboration with the BGSU Herpetarium.

Name: DaJaniere Rice

Major(s): Graphic Design

Institution: Bowling Green State University

Faculty Advisor(s): Barbara Bergstrom, Art Education

Poster #: 8

Art: The Healing Fountain for those Struggling with Depression

This research is a deeper exploration of the mind, body, and spirit of a person with depression. Revisiting my past through reading old journal and diary pages that expressed my depressive state at that time, gave me an idea of how I could integrate art into my therapy. I used the method of slow stitching to create a visual representation of my emotions. Using this process as a method of art-making, helped me confront some of my fears, be able to acknowledge when I was being rational or irrational, and even learn how to accept and love myself more.

Undergraduate Research Symposium Poster Presenter Abstracts

Athletic Training

Name: Amanda King

Major(s): Athletic Training

Institution: Bowling Green State University

Faculty Advisor(s): Andrea Cripps, College of Human Movement Sport and Leisure Studies

Poster #: 9

Determining the Effectiveness of Core Strengthening Exercise Therapies in Treating Nonspecific Low Back Pain: A Critically Appraised Topic

Transverse Abdominis and Lumbar Multifidus produce a greater reduction in pain and increase in function. CLINICAL BOTTOM LINE: Strength of Recommendation: There is moderate evidence, level 2b and higher, published from a randomized control trial and a comparative study suggesting that exercises targeting deep abdominal muscle activation, such as the Transverse Abdominis and Lumbar Multifidus, work best to decrease pain and increase function in athletes with nonspecific low back pain. However, there is also moderate evidence, level 1b, published in two randomized control trials that suggest no type of exercise therapy is superior to another for all athletes, but rather local factors pertaining to each athlete should direct the clinicians when creating an exercise program to reduce nonspecific low back pain. As a result of this evidence, the clinicians believe an exercise program should be created that is tailored to their individual athlete's flaws. To best reduce pain and increase function caused by nonspecific low back pain, the clinicians believe a combination of motor control exercises, graded activities, sling exercises, segmental stabilization, and spinal manipulative therapy should be utilized.

Name: Kerri Grothaus

Major(s): Athletic Training

Institution: Bowling Green State University

Faculty Advisor(s): Andrea Cripps, College of Human Movement Sport and Leisure Studies

Poster #: 10

Correlation between Volitional and Functional Balance Control in Healthy Young Athletes.

Context: Balance testing is an integral component of the evaluation of the concussed athlete. Balance deficits resulting from sensory-integration problems can be determined with a multitude of laboratory-based, computerized dynamic posturography measures, however

Undergraduate Research Symposium Poster Presenter Abstracts

current protocols currently utilize only one of these measures of balance. The Stability Evaluation Test (SET) protocol, utilizes the 6 testing conditions of the Balance Error Scoring System (BESS) to provide an objective analysis of the athlete's functional balance control based on the individual's postural sway velocity. The Limits of Stability (LOS) test quantifies impairments in an individual's ability to volitionally displace their center of gravity (COG) to their stability limits without losing balance, however, the LOS is not widely used in concussion protocols. A correlation between the LOS test and SET has not yet been established in a healthy, non-concussed population, therefore it is unknown if the LOS is a clinically relevant measure. Objective: To determine if volitional and functional balance control are correlated. Design: Prospective cross-sectional design. Setting: University research laboratory. Patients or Other Participants: Ninety-eight healthy intercollegiate athletes participated (age 20 ± 1.6 years, height 185.60 ± 7.16 cm). Interventions: All participants completed the SET and LOS testing protocols on the Natus NeuroCom® VSR Sport System. Main Outcome Measures: Reaction time (sec), movement velocity (deg/sec), endpoint excursion (%), maximal excursion (%), and directional control (%) on the LOS test; sway velocity (deg/sec) on the SET. Results: The LOS was not correlated with SET for any of the outcomes (Reaction Time, $R = -0.068$; Movement Velocity $R = 0.035$; Endpoint Excursion $R = -0.116$; Maximal Excursion $R = -0.055$). Conclusions: The lack of significant correlation between LOS and SET may indicate different construct measures. Clinicians should consider incorporating both measures into current concussion protocols. Key Words: Concussion, Balance, Volitional Control

Biological Sciences

Name: Allison Humbert

Major(s): Biochemistry and Biology

Institution: Bowling Green State University

Faculty Advisor(s): Jill Zeilstra-Ryalls, Biological Sciences

Poster #: 28

The Role of Acetylation in *Rhodobacter sphaeroides* Photosynthesis

Under low levels of oxygen and in the presence of light, *Rhodobacter sphaeroides* assembles a photosystem to harvest light energy. The photosystem includes proteins PucA and PucB. Other proteins, such as PucC help in the assembly of the photosystem. These PucA, B, and C proteins are encoded for by the puc operon. Recently, it was determined that one of the lysine residues of the protein is modified by the addition of an acetyl group. To examine the effects of this modification, it was necessary to construct a *R. sphaeroides* bacterium having suitable genetic

Undergraduate Research Symposium Poster Presenter Abstracts

background, in which *pucA* and *C* are expressed but *pucB* is not. Plasmids with various mutant *pucB* genes could then be introduced into this new *R. sphaeroides*, making it possible to investigate the consequences of the altered *PucB* protein for photosystem assembly and function. The aim of this project was to construct the new *R. sphaeroides* bacterium. This was accomplished by engineering a special plasmid having only *pucA* and *C* genes, and then moving this plasmid into a defective *R. sphaeroides* strain in which *pucA*, *B*, and *C* genes have been knocked out.

Name: Allison Humbert

Major(s): Biochemistry and Biology

Institution: Bowling Green State University

Faculty Advisor(s): Jill Zeilstra-Ryalls, Biological Sciences

Poster #: 29

Determination of the Bacterial Source of *RsaI*

RsaI is a restriction endonuclease originally reported to be from *Rhodobacter sphaeroides*. Since that first report, the genome of *R. sphaeroides* has been sequenced, which revealed the bacterium has no gene coding for *RsaI* in *R. sphaeroides*. Further, the inability of the *RsaI* source strain to grow under photosynthetic conditions indicated that it was misidentified. To confirm that the *RsaI* source strain is not from *R. sphaeroides*, the 16S rRNA gene was amplified from both *R. sphaeroides* and the *RsaI* source strain. The alignment of the DNA sequences proved that the source of *RsaI* is not from the species *R. sphaeroides*. After full genome sequencing of this new bacterium an *in silico* restriction of the DNA with *Asel* was performed, which further confirmed that these organisms are not of the same species.

Name: Andrew Lostoski

Major(s): Biology

Institution: Bowling Green State University

Faculty Advisor(s): Jeremy Klosterman, Chemistry

Poster #: 30

Undergraduate Research Symposium Poster Presenter Abstracts

Synthesis of Metal Organic Frameworks and Incorporation into Plastics

Reducing energy consumption has become a major area of research in the 20th century. Light emitting materials have emerged as one possibility to significantly reduce our current energy consumption. Organic light emitting diodes (OLED) use organic dyes and can emit light when an electronic current is introduced. When organic dyes become tightly packed they no longer emit light. This is a problem that can be fixed by putting organic dyes into metal organic frameworks. Metal organic frameworks (MOFs) are metal ion clusters that are connected by organic linkers. Metal organic frameworks are optimal for our research due to their solid-state emission properties. The structure provided by MOFs eliminates the possibility of the dye molecules becoming tightly packed resulting in quenched emission. We aim to utilize 3D printing, a method of fabricating plastics into any shape, to create plastic devices with embedded MOF particles for potential use in solid-state lighting.

Name: Ashley Everett

Major(s): Biochemistry

Institution: Bowling Green State University

Faculty Advisor(s): Ron Woodruff, Biological Sciences

Poster #: 31

CRISPR/Cas9 induced mutations of the white gene of haplo-X and diplo-X *Drosophila melanogaster*

Genome editing is the process of changing the DNA structure of a gene by deleting or replacing nucleotides, or by replacing an old gene with a new DNA sequence. The CRISPR/Cas9 bacterial system has revolutionized the genome editing process. This system consists of a CRISPR guide RNA that locates the gene of interest and a Cas9 endonuclease that cleaves the targeted DNA to form a double-strand break. Mistakes in DNA repair of this breakage often lead to base deletions or insertions. The goal of this experiment was to show that both CRISPR and Cas9 must be present to induce the white eyed mutation and test the efficiency of the CRISPR/Cas9 system by determining if a white eyed mutation can be induced at both white genes in wild-type females with attached-X chromosomes.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Catherine Freed

Major(s): Biology

Institution: Bowling Green State University

Faculty Advisor(s):

Poster #: 32

Phenotypic Analysis of Arabidopsis thaliana Mutants with Delayed Senescence

Polyamines are compounds that are found in all living organisms and are necessary for the cell to maintain its function and livelihood. These compounds play a role in plant senescence, seed germination, stress responses, and other developmental processes. In plants, polyamines are found globally and recent work has shown the characterization of two polyamine transporters to be localized in the ER (OsPUT1 gene) and the chloroplast (OsPUT3 gene). This indicates that polyamines must be transported across membranes to fulfill various tasks. A number of phenotypic assays were carried out using mutants of polyamine transporters in Arabidopsis thaliana to learn more about how polyamines affect plant growth and development. Transgenic plants overexpressing OsPUT1 gene using the 35S promoter (35S::OsPUT1), a mutant of an equivalent Arabidopsis gene - put5 (CS859607), and a mutant of a plasma membrane localized polyamine transporter (AtPDR11 Δ) were used in this study. The mutant (PDR11) started flowering 2 days ahead of wildtype and CS859607 A. thaliana, whereas the 35S::OsPUT1 delayed in flowering by about 3 days. Both mutants, CS859607 and PDR11, had thinner stems than their WT counterparts. Flowering times and basal stem width data provide evidence that polyamine transporters affect flowering time as well as plant phenotypes.

Name: Collin Austin

Major(s): Marine Biology

Institution: Bowling Green State University

Faculty Advisor(s): Matt Partin, Biology

Poster #: 33

Morphological response to current velocity in the zooxanthellate soft coral Sinularia flexibilis

Sinularia flexibilis is known to contain diterpenes that have been shown to possess properties potentially beneficial to the medical field such as antimicrobial, anti-inflammatory, and

Undergraduate Research Symposium Poster Presenter Abstracts

cytotoxicity (Kamel and Slattery, 2005). An article by Khalesi, Beeftink, & Wijffels (2007) tested the optimum flow rate of *Sinularia flexibilis* in a controlled laboratory setting and determined that 11 cm s⁻¹ was an optimal flow rate to maximize the growth of this species. The purpose of this student project is to confirm these results and to improve on the researchers design.

Name: Dale Shank

Major(s): Biology

Institution: Bowling Green State University

Faculty Advisor(s): Eileen Underwood, Biology

Poster #: 34

Comparison of growth rate, fertility, and mortality in corn snakes, *pantherophis guttatus*, relative to the odd gene

In 2005, the BGSU Herpetarium discovered a new pattern morph in their corn snake (*Pantherophis guttatus*) population, dubbed the odd morph. It was observed that snakes bearing the odd phenotype had reduced fertility and increased mortality, potentially due to the line-breeding involved in proliferating the phenotype. Part of ongoing research, this study was conducted to address whether outcrosses could establish the odd morph separate from the fertility and mortality problems, and also to quantify the odd trait's impact on growth. A range of breeding crosses (23 total) were established to compare reproductive success relative to the odd trait, and overall mortality records were analyzed. Weights were recorded weekly over a period of several months to compare the growth rate of yearling corn snakes relative to their relationship with odd. Outcrosses, particularly where the female snake was odd, continued to show low reproductive success, producing few viable eggs. Weight gain was significantly different, with unrelated snakes growing more rapidly than odd snakes. It is suspected that the continued lack of success with odd females is linked to the difficulty in reaching breeding weight. This reduces their ability to impart nutrients to potential offspring, and can lead to higher incidence of dystocia- a typically fatal inability to pass their eggs.

Name: William Gyurgyik

Major(s): Biology

Institution: Bowling Green State University

Undergraduate Research Symposium Poster Presenter Abstracts

Faculty Advisor(s): Eileen Underwood, Biology

Poster #: 35

Fertility and mortality in corn snakes with the “odd” trait

In 2005, the BGSU Herpetarium discovered a phenotypic variation in corn snakes (*Pantherophis guttatus guttatus*) called odd. Studies have found that this trait is autosomal recessive and affects both color and pattern; however, anecdotal evidence indicated that odd corn snakes did not reproduce as well and died more frequently than non-odd corn snakes. Fertility and mortality rates were measured in odd and non-odd corn snakes to substantiate these observations, with the expectation that odd corn snakes would exhibit lower fertility and higher mortality. Sixty eight non-odd male and non-odd female, 23 odd male and non-odd female, 13 non-odd male and odd female, and eight odd male and odd female crosses were analyzed. Hatch rates in clutches laid by odd females were lower than 10% (19 out of 250 eggs). Crosses with non-odd females, even with odd males, exhibited greater hatch rates ranging between 50-60% (834 out of 1371 eggs). Mortality data showed that, of 65 snakes that have died since the beginning of the odd study in 2005, 31% were odd and 27% were non-odd. While more females (N=41) than males died, this trend was consistent between odd and non-odd females. Evidence fails to support that odd snakes exhibit greater mortality, but does support that odd females exhibit lower fertility. Future studies are in place to examine the viability of offspring born from odd and non-odd pairs, and to set up outcrosses to determine if female odd fertility is a consequence of inbreeding.

Name: Edward Lagucki

Major(s): Biology

Institution: Bowling Green State University

Faculty Advisor(s): Kevin McCluney, Biological Sciences

Poster #: 36

Urbanization reduces abundance of pollinator taxa in Toledo, OH along urban gradient

Urbanization transforms natural landscapes into built environments, causing changes in ecological processes and communities. Arthropods are an important group of organisms that perform a variety of functional roles in ecosystems as pollinators, decomposers, and predators, and can be foundational in structuring food webs. The goal of this study was to identify how urbanization influences the composition of insect communities along an urban-suburban-rural gradient. We predicted that insect diversity and abundance would respond strongly to percent

Undergraduate Research Symposium Poster Presenter Abstracts

impervious surface, a measurement of urbanization. Insects were sampled from 30 sites along an urbanization gradient in Toledo, OH during July and August 2016, using pan traps, and a variety of predictor variables were recorded at each site. Here we focus on how landcover and impervious surface influence the abundance of orders of insects. We sampled and identified a total of 2372 individuals spanning 9 orders. Results indicate that two pollinator taxa, Hymenoptera and Lepidoptera, were negatively affected by urbanization. Diversity declined with herbaceous cover, but were not associated with urbanization. Community composition was significantly affected by impervious surface, canopy cover, flowering plants, and distance to city center. These results provide insight for understanding how environmental factors alter pollinators in urban environments.

Name: Erica Eskins

Major(s): Microbiology

Institution: Bowling Green State University

Faculty Advisor(s): Raymond Larsen, Biological Sciences

Poster #: 37

Antibiotic Resistance of Environmental and Laboratory Isolates of *Serratia marcescens*

Antibiotic resistance is a hot topic in the world of microbiology due to its involvement in both clinical and environmental microbiology. The bacterium at the focus of this study, *Serratia marcescens*, is classified as an opportunistic pathogen; it affects patients who have already debilitated immune systems and is known to show a large spectrum of antibiotic resistance. Polymerase chain reaction (PCR) methods were first used on 11 confirmed *S. marcescens* environmental isolates to observe the presence or absence of common beta-lactamase genes, a resistance mechanism used against certain classes of antibiotics. Antibiotic sensitivity tests were then carried out for each isolate at 30°C and 37°C to observe whether temperature and pigment production affected antibiotic resistance. Resistance spectrums of each isolate were also determined from this test. PCR results indicated that common beta-lactamases may be present in some of the isolates. Temperature and pigment production did not significantly affect antibiotic resistance patterns, but a range of responses to the antibiotics was observed. After looking at the resistance spectrums of each isolate, only three of eight antibiotics could inhibit growth of all 13 isolates at both temperatures. *S. marcescens* proved to be a very interesting bacterium that showed large diversity of resistance patterns among the isolates, which was consistent with the literature about this species. This unpredictability and its status as an opportunistic pathogen could strongly impact the immunocompromised community. Further studies need to be done to look at this species' resistance mechanisms more closely.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Erica Eskins

Major(s): Microbiology

Institution: Bowling Green State University

Faculty Advisor(s): Robert Midden, COSMOS

Poster #: 38

Positive Environmental Impact of Composting on BGSU Campus

Bowling Green State University is a 1,338 acre campus with more than 19,102 students and 800 full-time faculty. To mitigate environmental impact and promote social responsibility, BGSU has taken multiple approaches to reduce its carbon footprint. A major area of the dining halls that can be sustainably addressed is reducing the carbon footprint by waste diversion. Waste diversion reduces materials being sent to the landfill by using other methods, such as reusing, reducing and recycling. BGSU Dining, with the help of the Office of Campus Sustainability, implemented a composting program in 2014 to collect produce scraps used in the kitchens in the dining halls, and send them to a local farm, Hirzel Farms in Pemberville, OH, to be composted. After seeing the positive impact of the initial composting program, the idea to expand the program to include post-consumer food waste was generated. It is predicted that the amount of material diverted from the landfill would significantly increase. This expansion would allow for the University to promote sustainability by reducing its carbon footprint even further. With the approval of BGSU Dining and funding from the BGSU Green Fund, a pilot study will be carried out for one year to observe the impact of inclusion of post-consumer food waste at one of BGSU's dining halls, Carillon Place. From this study, it is expected that there will be a significant increase in waste diversion. If enough positive impact is made during the pilot study, post-consumer composting could be implemented at the other dining facilities on campus as well.

Name: Erin Plummer

Major(s): Biology

Institution: Bowling Green State University

Faculty Advisor(s): Kevin McCluney, Biological Sciences

Poster #: 39

Undergraduate Research Symposium Poster Presenter Abstracts

Functional trait variation in bees along an urbanization gradient in Northwest Ohio

Bees were sampled during September 2016 from a series of three urban and three rural sites in the Toledo region. Urban sites were located within 5km of the city center, and rural sites were greater than 10km from the city center. I am researching how Urbanization changes the functional traits of bees by using a LEICA EZ 4HD microscope to record a series of functional traits for individual bee specimens. A unique way to measure how changes in diversity alter ecosystem services and functions is to use functional traits. The functional traits I am measuring include; the wing wear, integumental length, length, weight, color, sex of the bees collected. Identifying differences in bee communities along an urbanization gradient is an import step to identify how human-modified landscapes alter not only the relative abundance of bees, but the functional diversity of the bee taxa in the Toledo region. These measurements can help us understand how urbanization affects functional diversity in bees.

Name: Hugh McQuillen

Major(s): Biology

Institution: Bowling Green State University

Faculty Advisor(s): Michael Geusz, Biological Sciences

Poster #: 40

Identifying Stem Cells In The Adult Brain

Neural stem cells (NSCs) are self-renewing cells that can also give rise to all other cell types in the nervous system upon differentiation. Currently there are two main sites in the brain that are known to contain NSCs; the subventricular zone (SVZ) of the lateral ventricles and the dentate gyrus (DG) of the hippocampus. However, there is evidence that NSCs may also be found in several other brain regions including the hypothalamus. Our primary objective of this project was to further characterize the presence of stem-like cells in the suprachiasmatic nucleus (SCN) of the hypothalamus. The SCN contains the master circadian clock of the body that regulates many daily rhythms in activity and physiology. We isolated the paired SCN regions from sections of adult mouse brain and cultured them in a medium that favors the growth of stem cells. To test for the presence of stem cell markers we used immunocytochemistry and confocal microscopy and applied imaging software for counting individual cells. The explant cultures revealed that the SCN contains numerous cells that are positive for the protein musashi-2 (MSI2), suggesting the presence of stem-like cells. We concluded that this RNA-binding protein that regulates a wide range of protein expression in

Undergraduate Research Symposium Poster Presenter Abstracts

cancer cells and during development may also control key components of the circadian clock mechanism.

Name: Jamie Justice

Major(s): Marine Biology

Institution: Bowling Green State University

Faculty Advisor(s): Jeff Miner, Biology

Poster #: 41

Development of a Partition Coefficient: Converting Vaterite to Aragonite in Steelhead Trout

Steel head trout (*Oncorhynchus mykiss*) have been shown to incorporate or switch to vaterite into their otoliths during development. Because vaterite is a less dense and larger variant of calcium carbonate, this can result in a reduction in the auditory acuity of an individual. As well, individuals that incorporate vaterite into their otoliths are not used in otolith microchemistry analyses because of the vast differences in the uptake of elements between aragonite and vaterite. About 50% of all hatchery raised steelhead trout incorporate or switch to vaterite in their lifetime, therefore, 50% of samples collected are not used in otolith microchemistry analyses. To decrease the number of samples wasted, a partition coefficient was developed that would enable elemental concentrations from a vaterite otolith to be converted to elemental concentrations from an aragonite otolith. This was confirmed by plotting aragonite and vaterite elemental concentrations against elemental concentrations in the water. It was found that the K_d values for each hatchery were significantly different based on variation in environmental factors such as diet and water sources, thus the K_d values were not universal. However, it was found that based on the water chemistry, vaterite values could still be converted to aragonite values, and thus those samples do not have to be wasted and can be incorporated into otolith microchemistry analyses.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Jessica Creech

Major(s): Biology- Pre-Medicine

Institution: Bowling Green State University

Faculty Advisor(s): Jill Zeilstra, College of Arts and Sciences - Biological Sciences

Poster #: 42

Replication of pRK415 in Rhodobacter sphaeroides 2.4.9

The objective of this project was to identify the genetic component of the plasmid pRK415 that is responsible for slowing the growth of *R. sphaeroides* strain 2.4.9 under anaerobic-dark conditions. Toward answering this question, two features of the plasmid were investigated; the antibiotic resistance gene and the origin of replication. Based on the findings, the antibiotic resistance gene was eliminated, and the origin of replication was identified as the plasmid feature responsible for slowing the growth of the bacteria.

Name: Joshua Simler

Major(s): Biology

Institution: Bowling Green State University

Faculty Advisor(s): Robert Midden, COSMOS

Poster #: 43

Evaluation of wastewater treatments to reduce nutrient transport from land application of dairy manure

The project that was performed in the summer of 2016 was to test the effects of different polymers on raw manure to identify the best polymer for solid/liquid separation. Once the liquid is separated from the manure cake it is then analyzed for phosphate, nitrates, and ammonium. The cakes are then used in rain simulations to see how much nutrients are released from the treated manure. Once a specific treatment is found to be successful it will then be used to treat one of 8 pilot scale plots at the Northwest Agriculture Research Station. Here the land is treated with the treated manure and the rain water is collected and tested as well for phosphates, nitrates, and ammonium. This process will likely be completed by the summer of 2017. Another part of our project was working with the Portage River Watershed to analyze the Portage River, a river just south of Bowling Green. This was done to find out the nutrient runoff from nearby farms. We placed water sampling machines out in different spots along the river and when there was more than a 5 cm increase in water level the machine

Undergraduate Research Symposium Poster Presenter Abstracts

collected a sample every hour for 24 hours. The water was then retrieved and taken back to the lab to be analyzed for phosphates, nitrates, and ammonium.

Name: Katherine D'Angelo

Major(s): Biology

Institution: Bowling Green State University

Faculty Advisor(s): Ray Larsen, Biological Sciences

Poster #: 44

Antibiotic Resistance Mechanisms in *Rahnella* Bacteria

Antibiotic resistance is a growing problem in the field of healthcare. Antibiotics are becoming less effective as species of bacteria adapt and share resistance mechanisms. If transmission of mechanisms can be better understood at the molecular level, inhibitors could be developed to lessen the likelihood of antibiotic resistance. In this study, *Rahnella* spp were isolated from environmental sources on MacConkey plates containing 100 µg ml⁻¹ ampicillin, and confirmed by 16S rRNA gene sequencing. Whole genomic DNA was extracted from isolates and initial amplifications were performed by the polymerase chain reaction (PCR) using primers specific for TEM, SHV and CTX β-lactamase genes. Products were generated only with CTX primers, and these were weak. New primers were designed based on the sequence of a β-lactamase identified in a *Rahnella* genome. These primers provided strong amplification. The products of these amplifications were sequenced, with the predicted protein products showing high sequence similarities to the previously identified *Rahnella* β-lactamase and less homology to CTX β-lactamases. Individual sequences were compared and found to cluster into two distinct groups, with each being distinct from the known *Rahnella* β-lactamase. Additional *Rahnella* isolates have been collected and further analysis is ongoing.

Name: Mahnur Khan

Major(s): Microbiology

Institution: Bowling Green State University

Faculty Advisor(s): Hans Wildschutte, Biological Sciences

Undergraduate Research Symposium Poster Presenter Abstracts

Poster #: 45 Genetic Characterization and Inhibitory Activity of Pseudomonas from Bowling Green, Hungary, and Germany

The emergence of pathogens resistant to all known antibiotics has become a serious and prevalent problem. In 2050, deaths from antibiotic resistance bacteria in the U.S. alone is predicted to be greater than 300,000 per year and the leading cause of death worldwide. Unfortunately, pharmaceutical companies have stopped researching and developing new drugs due to low profitability leaving antibiotic discovery to research laboratories. To combat this imminent global threat, the Wildschutte lab uses genetically diverse environmental bacteria, of the genus *Pseudomonas*, as a source for novel antibiotics. We hypothesize that *Pseudomonas* from different solid-state and liquid environments, have evolved the ability to produce diverse compounds that inhibit pathogenic bacteria that are adapted to a human host. To test this hypothesis, strains were isolated from soil in Bowling Green, OH and freshwater lakes within Hungary and Germany and characterized using the *gyrB* gene and antagonistic activity. 576 environmental soil and water-derived *Pseudomonas* strains were competed against a panel of 20 different opportunistic human lung adapted pathogens from cystic fibrosis patients, creating a total of 11,520 interactions among the strains. Out of these interactions, 323 of the 576 strains were successful in inhibiting pathogenic bacteria. Thus, *Pseudomonas* strains from diverse environments directly inhibit the growth of host-adapted pathogens. Future work involves using transposon mutagenesis to identify genes in the environmental strains that encode antibiotic compounds.

Name: Malika Day

Major(s): Biology Pre-Medicine (Minor in Chemistry)

Institution: Bowling Green State University

Faculty Advisor(s): Dr. Julia Halo-Wildschutte, Biological Sciences

Poster #: 46

Validation and Characterization of CfERV Insertions in Dogs and Wild Canids

Retroviruses store genetic information for their replication through RNA. During a retroviral infection, a DNA copy of the RNA is permanently integrated into the infected host cell. Endogenous retroviruses (ERVs) originate from integration of such DNA within the germ line of a host species. Specifically, the retroviral DNA copy is inserted into the nuclear genome of the cell into one of the host's chromosomes at a random position. Through transcription, the DNA of the ERV is converted into RNA and protein products by host cell machinery. If infectious, the resulting virus can now go on to infect other cells. In contrast to humans and other

Undergraduate Research Symposium Poster Presenter Abstracts

mammals, canine ERVs, or 'CfERVs' (named for discovery in *Canis familiaris*), make up just 0.15% of the canine genome. Due to mutations and old age of the insertions, the majority of CfERVs are inactive and unable to code for properly functioning genes. There have been diseases in dogs in which retroviral activity has been seen, but not further substantiated. Intriguingly, there are one or two individual CfERV insertions in the canine reference genome that appear to be recently integrated and intact. Based on this observation we previously explored the presence of additional CfERV insertions in canines by searching whole genome sequences in pair end reads for 101 dogs. In result, 60 candidate non-reference CfERV insertions were found. Based on these findings, we validated and further analyzed the reading frame presence of these additional non-reference insertions with available genomic material.

Name: Marissa Gittrich

Major(s): Microbiology

Institution: Bowling Green State University

Faculty Advisor(s): Ron Woodruff, College of Arts and Sciences

Poster #: 47

CRISPR/Cas9 induced mutations of the white gene of haplo-X and diplo-X *Drosophila melanogaster*

Genome editing is the process of changing the DNA structure of a gene by deleting or replacing nucleotides, or by replacing an old gene with a new DNA sequence. The CRISPR/Cas9 bacterial system has revolutionized the genome editing process. This system consists of a CRISPR guide RNA that locates the gene of interest and a Cas9 endonuclease that cleaves the targeted DNA to form a double-strand break. Mistakes in DNA repair of this breakage often lead to base deletions or insertions. The goal of this experiment was to show that both CRISPR and Cas9 must be present to induce the white eyed mutation and test the efficiency of the CRISPR/Cas9 system by determining if a white eyed mutation can be induced at both white genes in wild-type females with attached-X chromosomes.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Rachel Goldman

Major(s): Biology

Institution: Bowling Green State University

Faculty Advisor(s): Shannon Pelini, Biological Sciences

Poster #: 48

Effects of Sodium Addition on Invertebrate-Driven Soil Decomposition and Phosphorous Uptake

Invertebrates' activity in agricultural fields convert Phosphorous trapped in the soil into a form that can be used by crops. Small soil invertebrates in Northeast Ohio are thought to be limited by the availability of Sodium in the environment. By treating agricultural fields with Sodium, we may be able to increase invertebrate populations in the area, and crops will be able to more effectively use the Phosphorous already present in their environment. This could potentially decrease the amount of fertilizer needed by farmers to grow their crops and reduce excess runoff.

Name: Shannon Turner

Major(s): Biology

Institution: Bowling Green State University

Faculty Advisor(s): Scott Rogers, Biology

Poster #: 49

Newall Glacier Nucleic Acid Analysis

Having existed for thousands of years and being rarely touched by human populations today, glaciers are a major key to information on climate and life of the past. The purpose of this research was to determine if any organisms live approximately 100m within the Newall Glacier. Located in Antarctica between Mount Newall and Mount Weyant, the Newall glacier is found at approximately -77° 29' 59.99" S, 162° 49'59.99" E. Several Antarctic glaciers were drilled into in the 1980s by a team of Russian scientists in collaboration with laboratories around the world. Ice from this drilling was used for the purpose of this study. In order analyze what may live within the glacier, a portion of the ice core from the Newall Glacier was melted and plated on malt agar then nucleic acids were extracted, amplified, and sequenced to determine the species. Results will be presented.

Undergraduate Research Symposium Poster Presenter Abstracts

Chemistry

Name: Christopher Hicks

Major(s): Chemistry

Institution: Bowling Green State University

Faculty Advisor(s): Alexander Tarnovsky, Chemistry

Poster #: 11 Ultrafast Laser Spectroscopy Traces the Dynamics of Copper-Halogen Bonds in Real Time

The tetrabromocuprate(II) dianion was prepared and underwent ultrafast transient absorption investigation with 65 fs temporal resolution in an attempt to resolve its relaxation dynamics from its lowest energy 2E excited state to its 2B₂ ground state. CuCl₄²⁻, also of D_{2d} symmetry, was previously studied in the same manner, but with 100 fs temporal resolution and was now reinvestigated with 65 fs resolution. CuBr₄²⁻ and CuCl₄²⁻ need to be prepared with an excess of halide ion to prevent alternate species from being produced in solution. A variety of excitation and probe wavelengths were used on both compounds to study the rate of decay from different excited states and to see what role the lowest energy metal-centered state plays in these molecules' photophysical behavior.

Name: Craig Hoffman

Major(s): Chemistry with Polymer Option

Institution: University of Akron

Faculty Advisor(s): Chrys Wesdemiotis, Chemistry

Poster #: 12

Collisional Cross Section Analysis of Cyclic Polyesters

Thermoresponsive cyclic polyesters, referred to as LRM, were synthesized using differing ratios of the monomers NIP and PYR. Three samples, each having a differing ratio of the monomers, were analyzed using electrospray mass spectrometry coupled to ion mobility separation (ESI-IM-MS). From the ion mobility data, experimental collisional cross sections (CCS) were calculated for different oligomers. The experimental CCSs were then compared to theoretical CCSs obtained from molecular dynamics modeling to ascertain the structures formed.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Madison Brown

Major(s): Chemistry

Institution: Bowling Green State University

Faculty Advisor(s): Jeremy Klosterman, Chemistry

Poster #: 13

Solid State Mechanochemical Synthesis of Cocrystals

Cocrystals is an alternate way to tune solid state emission by understanding the crystal packing of organic dye molecules. In this study, cocrystals of anthracene and carbazole were sought by grinding. The structures could possibly be similar or much different based on packing. We anticipate our study to be a starting point of the main study of how cocrystals react with one another while being ground together. For example, the similarities and differences in structures of MOFs and cocrystals of anthracene and carbazole are a major development for the Klosterman Laboratory and this study.

Communication

Name: Kevin Roberts

Major(s): Communication

Institution: Bowling Green State University

Faculty Advisor(s): Lisa Hanasono, Communication

Poster #: 14

Activism on Social Media: How Messages on Social Media can Change Beliefs and Attitudes toward Immigration

Despite the rise of social media activism (SMA), the practice is often challenged and thought of as “slacktivism.” In other words, activists who use social media to raise awareness or encourage people to produce change are perceived to be engaging in meaningless efforts. Nonetheless, scholars have found that SMA has the potential to be powerful and influential. For example, the Black Lives Matter movement began almost four years ago, and #BlackLivesMatter social media

Undergraduate Research Symposium Poster Presenter Abstracts

activists continue to galvanize the public's support for anti-racism and social justice. Many activists measure their success through social media analytics, such as how many likes or shares that content has received. Although these measurements may indicate that social media users have seen and interacted with the activists' online content, it does not reveal the extent to which the social media messages influenced people's issue-specific beliefs and attitudes. Therefore, this study aimed to examine and measure how persuasive social media messages change people's attitudes regarding immigration in the United States. Drawing from the framework of social judgment theory, 516 U.S. adults were randomly assigned to read a positive, neutral, or negative social media message about immigration that was posted by a social media activist with a high or low level of perceived credibility. Although the social media messages did not systematically alter individuals' attitudinal positions, the results indicated that participants' political ideology, knowledge about current U.S. immigration issues, and ego-involvement were predictive of their attitudes about immigration. Implications, limitations, and future directions for research are provided.

Name: Jessica Smorul

Major(s): Communication

Institution: BGSU Firelands

Faculty Advisor(s): Ray Schuck, Humanities

Poster #: 15

Triadic Relationship Between Writers, Actors, and Fans in the WWE

The WWE differs from most competitive sports because of the written aspect of the show. However, that opens a unique opportunity for the writers, actors, and fans to engage and work with each other to produce the most entertaining show possible. The question is, within that triadic relationship, who has the most power? The fans dictate who they want and don't want to see, the actors earn that interest, and the writers provide the story with which the fans and actors either accept or reject. I participated in a panel discussion at the Midwest Popular Culture Association conference last fall where the other participants and I looked into who dictates the movement of any given WWE story throughout the year.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Kelsey Knoop

Major(s): Communication

Institution: Bowling Green State University

Faculty Advisor(s): Kate Magsamen-Conrad, Communication

Poster #: 16

Sexual Assault Prevention Programs on College Campuses

My presentation is intended to provide an overview of the problem of sexual assault and sexual violence on college campuses. I will be discussing the consequences of sexual violence on an individual, institutional, and societal level. I will then discuss prevention efforts being implemented by universities across the nation, including Bowling Green State University. My research has been in partnership with the company Informed-U which has been piloting a new sexual assault prevention program at BGSU this semester. I will discuss the results of this pilot.

Communication Sciences and Disorders

Name: Cortney Hansen

Major(s): Communication Disorders

Institution: Bowling Green State University

Faculty Advisor(s): Virginia Dubasik, Communication Disorders

Poster #: 17

English Verbal Lexemes and Morphological Forms: Patterns of Use and Errors in Spanish-English Bilingual Preschoolers

English verb data from sixteen preschool-age Spanish-English bilingual children are reported. Analyses determined associations between the number of verbal lexemes and number of morphological forms, and error patterns observed at three time points over the course of a school year. Results are discussed within the context of second language acquisition.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Tarynn Clune

Major(s): Communication Sciences and Disorders

Institution: Bowling Green State University

Faculty Advisor(s): Lynne Hewitt, CDIS

Poster #: 18

Communicative Behaviors Elicited by Leisure Activities in Memory Care Units

A wide variety of leisure activities used in reminiscence care have been studied for their merits in terms of preventing cognitive decline, and increasing quality of life; however, little is known about what different types have to offer in terms of communicative opportunities.

Communication with peers is imperative for quality of life, and is crucial for maintenance of relationships between the person with dementia (PWD) and their loved ones. As a result of this importance, an exploration of communication elicited by different activities facilitated in a unit was conducted. The communication explored in this study was solely vocal, and included interactions among participants, facilitators, and visitors. Although limitations to the study suggest that more investigation is required, some speculations about the impact of activity types, facilitators, and individual participants on group interaction can be made. In addition, suggestions for improving activity facilitation are suggested based on notable characteristics of activity types and facilitation strategies.

Name: Tarynn Clune

Major(s): Communication Sciences and Disorders

Institution: Bowling Green State University

Faculty Advisor(s): Jason Whitfield, Communication Sciences and Disorders

Poster #: 19

: Pause categorization in parkinsonian speech

This investigation examines various pause types produced in the speech of individuals with Parkinson disease (PD). Acoustic pause durations as short as 15 ms were examined. Results suggest that PD leads to disordered speech motor timing affecting both number and duration of pauses at segmental and supra-segmental levels.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Alexis Decker

Major(s): Communication Sciences and Disorders

Institution: Bowling Green State University

Faculty Advisor(s): Virginia Dubasik, Communication Disorders

Poster #: 20

Assessing Spanish-Speaking Children: A Comparison of International Practices

The purposes of this exploratory study were to a) summarize the recommended practices used by speech-language pathologists (SLPs) for assessment of bilingual Spanish-English children, b) identify the assessment practices by SLPs in Spanish-speaking countries, and c) determine similarities and differences between practices used by SLPs in the US and in Spanish-speaking countries. Eight participants met the inclusion criteria of working with bilingual children in schools, and being over the age of 18. All participants were female and from Spain (n = 4) and Mexico (n = 4). Participants responded to a 21 item questionnaire which consisted of questions about educational background and training, work setting and caseload composition, and specific practices used to assess bilingual children. Studies indicate that SLPs in the US and in Spanish-speaking countries are using similar practices, but the frequency with which specific practices are used differed. Case histories/questionnaires and parent/teacher interviews were used by five of the participants. Speech and language sampling and standardized testing in the native language of Spanish were reported by four participants. Conversely, none of the participants reported the use of dynamic assessment. The findings of this exploratory study offer insight into the bilingual assessment practices currently being employed in Spanish-speaking countries. This information has clinical implication for practices in the US as the number of Spanish-English speaking children in public schools has grown steadily over the past two decades.

Name: Haley Altman

Major(s): Communication Sciences and Disorders

Institution: Bowling Green State University

Faculty Advisor(s): Lynne Hewitt, CDIS

Poster #: 21

“Video Modeling for Social Communication in Adults with ASD”

Undergraduate Research Symposium Poster Presenter Abstracts

Research in adults with autism spectrum disorder (ASD) indicates a need for interventions that can assist with these individuals' social communication, in order to reverse the psychosocial toll that can result from these impairments. A pilot feasibility study (Hewitt & Kelliher, n.d.) was conducted to investigate the intervention of video modeling for adults with ASD, and data from that study was used for this current study. This study undertook to develop measures that could be valid and reliable to measure change in response to social communication intervention, and that could be applied in the future for other studies. Coding measures were developed, applied to the previous study's videos, and participant performance was compared pre-intervention to post-intervention. Also, participant performance was compared to model performance. Lastly, participants' perceptions of ASD and interventions for ASD were noted as well. Findings from this study indicate ways in which interventions may be designed to best meet the needs of each individual.

Name: Kristen Dunlap

Major(s): Communication Sciences and Disorders

Institution: Bowling Green State University

Faculty Advisor(s): Brent Archer, Communication Sciences and Disorders

Poster #: 22

A Study of Interactional Dynamics in Facilitated Conversations for People with Aphasia

Many people with communication disorders caused by brain damage such as strokes and traumatic brain injury take part in facilitated group conversations as part of their rehabilitation programs. Despite the popularity and effectiveness of this approach to therapy, few studies of the interactional dynamics at work in these conversations exist. In this study, we aim to shed light on how facilitators manage these interactions. We do so by analyzing video footage of people with aphasia taking part in a facilitated conversation. The Discourse Structure Analysis (Egins and Slade, 2005) framework we use shows that the facilitator plays a key role in setting up and propelling interaction, and manages events so that all group members, regardless of linguistic processing abilities, are afforded opportunities to take part in the conversation.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Lindsay Darr

Major(s): Communication Sciences and Disorders

Institution: Bowling Green State University

Faculty Advisor(s): Virginia Dubasik, Communication Disorders

Poster #: 23

Spanish Verbal Lexemes & Morphological Forms: Patterns of Use & Errors in Spanish-English Bilingual Preschoolers

Data from sixteen preschool-age Spanish-English bilingual children are reported, replicating and expanding upon previous work. Analyses determined associations between the number of Spanish verbal lexemes and number of morphological forms used at specific time points across one year of development. Results are discussed within the context of psycholinguistic development.

Name: Madison Livingston

Major(s): Communication Sciences and Disorders

Institution: Bowling Green State University

Faculty Advisor(s): Jason Whitfield, Communication Sciences and Disorders

Poster #: 24

Relationships Between Cognition and Speech Motor Learning

This study examines the abilities of neuro-typical individuals to chunk motor speech sequences as it relates to their working memory capabilities. Preliminary results suggest that there is a relationship between the two factors which could affect the way in which novel motor speech sequences are learned. Understanding how motor speech learning occurs could have future implications for individuals with deficits in novel sequence acquisition, such as those with Parkinson's Disease.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Sarah Pilkington

Major(s): Communication Sciences and Disorders

Institution: Bowling Green State University

Faculty Advisor(s): Ronald Scherer, Communication Sciences and Disorders

Poster #: 25

Teacher Candidates: Vocal Health

Classroom teachers are at high risk for developing voice problems and may experience positive benefits from vocal health education. Less is known about the experiences of student teachers. The objective of the study was to determine if vocal hygiene education affects the student teachers' vocal knowledge, vocal habits, voice quality, and their self-perception of their voice. Eight female education students, who were student teaching the semester of the study, were randomized into either the Experimental Group (who received vocal health information before their student teaching semester) or the Control Group. Both groups were assessed using a battery of qualitative and quantitative instruments at the beginning, middle, and end of the semester. There were no statistically significant differences between the Experimental Group and the Control Group on vocal hygiene knowledge, vocal hygiene habits, VHI-10 score, and all CAPE-V ratings. Analysis of the individual differences, however, indicates that knowledge of vocal health may influence other variables related to vocal health. Analysis of the qualitative data indicates that seven of the eight student teachers experienced problems with their voice and that all four members of the Control Group wanted information about vocal health. Due to potential limitations of the study, the researchers were not able to determine whether educational information resulted in fewer incidences of voice problems, but the data suggest, similar to classroom teachers, that student teachers are at high risk for developing voice problems during their student teaching practicum and they too may benefit from information on prevention of voice problems.

Data Science

Name: Brenda Emerson

Major(s): Data Science

Institution: Bowling Green State University

Faculty Advisor(s): Irina Stakhanova, Department of German, Russian, and East Asian Languages

Poster #: 26

Text Mining in a Russian Literature Class: The Benefits of R

Undergraduate Research Symposium Poster Presenter Abstracts

R is a programming language commonly used for statistical computing and graphical displays. It is often used in the field of data science for big data analytics. Data science is commonly thought of as being used more for business analytics or sports analytics, but it can be used in a variety of fields. Over the course of a semester, we have been using R in a Russian Literature class to analyze a variety of texts. This is done through a process called text mining. Text mining is a way of analyzing and getting relevant information from texts. This includes categorizing information, making links between different documents, and providing visualization methods. It allows us to find patterns in the texts and draw conclusions from those patterns. In this course, we focused on word frequency and making word clouds based off of that frequency. Through making word clouds, we are able to see the most frequent words in a text because they are larger and often in a different color. When making word clouds in R, there are many options of how the cloud can be formatted. It gives students a lot of choices, and they can change a few of the settings to make the cloud easier to understand. We are showing students that there is so much more to literature than just the sentences they are reading. By comparing word clouds of two different texts, they can see a variety of differences even if they had not read the text. They could see the main character, the difference in common pronouns, or even determine the genre from looking at the frequent words. In the course, we focused on microanalysis, or analyzing only one or two texts at a time, but R also offers the ability to macro analyze. Macro analysis is when you have the ability to analyze texts within the context of thousands of other texts. Looking at a years worth of texts in a certain country can reveal what pronouns were more common to use and what genres were more popular. Finding these trends can give you a sense of what the country was like at that time or if there were any disasters or celebrations in the country that could have led to those trends. While we are not doing this macro analysis currently, doing microanalysis prepares us for the possibility of doing larger-scale text mining in the future.

Dietetics

Name: Josie Mansperger

Major(s): Dietetics

Institution: Bowling Green State University

Faculty Advisor(s): Mary-Jon Ludy, College of Health and Human Services

Poster #: 50

The Influence of Modest Weight Gain on Taste and Smell Acuity in College Freshman

Background: Reduced taste and smell acuities are common among those with high BMI. Evidence of improved taste sensitivity after modest weight loss (~3-4 kg) exists in overweight individuals. Whether taste and smell decrements precede or result from weight gain is unknown. This study's purpose was to determine the effect of modest weight gain on taste and

Undergraduate Research Symposium Poster Presenter Abstracts

smell acuity. Methods: College freshmen (n=60), a cohort at risk for modest weight gain, were assessed upon arrival to campus and 5 months later. Weight, BMI, and body fat percent (%BF) were measured. Intensity ratings for graded, suprathreshold concentrations of sweet (n=3) and salty (n=3) solutions, as well as a suprathreshold orange odor were assessed. Mann-Whitney-U tests were used to indicate change from baseline to follow-up. Spearman correlation coefficients were used to identify associations between variables. Results: Sixty participants (82% female, 92% white, 18.1±0.3 years) completed testing. BMI (22.9±3.8 to 23.6±4.1kg/m²) and %BF (24.5±9.6 to 27.1±9.1%) increased at follow-up (p<0.001 for both). Weight gain (62.8±12.8 to 64.6±13.7kg, range -2.9 to +9.1kg) occurred in 79% of participants. No changes in taste intensity for low, medium, and high concentrations of sweet or salty solutions were observed. No change in smell intensity was observed over time, although smell intensity at follow-up was negatively associated with BMI (r=-0.36, p=0.048). Conclusions: Modest weight gain in college freshmen did not influence taste acuity. Lack of change in intensity ratings may relate to use of suprathreshold concentrations rather than detection thresholds, or recruitment of a predominantly lean population. Learning Outcome: Participants will be able to discuss the influence of weight change on taste and smell acuity.

Name: Julia Filc

Major(s): Dietetics

Institution: Bowling Green State University

Faculty Advisor(s): Mary-Jon Ludy, College of Health and Human Services

Poster #: 51

Health Markers in First Year College Students

Background: During college students' first year of school, they are exposed to many different factors that influence their risk of cardiovascular disease. Methods: First year college students were enrolled in five sections of a seminar course that included health assessments at the beginning and end of the fall semester. Seventy-three of 91 students (80.2%) consented to have their data used for research purposes. Physical measures included weight, height, body fat percent, and blood pressure. Online questionnaires assessed alcohol consumption and stress. Paired t-tests were conducted to assess changes from the beginning to the end of the semester. Results: Body mass index (calculated as kg/m²), body fat percent, alcohol consumption, and self-reported stress increased during the semester (p<0.05 for all). Systolic blood pressure tended to increase (p=0.080), while diastolic blood pressure did not change during the semester. At the end of their first college semester, health risk was identified in 44.1%, 39.4%, 82.6%, and 35.8% of students based on high body mass index, body fat percent, blood pressure, alcohol consumption, respectively. Discussion: This study has provided a more comprehensive understanding of the risks for cardiovascular disease among college-aged students. The

Undergraduate Research Symposium Poster Presenter Abstracts

knowledge gained from this investigation can be used to improve campus health-based programming at Bowling Green State University.

Name: Madeleine Drees

Major(s): Dietetics

Institution: Bowling Green State University

Faculty Advisor(s): Mary-Jon Ludy, College of Health and Human Services

Poster #: 52

Muscle Dysmorphia and Disordered Eating in Undergraduate Student Exercisers and Non-Exercisers

Muscle Dysmorphia and Disordered Eating in Undergraduate Student Exercisers and Non-Exercisers Author(s): E. Gill, M. Drees, T. Lechner, C. Hamady, M. Ludy; Bowling Green State University Learning Outcome: Participants will be able to identify the differences in muscle dysmorphia and disordered eating among undergraduate student exercisers and non-exercisers. Background: Body dissatisfaction, characterized by negative self-evaluation of body weight and/or shape, is common among young adults. Compensatory self-destructive behaviors, such as excessive exercise and/or disordered eating, often occur. This study's purpose was to characterize the prevalence of muscle dysmorphia and disordered eating among college student exercisers and non-exercisers. Methods: Undergraduates (n=149, 48.3% female, age 21.1±4.4 years, BMI 25.0±4.4 kg/m²) were recruited from the union and recreation center at a large, Midwestern university and asked to complete the Muscle Dysmorphic Disorder Inventory (MDDI) and Eating Attitudes Test (EAT-26). Exercisers (n=93) were defined as ≥150 minutes per week purposeful physical activity. Results: Among both exercisers and non-exercisers (445.8±214.0 and 36.9±85.1 minutes purposeful exercise per week, respectively), one-third were identified as having muscle dysmorphia (based on MDDI) and/or disordered eating (based on EAT-26). Disordered eating was identified more commonly among non-exercisers (33.9%) than exercisers (22.6%). Muscle dysmorphia was only identified among exercisers (19.4%), with 8.6% also identified with disordered eating. Muscle dysmorphia was more common in males (19.5%) than females (4.2%), whereas disordered eating was more common in females (30.6%) than males (23.4%). Conclusions: The prevalence of muscle dysmorphia and disordered eating vary among college-aged exercisers and non-exercisers. Targeted educational messages for college exercisers should include content focused on both muscle size and eating habits, while content for non-exercisers should focus more on eating habits. Funding Disclosure: None

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Tiffany Smith

Major(s): Dietetics

Institution: Bowling Green State University

Faculty Advisor(s): Mary-Jon Ludy, College of Health and Human Services

Poster #: 53

Class-based mentoring for Undergraduate dietetics students

Background: Dietetics students benefit from career coaching, role modeling, and peer networking. However, such mentorship is often sacrificed to cover academic material. This innovation involved class-based mentoring in which graduate students and faculty interacted with undergraduates to facilitate self-reflection, encourage programmatic/professional questions, and engage in relationship-building activities. Methods: Twenty-five seniors in a capstone course and 49 new majors in an introductory course participated in mentoring during 4 regular class days. Activities were designed and conducted by 7 graduate students and 2 faculty, focusing on perceived areas of student weakness. An end-of-semester survey was completed. Results: Feedback was positive with all mentorship activities scoring $\geq 3.1 \pm 0.8$ on a 4-pt Likert scale. Qualitative themes included: (1) better understanding of college/internship expectations, (2) ability to discern personal strengths/weaknesses and leverage them professionally, and (3) inspiration from graduate student interactions. Specifically, seniors noted benefit from discussing DICAS, internships, and master's programs. New majors agreed, also expressing great appreciation for activities requiring self-reflection and promoting personal growth. Conclusions: Incorporating mentoring days into undergraduate dietetics programs at both introductory and capstone levels presents a viable resource for (1) encouraging collaboration and networking among peers and faculty, (2) providing an avenue for self-reflection and personal growth, and (3) empowering students to utilize both internal and external resources and skills to attain their professional path.

Ecology and Conservation Biology

Name: Katherine Herzog

Major(s): Ecology/Conservation Biology

Institution: Bowling Green State University

Faculty Advisor(s): Eileen Underwood, Life Sciences

Poster #: 54

The Effects of Incubation Temperature on Coloration and Growth in *Rhacodactylus* Geckos

Undergraduate Research Symposium Poster Presenter Abstracts

The goal of this research was to observe whether or not the incubation temperature impacted the growth and/or coloration in geckos of the *Rhacodactylus* genus. Three species were used in the research: *R. ciliatus*, *R. auriculatus*, and *R. chahoua*. Color change has been observed in leopard geckos (*Eublepharis macularius*) that were incubated at different temperatures and, in some species, incubation temperature plays a role in determining the sex of the hatchlings. Sex of these geckos was not monitored due to immaturity. Our hypothesis was that geckos incubated at a higher temperature would have a lower hatch weight and lighter coloration. To test our hypothesis, eggs laid in clutches of two were split between incubators at 26°C and 30°C. Each incubator had a nighttime drop in temperature which was shown in a previous study to increase survival. Upon hatching, the geckos were photographed, measured, and weighed. Measurements included both the snout-vent length and total length of each animal. The photographs and measurements were taken every other week after the hatch date to track their progress. A small ruler with a color chart was present in each photograph to ensure standardization of color. A larger sample size is needed to form definitive conclusions, but so far, *R. auriculatus* has exhibited a gradual lightening of color among all geckos and those incubated at 30°C hatched darker. Weight did not differ between groups. Thus, the original hypothesis was not supported. However, we discovered a noticeable difference in incubation duration and survival among geckos incubated at different temperatures.

Name: Thomas Hutsler

Major(s): Ecology/Conservation Biology

Institution: Bowling Green State University

Faculty Advisor(s): Anita Simic, Geology

Poster #: 55

Classification of terrestrial and aquatic vegetation along the Lake Erie shoreline using UAV images

Wetlands are a valuable land type that occur worldwide. They are known to be highly productive, provide critical ecosystem services, and act as habitat for a variety of wildlife. Despite playing vital roles in local, regional, and global systems, wetlands have been subjected to large amounts of destructive disturbance. These disturbances include, but are not limited to, land conversion, pollution, eutrophication, fragmentation, introduced and invasive species, and changes in hydrology. Due to the increased frequency of wetland habitat loss, land managers have turned to remote sensing approaches in an attempt to further understand and combat these threats to wetland health. Remote sensing data has effectively been applied to wetland studies and monitoring efforts to produce regional wetland inventories, determine wetland health, and generate maps distinguishing native from invasive vegetative species. The purpose

Undergraduate Research Symposium Poster Presenter Abstracts

of this study is to use remote sensing techniques to produce accurate species/community maps for Metzger Marsh Wildlife Area off the coast of Lake Erie. The maps will be important to land managers for locating invasive species and their extent and detecting vegetation patterns within the area. UAV imagery will be used in conjunction with multispectral data and in situ measurements to assess the area of study and aide in map production

Education

Name: Christopher Carter

Major(s): AYA Education

Institution: Bowling Green State University

Faculty Advisor(s): Tim Murnen, Education

Poster #: 56

The Journey to a New World: Uncovering Realities of First-Generation College Students

What are the experiences of first-generation, low-income college students? What motivates them to attend college? Are their needs met by instructors and resources on campus? Lastly, how do they navigate through college? This study examines the experiences of low-income, first-generation college students to explore whether their academic, social, and personal needs are being met by institutions. The researcher interviewed students who meet the aforementioned characteristics. Results will help researchers to understand the experiences of first-generation college students and will provide professionals with guidelines on how to help students transition into college.

Name: Madeline Garlough

Major(s): Inclusive Early Childhood Education

Institution: Bowling Green State University

Faculty Advisor(s): Alicia Mrachko, Education

Poster #: 57

Childhood Anxiety Within the Classroom: A Professional Development Experience for Educators

Undergraduate Research Symposium Poster Presenter Abstracts

This professional development experience for educators focuses on children with diagnosed anxiety disorders within the classroom. A permanent resource packet gives participants useful resource links, strategies, and an understanding of what childhood anxiety disorders are. A reflection on adult teaching strategies and the effectiveness of the professional development experience, as well as the permanent resource, are included.

Name: Stephanie Wonnell

Major(s): Inclusive Early Childhood Education

Institution: Bowling Green State University

Faculty Advisor(s): Jaimee McNamara, Education

Poster #: 58

Transgender Harassment and Violence: Hate Is Not a Phobia

My poster explains the violence and aggressions that trans individuals face throughout their lives. I will focus on all forms of violence, from micro-aggressions such as getting shouted at in a restroom up to homicide. I will also have a place set aside on my poster to remember all of the reported trans lives lost to homicide in the United States in 2016. I will explain the ramifications that being openly trans has on employment and housing. I feel that this is an important topic for people to be more aware of, especially as our culture becomes more inclusive and understanding of individual differences.

Electro-Mechanical Systems Engineering and Technology

Name: Brycen Hupe

Major(s): Mechatronic Engineering Technology

Institution: Bowling Green State University

Faculty Advisor(s): Mohammed Mayyas, College of Technology, Architecture and Applied Engineering

Poster #: 59

Characterization of Electromechanical Actuator for Robotic Gripper

Undergraduate Research Symposium Poster Presenter Abstracts

For this independent study I was tasked at uncovering the characteristics of a robotic gripper that is ran off of an electromagnetic actuator. I was to collect and record data on the actuator itself, then collect an record data from the fingers of the robotic gripper as the actuator acted on them. This research is to help improve and advance the robotics lab at Bowling Green State University by providing them with a robotic gripper that is developed and designed by the students there.

Name: Hadi Aqeel

Major(s): Electro-Mechanical System Technology

Institution: Bowling Green State University

Faculty Advisor(s): Mohammed Mayyas, College of Technology, Architecture and Applied Engineering

Poster #: 60

Test of Human-Like Skin Sensor Platform using Impedimetric Measurement Method Based on Frequency Response Analysis

With the ever-increasing demand of collaborative robotics both in social and industrial settings, there is a need to improve the safety when humans work close to robots. One way to improve the Human-Robotic Interaction (HRI) safety is to improve the environmental awareness by populating sensor network that is capable of detecting the presence of surrounding object. Existing sensor technology include proximity sensor, vision system, laser position sensor, torque sensor, and many others. However, there these technologies do not have sufficient sensitivity that would ensure the safety. For example, human often works close to robots in a manufacturing plant, where one hostile scenario may suggest a worker coming accidentally close to the robot working space. This may cause robot impacting the worker hard enough to cause serious injury. This is because the torque sensor – which is part of the robot control system- do not have sufficient sensing resolution that would instruct robot to stop. Therefore, we want to investigate on new type of sensor that would feel its surrounding at low impact force.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Mohammed Almajed

Major(s): Engineering Technology specialized in Mechanical Design

Institution: Bowling Green State University

Faculty Advisor(s): Mohammed Almajed, College of Technology Architecture and Applied Engineering

Poster #: 61

Modeling and Simulation of a Skin-like wearable garment for human robot interaction

It is a sensor that could be used in robotic which can detect the presence of surrounding object such as temperature and force.

Environmental Science, Policy, and Analysis

Name: Casey Stephens

Major(s): Environmental Policy & Analysis

Institution: Bowling Green State University

Faculty Advisor(s): Andrew Gregory, Department of the Environment and Sustainability

Poster #: 62

The Influence of Land Use and Stream Naturalness on NW Ohio Water Quality

The focus of this work was twofold. First we assessed levels of nutrient contamination of streams and ditches with perpetual standing water throughout Northwest Ohio as a function of adjacent human land use. Second we assessed the degree to which stream channel naturalness, as indicated using the Ohio Environmental Protection Agency's Qualitative Habitat Evaluation Index (QHEI), influenced rate of nutrient contamination of the Northwest Ohio waterways. This work has implications for surface water quality throughout the region as non-point source contamination (NPS) can bio-accumulate and result in eutrophication and algal blooms, such as those that made national headlines in 2014.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Gabrielle Ysassi

Major(s): Environmental Science

Institution: Bowling Green State University

Faculty Advisor(s): Andrew Gregory, Department of the Environment and Sustainability

Poster #: 63

Testing the effectiveness of eDNA procedures to identify *Thamnophis* tissue ex situ

My project aims to use eDNA to screen water from Kirtland's Snake (*Clonophis kirtlandii*) occupancy. The project is a way to expand survey sampling, with a focus to confirm Kirtland's sightings. There is diminutive sampling data of Kirtland's due to insufficient means of locating this species. Kirtland's tend to have an elusive nature causing confirming sightings challenging, therefore little verifiable data is available. With little empirical data available it is hard to track population rates. The relevance of this project will help improve data by allowing us to collect Kirtland's population information without actually needing to spot the species. I will select 100 miligrams of Kirtland snake tissue and place in 250, 500 and 100 microliters of water. The samples will sit for an hour, day, and week. From this I will be able to test which quantities of both volume of water and amount of tissue is the best for collecting DNA samples.

Name: Hannah Olenik

Major(s): Environmental Science

Institution: Bowling Green State University

Faculty Advisor(s): Andrew Gregory, Department of the Environment and Sustainability

Poster #: 64

Vegetation Diversity and Connectedness in Ditches across Northwest Ohio

Since European settlement, prairie ecosystems have been in decline due to increasing anthropogenic use of these landscapes, principally for cultivation. However, a common feature of cultivated landscapes is the occurrence of remnant natural or near natural vegetation found as linear habitat features along ditches and field margins. Quixotically, given the prevalence of these features, they may actually be the best native vegetation reserve remaining in northwest Ohio. We examined the degree to which these marginal natural vegetation remnants contain and preserve native biodiversity relative to existing reserve areas across northwest Ohio. In the summer of 2016, we collected data from 46 ditches in Wood and Lucas County and 10 sample sites within the Dorr-Irwin Prairie Reserve at the Toledo Metroparks in Ohio. We sampled

Undergraduate Research Symposium Poster Presenter Abstracts

herbaceous vegetation diversity using point intercept methodology, and vegetation composition/density using Daubenmire Frame and Robel Pole sampling schemes. We found that linear natural vegetation remnants had higher native species richness than reserves, with ditches and field margins containing 46 native species and reserves containing 31 native species. However, reserve sites did contain a significantly higher concentration of native species compared to ditches. Because our study system of ditches and field margins is highly interconnected, our findings can have possible contributions to Meta-population biology, investigating whether reserve areas do serve as sources of native diversity found in, or whether this dendritic system of linear habitat features is autonomous and drives its own diversity. Our data also can contribute to the SLOSS debate, by adding further empirical evidence to long-standing theoretical findings.

Name: Misty Peavler

Major(s): Environmental Science

Institution: Bowling Green State University

Faculty Advisor(s): Andrew Gregory, Department of the Environment and Sustainability

Poster #: 65

Evolutionary consequences of fragmentation on plant communities in northwest Ohio

A common feature across northwest Ohio is the occurrence of ditches and agricultural field margins. Each of these field margins is a remnant of the native Great Black Swamp that dominated this region of the country prior to European settlement. Each of these linear habitat features, is likely a small isolated patch, in which native plant species live in highly inbred populations. Given this information, we assess how the native species richness at an isolated linear habitat influences the height, basal area, seed number, and seed mass. While doing so, we also analyze how the richness of these areas effect the percent germination of native verses invasive plants. To do this we selected a subset of 20 ditches/field margins to measure plant size and seed characteristics of two native and two invasive species. Seed characteristics include, amount, weight, basal height, and basal width. The seeds were then stratified and a set of 10 seeds per individual species from each site were cultivated and measured for successful germination. This data gives perspective on what effects linear habitat features and inbreeding has on plant species.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Nicholas Gulling

Major(s): Environmental Science

Institution: Bowling Green State University

Faculty Advisor(s): Andrew Gregory, Department of the Environment and Sustainability

Poster #: 66

Investigating Spatial Drivers of Possible Heat Islands in Northwest Ohio

Humans have fundamentally altered the entire landscape of the planet, with some estimates suggesting that >75% of the Earth's surface is comprised of anthropogenic landscapes. Human altered landscapes have very different thermal properties than natural landscapes. For example the amount of impervious surface along an urban to natural vegetation gradient, resulted in urban areas being 17% warmer (+2.1 C°) than rural and natural areas. We used ONSET Hobologgers to monitor surface temperature at ~30 natural vegetation remnants embedded along a gradient of anthropogenic to natural adjacent land uses throughout Wood and Lucas Counties. Loggers measured surface temperature at 30 minute intervals from May-November, 2016. We found that the max and min temperatures of urban and natural areas were similar. Mean of Urban max, min= 50.26, 4.93 and agriculture max, min=50.22, 4.48. This makes sense because the natural area tested was the Oak Openings embedded within the Toledo Metropolitan area. However, the variance of the urban area is much higher, which could lead to micro climates and increased intensity of storms passing through the area. In addition, we measured local vegetation structure at four discrete time periods at each temperature logging station using modified Duabnemeir Frames and Robel Poles. We found that invasive species percentages in natural areas are around 33% but this number climbs to around 50-75% on land adjacent to urban and agriculture land. We found that max vs nat and c4 vs var had a weak positive correlation (r values of .07 and .09 respectively). Additionally, var vs. natural had a weak negative correlation (r value of -.03). The vor vs var and vor vs max temp both had strong positive correlations (both r values being .35). This suggests that higher natural densities and vegetation densities have a strong effect on the surface temperature of the land. This data suggest that the anthropogenic landscape has a strong influence on local temperature but natural vegetation density can reduce the magnitude of these impacts, further highlighting the importance of urban green spaces.

Undergraduate Research Symposium Poster Presenter Abstracts

Ethnic Studies

Name: Breanna Jones

Major(s): Ethnic Studies

Institution: Bowling Green State University

Faculty Advisor(s): Angela Nelson, Popular Culture

Poster #: 67

The Sistahs are Conscientious: Black Women Owning Themselves in Media

Television and music can affect an individual's mood and perceptions. However, self-esteem has been understudied with regard to media. I conduct a comparative analysis of media representations of African American young women. I examine a sample of music from the genres of Hip Hop and R&B from 1995-2005 and compare to selections from 2005 to the present. Two research questions are examined: 1) Did African American young women's self-perceptions change as media portrayals changed from the 1990s to the 2000s? 2) Did African American young women have a higher level of self-esteem in the 1990s compared to the 2000s?

Name: Leigh Dunewood

Major(s): Ethnic Studies

Institution: Bowling Green State University

Faculty Advisor(s): Sarah Rainey, Women's, Gender and Sexuality Studies

Poster #: 68

Examining High-Achieving Black Undergraduate Students' Low Participation in Honors Education at Predominantly White Institutions (PWIs)

While high-achieving students who identify as African American or Black (AA/B) might be eligible for and interested in pursuing an honors education, they are noticeably scarce in honors environments at PWIs, and may be hesitant to pursue an honors education for a multitude of reasons. The results from this study serve a variety of functions: (1) to give a name to those factors that deter students of color from honors colleges/programs, (2) to help honors college/program administrators, faculty, and staff members diversify their communities of honors students, (3) to be more inclusive of historically marginalized honors students, and (4)

Undergraduate Research Symposium Poster Presenter Abstracts

to identify more effective outreach and retention strategies that attract high-achieving students of color, specifically AA/B students.

Forensic Chemistry

Name: Alexis Bird

Major(s): Forensic Chemistry

Institution: Bowling Green State University

Faculty Advisor(s): Mikhail Zamkov, Department of Physics and Astronomy

Poster #: 69

Nanocrystals for Luminescent Solar Concentrators

Luminescent solar concentrators (LSCs) taking in sunlight over significant areas and then concentrate the energy to photovoltaics or other such uses by transporting photons through macroscopic waveguides. LSCs are poorly limited by luminophore reabsorption losses. By using a specific nanocrystal phosphors proposed to minimize reabsorption in large-scale LSCs.

Name: Alexis Bird

Major(s): Forensic Chemistry

Institution: Bowling Green State University

Faculty Advisor(s): Mikhail Zamkov, Department of Physics and Astronomy

Poster #: 70

Colloidal Synthesis of Monodisperse Semiconductor Nanocrystals through the Saturated Ionic Layer Adsorption

Abstract. We demonstrate a general strategy for the synthesis of colloidal semiconductor nanocrystals (NCs) exhibiting the size dispersion below 3%. The present approach relies on the sequential deposition of fully saturated cationic and anionic monolayers onto small-diameter clusters, which leads to focusing of nanocrystal shapes with the increasing particle diameter. Each ionic layer is grown through a room-temperature colloidal atomic layer deposition (ALD) process that employs a two-solvent mixture to separate the precursor and nanocrystal phases. As a result, unreacted precursors can be fully removed after each deposition cycle, preventing

Undergraduate Research Symposium Poster Presenter Abstracts

the secondary nucleation. By using CdS NCs as a model system, we demonstrated that a narrow size dispersion can be achieved through a sequential deposition of fully-saturated Cd²⁺ and S²⁻ half-monolayers onto starting CdS cluster “seeds”. In addition to a narrow distribution of nanoparticle sizes, the demonstrated methodology offers an excellent batch-to-batch reproducibility and an improved control over the nanocrystal surface stoichiometry. The present synthesis is amenable to other types of semiconductor nanocrystals and is expected to offer a viable alternative to traditional hot-injection strategies of the nanoparticle growth.

Name: Holly Eckard

Major(s): Forensic Chemistry

Institution: Bowling Green State University

Faculty Advisor(s): Mikhail Zamkov, Department of Physics and Astronomy

Poster #: 71

Tracking the Energy Flow on Nanoscale via Sample-Transmitted Excitation Photoluminescence Spectroscopy

Tracking the energy flow in nanoscale materials is an important yet challenging goal. Experimental methods for probing the intermolecular energy transfer (ET) are often burdened by the spectral crosstalk between donor and acceptor species, which complicates unraveling their individual contributions. This issue is particularly prominent in inorganic nanoparticles and biological macromolecules featuring broad absorbing profiles. Here, we demonstrate a general spectroscopic strategy for measuring the ET efficiency between nanostructured or molecular dyes exhibiting a significant donor–acceptor spectral overlap. The reported approach is enabled through spectral shaping of the broadband excitation light with solutions of donor molecules, which inhibits the excitation of respective donor species in the sample. The resulting changes in the acceptor emission induced by the spectral modulation of the excitation beam are then used to determine the quantum efficiency and the rate of ET processes between arbitrary fluorophores (molecules, nanoparticles, polymers) with high accuracy. The feasibility of the reported method was demonstrated using a control donor–acceptor system utilizing a protein-bridged Cy3-Cy5 dye pair and subsequently applied for studying the energy flow in a CdSe560-CdSe600 binary nanocrystal film.

Undergraduate Research Symposium Poster Presenter Abstracts

History

Name: Caroline Harris

Major(s): English

Institution: Bowling Green State University

Faculty Advisor(s): Vibha Bhalla, Ethnic Studies

Poster #: 72

A History of Angel Island

A short story written from the perspective of a Chinese Immigrant experiencing the isolation and sadness that was caused both by the Chinese exclusion act, as well as the treatment of immigrants at the Angel Island Immigration Station.

Name: Dominique Seo

Major(s): History

Institution: Bowling Green State University

Faculty Advisor(s): Amilcar Challu, History

Poster #: 73

Factors Effecting Living Standards in Early 20th Century Peru

Class, race, and geography are all indicators of inequality in early 20th Century Peru. At this time, class and race may determine the opportunities that a person will have within Peruvian society. For example, a person of a higher socioeconomic class is more likely to have access to nutrient rich food, health care, and education, while a person of a lower socioeconomic class would not have similar opportunities to appropriate foods, health care, and education. Similarly, geography may be a factor of inequality because it determined the availability of resources and opportunity to participate in certain occupations, such as commerce or agriculture. This study seeks to gain a better understanding of genetics, or race, geography, education and other indicators as factors of height, which may be an indicator of more significant issues, such as social inequalities, in early 20th century Peru.

Name: Matthew Wright

Undergraduate Research Symposium Poster Presenter Abstracts

Major(s): History

Institution: Bowling Green State University

Faculty Advisor(s): Amilcar Challu, History

Poster #: 74

Impact of Biological Skin Complexion during Late Eighteenth and Early Nineteenth Century Colonial Mexico

The focus of this project is on the studied the impact of skin complexion in colonial and post-colonial Mexico. There is an ongoing debate between historians over the importance of casta labels in colonial and post-colonial Mexico. These casta labels given to the citizens of New Spain (colonial Mexico) were from a racial hierarchy system implemented by the Spanish. Preliminary research showed that complexions were as important in determining one's place in society, and in the military as the casta labels was. To test this theory; a comprehensive analysis was required of military data. This project presents, and analyzes the results of this study. The military data used to further study this topic were recruitment records called filiaciones. Over seven thousand military records were analyzed. These documents include a soldier's skin complexion and their casta position/label. The first objective of the project was to categorize the multitude of complexions listed. The second objective was to outline the guidelines for the project. The third objective was to study the results of the research conducted on the filiaciones. A cross section study was conducted between a soldier's complexion and the relation to v draft rates, occupational skills, and literacy rate. The constant gap in all of these categories implies that there was a lack of an effort to improve the conditions for soldiers of black and brown skin complexions over time. The inequalities in these categories also show that complexions were as important as casta labels were. This project contributes to the cultural, and military history of Mexico.

Math and Statistics

Name: Mary Fleck

Major(s): Mathematics

Institution: Bowling Green State University

Faculty Advisor(s): Andrew Layden, Department of Physics and Astronomy

Undergraduate Research Symposium Poster Presenter Abstracts

Poster #: 75

Periods of Variable Stars

Variable stars are stars whose luminosities, or total light outputs, fluctuate. There is a particular set of variable stars within a globular star cluster, Messier 30 (M30 for short), that has been of interest to the BGSU astronomy community. This cluster has been observed greatly in the Southern hemisphere but has been neglected in regards to observation in our region due to its proximity to the horizon. Since 1975, there have been five studies based around M30, performed by Terzan and Rutily (1975), Pietrukowicz and Kaluzny (2004), Smitka (2007), Lesh (2013), and Kains (2013). Several of these studies sought to determine the periods of the fluctuations in the variable stars, or the time between fluctuations. Though they were looking at the same stars, they used different methods and calculated different periods. From this arises a need to reevaluate the data available and find the best possible periods. A similar problem exists for globular cluster NGC 6388, for which there is data present from an assortment of sources, while the periods of several variable stars are unknown. To approach this problem, VStar, a period finding program, was used to analyze the data. Looking at the Lesh data, Kains' periods seemed to be very consistent with the VStar results, whereas the periods found by Pietrukowicz and Kaluzny were less so. I hypothesize that this is because the updates in period-finding technology in the nine years between the publishing of these two articles allowed Kains, et al. to be more accurate and precise. For eight of the eleven stars (73%) that were analyzed through VStar, a conclusive period was found and confirmed. For the remaining three, Kains' period was identified in the VStar period results, but was not displayed as the primary period. For NGC 6388, the data for the V and I filters were found to be very consistent, producing the same main period for both sets of data on each star. This is very positive, as well as moderately rare result. I also found that several of the stars may be multi-periodic. This means that while the period results presented by VStar may show several potential periods, the model that fit the data best was a combination of more than one period. This is a very important discovery as the period-finding method that had been previously used only allowed the user to find the main period. The possibility was also explored for a way to derive a "merit" value for the period of a variable star based on the correlation of the VStar period results for the two filters of a star. A conclusive result was not produced, but a firm hypothesis stands. This can be explored using a programming software like Python. When analyzing the Smitka data in VStar, there was so little data that it was difficult to tell where one model was better or worse than another. The phase plots fit the data well, but were not drastically different from one to another. This could possibly be improved by narrowing the range of the period search, and will require more attention before a conclusion is reached. The periods that Smitka stated in his thesis were much closer to the Kains periods than those that were found in VStar, so it is not certain whether VStar is a strong enough program for smaller data sets. Other progressions made include taking the aperture photometry for Lesh, Smitka and CT10 data sets. This will allow the data to be calibrated such that standard unit magnitudes are used. The stars

Undergraduate Research Symposium Poster Presenter Abstracts

considered new discoveries by Lesh and Smitka were also investigated. These stars were studied by Smitka and Lesh and are believed to have been overlooked in previous studies due to their distance from the center of the cluster. The methods used by the previous astronomers only allowed them to detect stars within a certain radius, which may have placed our discoveries outside their field of view. Discoveries for this research project have allowed an update for previous studies on globular star clusters M30 and NGC 6388 that will allow the astronomical community a higher jumping-off point for further research and exploration. Also, the door has also been opened for an investigation into a "merit" value for the period of a variable star. Lesh, Smitka, and CT10 data sets will be easier to include in future studies, and the newly discovered stars of Lesh and Smitka may be added to the database for further investigation.

Name: Jocelyn Mineo

Major(s): Statistics

Institution: Bowling Green State University

Faculty Advisor(s): Kelly Balistreri, Sociology

Poster #:

Opportunity, Health, and Mortality: A Focus on Young Adults in Ohio.

A key finding in sociological and demographic research is the sustained socioeconomic gradient in health and mortality. However, less is known about the precursors to socioeconomic status, namely economic opportunity, and its links to the health and mortality of the nation's young adults. Using data from the Centers for Disease Control, the 2015 Ohio Medicaid Assessment Survey and the Opportunity Index, we examined the link between county-level opportunity, health behaviors, and mortality for Ohio young adults ages 19 to 34. We also pay special attention to the increasing prevalence of deaths due to drug overdoses among Ohio youth. Our findings suggest that opportunity is closely related to the well-being of Ohio's young adult population.

Undergraduate Research Symposium Poster Presenter Abstracts

Physics

Name: Adam Lahey

Major(s): Physics

Institution: Bowling Green State University

Faculty Advisor(s): Andrew Layden, Physics

Poster #: 77

CCD Imaging of KIC 8462852: Comets or Civilization?

A particularly interesting star, KIC 8562852, recently became famous for its enigmatic dips in brightness. The interpretation broadcast by many popular media outlets was that the dips were caused by a megastructure built around the star by an intelligent civilization. The best scientific hypothesis relies on a natural phenomenon: the break-up of a comet orbiting the star. To further address this problem, we have measured the star for four months using BGSU's 0.5m telescope and digital CCD camera, and we present the star's brightness as a function of time. Using two very clear nights, we refined the brightness of four comparison stars which can be used by the astronomical community to monitor the star's brightness. These newly refined magnitudes should reduce the uncertainties in our brightness measurements; this error analysis is essential in determining the significance of any brightness deviations. An observed dip in brightness would confirm the comet hypothesis by establishing a cyclical pattern, or may serve as a basis for new understanding of variable stars. An additional element to the project involves creating CCD calibration images and a well-documented procedure for future use.

Name: Benjamin Hardy

Major(s): Physics and Mathematics

Institution: Bowling Green State University

Faculty Advisor(s): Farida Selim, Physics and Astronomy

Poster #: 78

Magneto Optic Kerr Effect in a Magnetized Electron Gun

Magnetized electron sources have the potential to improve ion beam cooling efficiency. At the Gun Test Stand at Jefferson Lab, a solenoid magnet will be installed adjacent to the photogun to magnetize the electron beam. Due to the photocathode operating in a vacuum chamber, measuring and monitoring the magnetic field at the beam source location with conventional

Undergraduate Research Symposium Poster Presenter Abstracts

probes is impractical. The Magneto-Optical Kerr effect (MOKE) describes the change on polarized light by reflection from a magnetized surface. The reflection from the surface may alter the polarization direction, ellipticity, or intensity, and depends linearly upon the surface magnetization of the sample. By replacing the photocathode with a magnetized sample and reflecting polarized light from the sample surface, the magnetic field at the beam source is inferred. A controlled MOKE system has been assembled to test the magnetic field. Calibration of the solenoid magnet is performed by comparing the MOKE signal with magnetic field measurement. The "Kerr-mometer" will provide an adequate description of the field at the electron beam source. The report summarizes the method and results of controlled tests and calibration of the MOKE sample with the solenoid magnet field measurements.

Name: Christopher Pyles

Major(s): Physics

Institution: Bowling Green State University

Faculty Advisor(s): Alexey Zayak, Physics and Astronomy

Poster #: 79

Raman Spectroscopy of the Interfacial Charge Transfer Between C60 and Gold.

Surface Enhanced Raman Spectroscopy (SERS) is a significant extension of the conventional Raman method, which utilizes the fact that molecules adsorbed on metal surfaces dramatically increase the Raman scatterings. While the conventional Raman can be used only with large quantities of materials, due to its very small scattering cross section, SERS allows for almost single-molecule measurements. However, along with the useful enhancements, SERS also brings changes to the spectra of molecules. One main example is the shifting of vibrational frequencies. In particular, there is experimental data of this effect for C60 molecules adsorbed on a gold surface. Curiously, not all peaks shift, only a subset. There is a hypothesis that the metal involved in SERS shares electric charge with the molecules in question, which in turn causes the change of frequency. In this work, we use Density Functional Theory (DFT) to computationally find what charge does to the Raman spectrum of a molecule and why only certain vibrations exhibit these changes. Results of this study should help to fully understand the mechanics behind SERS.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Graham Avina

Major(s): Physics

Institution: Bowling Green State University

Faculty Advisor(s): Farida Salim, Architecture and Environmental Design

Poster #: 80

Transparent Conductive Oxides: Characteristics, Applications, and the use of ITO

Transparent Conductive Oxide films are widely used in modern technology in everything from gas detectors, to smart phones, to solar panels. One of the most widely used TCO films is Indium-Tin-Oxide. I have studied the ideal properties of TCOs, and discuss the benefits and drawbacks of ITO. Finding an alternative to ITO is increasingly important; therefore, I have explored a few methods of measuring the characteristics of different TCO films, and what we learn from them.

Name: Greg Jensen

Major(s): Physics

Institution: Bowling Green State University

Faculty Advisor(s): Mikhail Zamkov, Department of Physics and Astronomy

Poster #: 81

Tracking the Energy Flow on Nanoscale via Sample-Transmitted Excitation Photoluminescence (STEP) Spectroscopy

Tracking the energy flow in nanoscale materials is an important yet challenging goal. Experimental methods for probing the intermolecular energy transfer (ET) are often burdened by the spectral crosstalk between donor and acceptor species, which complicates unraveling their individual contributions. This issue is particularly prominent in inorganic nanoparticles and biological macromolecules featuring broad absorbing profiles. Here, we demonstrate a general spectroscopic strategy for measuring the energy transfer efficiency between nanostructured or molecular dyes exhibiting a significant donor-acceptor spectral overlap. The reported approach is enabled through spectral shaping of the broadband excitation light with solutions of donor molecules, which inhibits the excitation of respective donor species in the sample. The resulting changes in the acceptor emission induced by the spectral modulation of the excitation beam are then used to determine the quantum efficiency and the rate of ET processes between arbitrary fluorophores (molecules, nanoparticles, polymers) with high accuracy. The feasibility

Undergraduate Research Symposium Poster Presenter Abstracts

of the reported method was demonstrated using a control donor-acceptor system utilizing a protein-bridged Cy3-Cy5 dye pair and subsequently applied for studying the energy flow in a CdSe560-CdSe600 binary nanocrystal film.

Political Science

Name: Anya Kaiser

Major(s): Political Science

Institution: Bowling Green State University

Faculty Advisor(s): Kei Nomaguchi, Sociology

Poster #: 82

Parenting Styles and Mother-Child Relationship Quality

Parenting styles play an influential, but varying, role in parent-child relationship quality. This study focuses on mother-child closeness and conflict and how both of these relationship-quality indicators are shaped by permissive and authoritative parenting styles. I analyze data about mother's parental behavior and relationship quality with children, as reported by mothers of third grade children in the Study of Early Childcare and Youth Development (N = 1,007). On average, highly permissive mothers have greater conflict and less closeness with their child. In contrast, highly authoritative mothers have less conflict and greater closeness with their child. Authoritative parenting relates to less conflict with their child only among mothers with college education, and authoritative parenting relates to mother-child closeness regardless of mothers' levels of education. Permissive parenting is related to conflict only among mothers without college education, and, inversely, mothers' permissive parenting relates to more closeness only among mothers with college education. These results suggest that authoritative parenting styles, regardless of education level, foster closer and more peaceful parent-child relationships.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Anya Kaiser

Major(s): Political Science

Institution: Bowling Green State University

Faculty Advisor(s): Neal Jesse, Political Science

Poster #: 83

The American Political Mindset: The Interaction of Exceptionalism and Cynicism in Public Opinion

This research investigates the pervasiveness of both political cynicism and American exceptionalism within American society. Throughout history, there has been an interaction between the public's feelings of American exceptionalism and cynicism in the United States, starting at the nation's founding and continuing into recent times (Chaloupka, 1999). Using the American National Election Studies' 2012 survey on trust in government (n = 5,914), I examine the relationship between distrust in government (a proxy for political cynicism) and feelings of American exceptionalism. Results show a significant relationship between cynicism and feelings of American exceptionalism in the United States, with those who report low trust also reporting greater feelings of American exceptionalism, as compared to those with medium and high trust in government. These associations are stronger for respondents who report high levels of satisfaction with the federal government. The results suggest that feelings of political cynicism and American exceptionalism exist in tandem in American public opinion.

Name: Julie Macmann

Major(s): Political Science

Institution: Bowling Green State University

Faculty Advisor(s): Melissa Miller, Political Science

Poster #: 84

Bias in the Press Corps? Comparing Coverage of Hillary Clinton by Journalist Gender

Using the New York Times 2016 Presidential Primary Press Coverage Study, which involved a collection of over 400 news articles pertaining to the presidential campaign, I seek to find if there was any bias in Hillary Clinton's coverage based on the journalist's gender. I hypothesize that female journalists covered Clinton in a more positive way than male journalists. I examine the following variables by journalist gender: article tone, mention of positive image traits, and mention of scandals. I examine whether female journalists adopted a more favorable tone

Undergraduate Research Symposium Poster Presenter Abstracts

toward Clinton, mentioned her positive image traits more frequently, and mentioned scandals about her less frequently than male journalists. While none of these relationships proved statistically significant, there is directional support for female journalists mentioning scandals about Clinton at a lower rate and mentioning her positive traits at a higher rate than male journalists. Implications and the need for further research are discussed.

Name: Collin Claywell

Major(s): Political Science

Institution: Bowling Green State University

Faculty Advisor(s): Jacqueline Severt, Political Science

Poster #: 85

Preventing Protest Mobilization in Authoritative States: Using Courts to Uphold Association Rights

Deciding to participate in a political protest or social movement is not one that is made lightly. Individuals faced with the choice to speak out against their governance or live under policies or laws they disagree with do not simply choose to march in the streets without significant consideration. The choice to protest—or dissent—is influenced by many factors, including whether the government is likely to respond with force or repression (Davenport et al., 2005; Davenport, 1995; Davenport 2007; Moore, 2000; Danneman and Ritter, 2014; Ritter, 2014), the political, institutional, or social structure of the system they live in (Tarrow, 1994), and the issues at stake in the protest. One understudied area of protest is how protests are shaped or affected by the independence of the judicial system. Two possible explanations of this phenomenon currently exist. The first school of research suggests that when political opposition groups have less restricted access to independent court systems for legal rectification, they will be more probable to address their grievances with the state through the court system rather than protest. In non-democratic regimes, where political protests are especially risky for individuals, other political nominally independent institutions have been shown to reduce conflict and minimize opposition movements. The creation of political parties and legislatures has been associated with increased tenure of authoritarian regimes and sidelining political opposition movements (Lust-Okar, 2005; Geddes, 2006; Haber, 2006; Gandhi, 2008; Blaydes, 2011; Frantz and Ezrow, 2011). A similar argument can be made about partially independent judiciaries. If the court system is independent, it provides an avenue for people to have their grievances addressed without having to take their message to the street. The second explanation suggests that when independent judiciaries provide a check on the executive, the executive will be less likely to repress and coerce the protests and opposition

Undergraduate Research Symposium Poster Presenter Abstracts

groups, thus providing the groups cover to assemble. If the court limits the authority of the executive, or if the regime leader is forced to account for his actions in a public court of law, they will be less likely to use force if it will cost them legitimacy or they face some punishment. Protesters, being aware of the possibility the regime could be called in front of the court to account for violence against protesters, may seize on the opportunity to protest. In other words, the more independent court system, the more likely protests will occur. Although prior research indicates that independent courts often result in less violent uprisings, it does however incur more peaceful political demonstrations. As such, when regimes foresee potential for rebellion in opposition groups, they offer legal concessions to preempt deleterious activity. A systematic independent court apparatus issues a broad array of legal remedies and checks on autocratic regimes. The objective of this research is to better understand the motivations behind the protests in authoritative states, and whether the independence of the judiciary affects the severity and frequency of protests.

Psychology and Neuroscience

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Faculty Advisor(s): Howard Cromwell, Psychology

Poster #: 86

Effects of Anandamide Administration on Components of Reward Processing During Free Choice

Previous research has implicated the positive modulation of anandamide, an endocannabinoid neurotransmitter, on feeding behavior. Anandamide is particularly noteworthy as it shares a similar mechanism of action with tetrahydrocannabinol, the primary psychoactive component in Cannabis. Cannabis legalization in North America has presented with a need to study endocannabinoid agonists and their effects on behavior. Much has yet to be determined in terms of the role of the endocannabinoid system in decision-making scenarios. The research presented here tested the hypothesis that anandamide would augment motivation and reward processing via appetitive and consummatory measures during an operant, foraging task. A three-box design was used in order to provide the animals with a free choice, exploratory foraging environment. Discrimination, preference, and incentive contrast were analyzed as discrete measures of decision-making in the three-box paradigm. Anandamide administration (1mg/kg) was found to significantly increase motivation for the optimal foraging outcome. The

Undergraduate Research Symposium Poster Presenter Abstracts

positive effects of anandamide on eating behavior and motivation have implications toward possible treatment modalities for patient populations presenting with disorders of motivation. These findings suggest the need for continued investigation of the endocannabinoid system as a central component of motivated behavior.

Name: Kayla Keto

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Poster #: 87

Do whip spiders use magnetic cues during navigation?

The navigational abilities of amblypygids has been little studied. Field studies suggest that when navigating back to their home refuges, amblypygids may rely on olfactory cues and that visual cues are not needed. In this particular study, the potential use of magnetic cues was explored. The methods used were based on an experiment in which amblypygids were successfully trained to discriminate between shelters based on olfactory cues. Subjects were trained to discriminate between a shelter cued by a localized shift in the polarity of the magnetic field and a shelter near which the field was unmanipulated. After the training, subjects were given a choice test and the time spent near each shelter was recorded. The experiment is not yet completed, but the results suggest that the potency of magnetic cues as navigational guides is less than that of olfactory cues.

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Poster #: 88

Alcohol Outlet Locations and Urban Adolescent Views of Neighborhoods

Undergraduate Research Symposium Poster Presenter Abstracts

The environment in which an adolescent resides affects their development, however the adolescent's perception of their environment should be considered as well. Mennis and Mason (2011) found that the perceptions of participants were vital when studying locations, in particular when dealing with substance use. Furthermore, previous research by Gorman et al (2001) established that alcohol outlet density was positively correlated with violent crime. This would in turn, increase the negative perception of the neighborhood. Thus, the present study sought to understand the affects of alcohol outlets locations on adolescent perceptions of neighborhood. This study analyzed the proximity of alcohol outlet locations to urban adolescents in their home neighborhood and recorded their perception of their neighborhood in an interview. The adolescents were asked to illustrate their perceived home neighborhood via sketch maps, which were then recorded onto ArcGIS software for further analysis. The spatial relationship of alcohol outlets to the adolescents' home neighborhood was examined, and thus created insight into the frequency that the adolescent would encounter alcohol outlets during their daily routine. Based on the answers received during the interview, the perspective of an adolescent's neighborhood was measured in terms of: neighborhood attachment, street code, social control, collective efficacy, and social cohesion. Findings (n=52) suggest no correlation between alcohol outlet locations and the adolescent views of neighborhood. This would mean that the number of alcohol outlet location around an adolescent's home neighborhood does not have an impact on how that individual perceives their neighborhood. However, these insignificant findings could be caused by a lack of the adolescent to fully appreciate their environment and the differences in which the adolescent defined their home neighborhoods. Due to these findings, further research and practice is needed to study in more depth.

Works Cited Gorman, D. M., Speer, P. W., Gruenewald, P. J., & Labouvie, E. W. (2001). Spatial dynamics of alcohol availability, neighborhood structure and violent crime. *Journal of studies on alcohol*, 62(5), 628-636. Mennis, J., & Mason, M. J. (2011). People, places, and adolescent substance use: Integrating activity space and social network data for analyzing health behavior. *Annals of the Association of American Geographers*, 101(2), 272-291.

Undergraduate Research Symposium Poster Presenter Abstracts

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Poster #: 89

Incentive Contrast As A Relative Reward Process

: Incentive contrast has been a very popular research topic in behavioral neuroscience. Incentive contrast is the change in response to a particular reward due to the outcome being different than previous exposure. An example of this would be receiving one hundred dollars after only getting one dollar the previous day (positive contrast) or only getting a dollar after receiving one hundred from the day before (negative contrast). Most of the research has looked at incentive contrast in either through consummatory actions or operant tasks, never both together. It is unknown how these two processes work together to predict incentive contrast. For this study in particular, we are examining appetitive measure such as, total number of lever presses, noses pokes and latencies within the apparatus. The consummatory measure being investigated is total amount drank. This study examines the relationship between rapid relative reward comparisons and incentive contrast among rats (n=3) that are both deprived (85%-87%) and non-deprived using appetitive and consummatory measures. Animals were trained to nose poke and lever-press in order to obtain access to a sucrose solution (concentration used: 2.5%, 10%, 20% or 40% in deionized water). These rewards were placed outside an operant box which could be reached through a small hole. Animals ran through eight testing session with two single blocks (5v5%, 10v10%, 20v20%) and a mixed comparison block (5V10%, 10v5%) in between the two single blocks. During mixed comparison blocks the spout rotated between pre-randomized sucrose solutions, allowing for comparative analysis between two concentrations in one block. During the eight sessions, animal's experiences upshifts (positive) or down shift (negative) relative to another outcome in order to examine incentive contrast effects on behavior performance. We will examine the influence of dynamic comparisons between the two reward outcomes in a repeated measures design with three sessions: a single outcome a mixed outcome followed by a single outcome session for extinction. We are hoping to see that the operant/instrumental processes can be an effective way to measure incentive contrast.

Undergraduate Research Symposium Poster Presenter Abstracts

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Poster #: 90

The Effects of Coloring Mandalas on Mood and EEG Frequency Bands

Coloring is thought to be particularly effective in reducing stress because it involves both self-expression and concentrative meditation; thereby limiting stimulus input and reducing focus on negative emotional states (Curry & Kasser, 2005). There are a few studies that support coloring mandalas to reduce stress (Curry & Kasser, 2005; van der Venet and Serice, 2012; Sandmire et al., 2012). The literature, however, is limited by the number of studies and by an overreliance on self-report measures. We sought to fill a gap in the literature by exploring the effects of coloring mandalas on self-reported mood and physiological measures, specifically heart rate and brainwave activity. Specifically, we sought to investigate whether coloring mandalas would improve mood as indicated by self-report and greater electroencephalographic (EEG) left-hemispheric activity, a proposed global indicator of positive mood. We also hypothesized that coloring would reduce heart and increase EEG theta amplitude, a measure of cortical arousal. To date, there is no study on the impact of mandala coloring on brainwave activity. Consequently, this study allowed us to examine the impact of coloring mandalas at a fundamental neurophysiological level.

Name: Natasha Flesher

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Faculty Advisor(s): Vincent Coppola, Psychology

Poster #: 91

Continued Investigation of Hippocampal Aging in Homing Pigeons

More than 5 million Americans are living with Alzheimer's, a disease caused by the degeneration of neurological cells in our brains. The foundational work of O'Keefe & Nadel, (1978) initiated a stream of neurological research investigating the mammalian hippocampus as a key component in spatial memory and navigation in relation to cell death. These concerns are stimulating research that asks the question: does the creation of memories cause the usage and

Undergraduate Research Symposium Poster Presenter Abstracts

cell death of so many neurons that it interferes with the ability to recall information. The well-known homology between the mammalian and avian hippocampus (Colombo & Broadbent, 2000) suggests promising research avenues for using pigeons to unlock understanding of this research question. In the avian brain, our lab hypothesizes that older birds have less remaining capacity for new memories to be coded and retrieved; when forming new memories, knowing how many cells die in the hippocampus enables us to better understand whether the hypothesis is accurate. My specific research compares the number of cells that die in old and young pigeons; if the difference between the two groups of pigeon's number of dying cells is significant, then memories are no longer susceptible to being retrieved. In order to identify and isolate dead or dying cells, I completed a sub-field and magnification analysis that separated the hippocampus into the dorsal lateral, dorsal medial, and ventral sections. I then completed a multivariate assessment to find any significance to support my hypothesis.

Name: Rowan Wicks

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Faculty Advisor(s): Hannah Geis, Psychology

Poster #: 92

Perfectionism as a Maladaptive Construct: An Examination of Perfectionism, Negative Automatic Thoughts, and Conscientiousness

Although some authors have discussed an “adaptive” dimension of perfectionism, Flett and Hewitt (2006) argued that adaptive perfectionism as defined in the literature “bears a striking resemblance” to conscientiousness, and that perfectionism is always a maladaptive construct that describes those who place an irrational importance on achieving impossibly high standards. To explore the nature of this construct, this project examines the correlations among perfectionism cognitions, rumination, worry, and conscientiousness, and explores whether individuals who report having a current diagnosis of depression or anxiety report higher levels of these four constructs. 621 participants completed an online questionnaire with self-report measures of these constructs. Perfectionism cognitions, rumination, and worry were all highly positively correlated ($p < .001$). Additionally, conscientiousness and rumination had a small, but significant negative correlation ($p = .001$), and perfectionism cognitions and conscientiousness had a small, but significant positive correlation ($p = .005$). Finally, we found that those who report having a diagnosis of anxiety or depression reported significantly higher levels of perfectionism cognitions, rumination, and worry ($p < .001$) than those without this diagnosis. There was no significant difference when comparing levels of conscientiousness between the

Undergraduate Research Symposium Poster Presenter Abstracts

two groups. Overall, these findings support the argument that perfectionism is a maladaptive construct. These results should caution researchers against using the terms “positive” or “healthy” perfectionism when describing characteristics such as achievement striving or conscientiousness. Future research should explore other measures of perfectionism to determine whether they include aspects of “healthy” perfectionism not captured in the scale used in this study.

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Poster #: 93

Gossip in a Telework Context

Telework is defined in terms of a work arrangement which allows one to work remotely from the traditional workplace in locations such as the home, telecenters (e.g. public libraries with internet access, university telecenters, cybercafés), and cafes for one or more days of the work week. Due to the distanced style of work altering communication with coworkers and supervisors, workplace social interactions may differ for teleworkers relative to their traditional peers. This study examines the social interactions (e.g., the role of gossip) within a sample of 236 teleworkers and 197 traditional workers. Within our theoretically ground model, as predicted, gossip had a positive direct effect on affective commitment demonstrating a potential positive outcome of gossip. However, as predicted, gossip had a negative indirect effect on affective commitment when engaging in gossip elicited retaliatory behaviors (in the form of incivility) from coworkers and supervisors. Subgroup differences between teleworkers versus non-teleworkers were observed in multiple group analyses. Thus, consistent with theory, gossip had both positive and negative implications. Implications of this study are discussed and suggestions are made for future research.

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Undergraduate Research Symposium Poster Presenter Abstracts

Faculty Advisor(s): Howard Cromwell, Psychology

Poster #: 94

Getting (Lazy) rats to work: Order effects alter work output in rat model of choice

Previous research on how order effects can influence motivation in choice behavior has traditionally been explored in paradigms that by design limit, or completely remove fundamental behavioral processes that may impact choice evaluation and discrimination (i.e. free foraging). Previous work, and preliminary data, has indicated that the sequence of effort experience could have major impacts on the level of motivation for a reward. With early high levels of effort paired with small reward values showing an increased difficulty in eliciting and maintaining work output, independent of later variations of food reward. The present study used a paradigm that couple's elements of reward order, free choice, and free foraging with the goal of forming a more naturalistic model of how order effects relate to work motivation/output in the rat model of choice. In order to analyze the effects of order on choice behavior a three-box design was implemented. Over a period of seven weeks' reward outcomes in the high effort box (5 lever press) were shifted by week for a mixed-option outcome (5,4,3,1,3,4,5 pellets). While in the low effort box (one lever press) a constant reward or single option (one pellet) was maintained over all weeks. Work motivation/output was determined through analysis of high effort reward discrimination, preference and incentive contrast between weeks. An order effect was observed with animals working harder and providing more effort when rewards were decreasing, when compared to rewards increasing, by week; (1>7), (2>6), (3>5). These findings suggest that rats who experience higher levels of work first, will choose to work and prefer working even when the food reward is decreased to a point where it is costly in comparison to the constant one lever press one pellet reward.

Undergraduate Research Symposium Poster Presenter Abstracts

Public Health

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Faculty Advisor(s): Rebecca Fallon, Public and Allied Health

Poster #: 27

**Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS):
Student Knowledge at Bowling Green State University (BGSU) in 2016 Compared to 1988**

In 1988 during the height of the HIV and AIDS pandemic, a cross-sectional survey was distributed to BGSU students asking about knowledge, perceptions, and behaviors regarding HIV and AIDS. To see if HIV-specific knowledge and perceptions have changed among BGSU students in 2016 compared to 1988, focus groups were held and a survey was delivered to BGSU students. Knowledge regarding HIV testing has increased (by 25%) while knowledge of treatment of HIV has decreased (by 22%). Students perceive a medium likelihood that someone they know could contract HIV, but perceive a very low likelihood that they could contract HIV. Additional educational opportunities should be explored by BGSU to prevent transmission of HIV.

Undergraduate Research Symposium Poster Presenter Abstracts

Social Work

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Poster #: 95

Sexism in the Film Industry

Our study, "Sexism in the Film Industry," will serve to bring awareness to the fact that the film industry has endorsed sexism by continually misrepresenting women. When women are exposed to the ambient sexism in the film industry, they will be negatively impacted, even if the impact is subconscious. In this study, we conduct a survey of ten questions asking how the sexism in the film industry affects emerging adult's attitude toward themselves and other women. Men and women, per our study, are affected by sexism in the film industry differently. Men are less likely to be negatively impacted, and women are more likely to be affected.

Keywords: sexism, film industry, women, misrepresentation

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Poster #: 96

Stressors of Grandparenting: How the Community Can Aid Them

Approximately 2.7 million grandparents are raising their grandchildren and about one-fifth of this population falls beneath the poverty line (Cancino, 2016). By becoming the primary caregiver to grandchildren, grandparents face numerous stressors, such as financial difficulties, mental and physical health problems, and challenges regarding custody, parental deaths, incarceration, and parental rights. The purpose of the study is to explore the main stressors grandparents experience and to discover how a strong community can aid them. A literature review, three testimonials, as well as twenty-three completed surveys used to collect the data. The findings include; financial burdens, mobility issues, higher depression and anxiety rates, and struggles with family conflict. Recommendations for assisting grandparents include, but are

Undergraduate Research Symposium Poster Presenter Abstracts

not limited to; family therapy, support groups for both the grandparent and the grandchild, financial programs, and secondary caretakers. In the community, it is important to be aware of the stressors of this population, and to be able to provide the proper resources. Keywords: grandparenting, stressors, well-being, grandchildren, community

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Faculty Advisor(s): Hee Soon Lee, Social Work

Poster #: 97

Stressors of Grandparenting: How the Community Can Aid them

Approximately 2.7 million grandparents are raising their grandchildren and about one-fifth of this population falls beneath the poverty line (Cancino, 2016). By becoming the primary caregiver to grandchildren, grandparents face numerous stressors, such as financial difficulties, mental and physical health problems, and challenges regarding custody, parental deaths, incarceration, and parental rights. The purpose of the study is to explore the main stressors grandparents experience and to discover how a strong community can aid them. A literature review, three testimonials, as well as twenty-three completed surveys used to collect the data. The findings include; financial burdens, mobility issues, higher depression and anxiety rates, and struggles with family conflict. Recommendations for assisting grandparents include, but are not limited to; family therapy, support groups for both the grandparent and the grandchild, financial programs, and secondary caretakers. In the community, it is important to be aware of the stressors of this population, and to be able to provide the proper resources.

Name: Joshua Amaro

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Poster #: 98

A Review of Studies Measuring Quality of Life for the Aging HIV Population

Undergraduate Research Symposium Poster Presenter Abstracts

Because of advances in HIV treatment, and general health care, the aging population living with HIV has been growing exponentially, jumping from only 9% (71,428) in 2000 to almost 45% (428,724) in 2014. Subsequently, the need to measure the quality of life for HIV patients over the age of 50 has been the subject for research in the past decade. This study acts as a small-scale meta-analysis compiled of studies that measure the quality of life for people over the age of 50 and living with HIV. The purpose of this study is to collect and compare data regarding the quality of life for this particular population of HIV patients. Each sample study was reviewed and analyzed to determine what tools were used to measure the quality of life for their subjects, as well as what data was discovered through their research. Findings for each study was compiled, and compared when contradicting measuring tools were used. With this study, we hope to provide effective and efficient methods for measuring the quality of life of HIV patients over the age of 50.

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Faculty Advisor(s): Hee Soon Lee, Social Work

Poster #: 99

Seasonal Blues: Older Male Adults in Corrections

As of 2016, about 2.4% of prisoners are 55 or older totaling 4,652 prisoners overall (Federal Bureau of Prisoners, 2016). The purpose of the study is to determine if there is a correlation between the time of the year and the type of offense committed among male older adults. This study is important because as social workers we are able to implement certain programs around the most criminal seasons in order to see a decrease in crime. The objective of this research is to identify patterns of criminal activity among older adult males within the state of Ohio. Our methodology in order to collect data involves literature reviews, secondary data analysis, case studies, and specifically looking at crimes committed in certain counties in Ohio. Our sample population was 100 adult males. Findings, from both the literature review and secondary data analysis, indicate that there is a strong correlation between the seasons and the type of offense committed. Due to these findings, we suggest that more programs should be in place to divert these criminal actions among older adults during certain seasons of the year, as this is a vulnerable population. Keywords: older, corrections, seasons, offense, and males

Undergraduate Research Symposium Poster Presenter Abstracts

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Poster #: 100

Racial Minorities and Majorities: Equal Access to Opportunities?

Unequal access to opportunities in the areas of healthcare, education, employment, and housing for racial minority groups is a significant problem in America. Many racial minority populations do not receive similar treatment in these realms due to personal and institutional racism. This research study was done to discover the various ways that these disparities exist and the role that racial discrimination plays when these services are delivered. Data was collected from reviewing previous scholarly journals within these fields. Findings showed that there are considerable differences between the racial majority compared to other minority groups in the treatment of illnesses, hiring processes, loan applications, and access to quality education. Causes of these various prejudices tended to be due primarily toward institutional forces carried out by the individuals providing these services. These results show a need for more research done on reasons behind institutional racism in order to look for solutions to this issue.

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Poster #: 101

Botched Beauty

The concepts of lookism in the workplace and media regarding skin complexion, weight, lack of legal action, and general societal standards of appearance cause an issue in society today. The issue is the discrimination set forth by those who judge others based off of how they look and forcing those judged to feel the need to change themselves to fit the proper standards. The purpose of the study is to examine why one feels the need to conform to the standards set by society and shown to them through different forms of media outlets. The goal of the research study is to discover individual's perception of beauty within themselves, others, and overall

Undergraduate Research Symposium Poster Presenter Abstracts

society. We reviewed several different articles about lookism in the workplace and media. We found that lookism is becoming a growing trend in today's society and the important role social workers must play in advocating. Society has set standards of what the "ideal body" should look like; from skin tone to size and shape, down to the structure of a man's muscle definition. As social workers it is important to advocate self-love, educate about the negative aspects of body shaming, and promote the creation of legal action against lookism.

Sociology

Name: Elizabeth Kovert

Major(s); Sociology

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Faculty Advisor(s): Susan Brown, Sociology

Poster #: 102

The Role of Union Dissolution and Repartnering on Health Later in Life

Gray divorce, or divorce after the age of 50, has doubled since 1990, whereas widowhood is on the decline. Widowhood is negatively associated with well-being but little is known about divorce in later life. Our study builds upon previous research by examining the association between gray divorce and well-being. We also consider whether repartnering helps to ameliorate the negative consequences of marital dissolution. Further, men often reap greater psychological advantages from marriage than women, which may lead to gender differences in health outcomes following union dissolution and repartnering. Using data from the 2010 Health and Retirement Study, we found that divorceds drink more than widowed, with divorceds who remain single reporting the highest levels of alcohol use. Divorceds and widowed who repartner have lower levels of depressive symptoms than divorceds and widowed who remain single suggesting that regardless of dissolution type, repartnered individuals report lower levels of depressive symptoms than those who remain single. Men tend to drink more than women with the exception of divorced repartnered men. Regardless of repartnering status, divorced women report higher levels of depressive symptoms than divorced men. However, there are no differences among men and women who are widowed. This study contributes to the current body of literature by providing new insights on the health consequences of divorce and repartnering for both men and women.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Megan Corns

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Faculty Advisor(s): Kei Nomaguchi, Sociology

Poster #: 103

The Association Between Teacher-Student Relationship and Academic Performance

This study examines the link between a student's relationship, levels of conflict and closeness with his or her teacher and student's academic performance, with a specific attention to variation by socioeconomic status measured by the student's mother's educational attainment. Data for this study was drawn from the (NICHD) Study of Early Child Care and Youth Development, a longitudinal study of families over 15 years, focusing on the year when the study children were in fifth grade, found in Wave III (N = 924). Overall, teacher's reported low conflict and high closeness with their students. Cross-tabulation analysis with Chi-square tests found that students were more likely to score higher on tests of mathematical thinking and language and literacy if they had low conflict with their teacher. There was little variation by mother's education in this association. These results suggest the importance of a good relationship between students and their teachers for the student's academic success regardless of their families SES.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Nicholas Bischoff

Major(s): Chemistry

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Faculty Advisor(s): Robert Midden

Poster #: 104

Evaluation of Wastewater Treatment to Reduce Nutrient Transport

This research project is aimed at reducing the nutrient runoff from liquid CAFO manure used as fertilizer on farm fields. Polymer and coagulants are added to liquid manure to coagulate the solids and bind the nutrients. The solid treated manure is dried and the release of its nutrients are tested using rain simulations. Ideally the nutrients will be released at a rate in which the crops planted in the fields can use them so they do not enter waterways in rain runoff. Overall, the main goal of this project is to develop a more efficient manure fertilizer that will promote environmental sustainability from an agricultural standpoint.

Name: Brynn Busalacchi

Major(s): History

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Faculty Advisor(s): Amilcar Challu

Poster #: 105

Study of Delbert Latta's Involvement in Environmentalism

Examining the Delbert L. Latta Congressional Papers Collection from the Center of Archival Collections, I looked at his involvement and acknowledgement of local environmental concerns from 1970-1976. Through letters from his constituents and contact with the Department of Natural Resources, Department of Parks and Recreation and The Ohio Environmental Protection Agency, he is involved with the creation process of watersheds, dealing with air pollution affecting tree growth and complaints about the toxic waste from local companies.

Undergraduate Research Symposium Poster Presenter Abstracts

Name: Jackson Wheeler

Major(s): Geology

Institution: Bowling Green State University

Faculty Advisor(s): 106

Poster #: Yuning Fu

Surface deformation caused by aquifer in Hamilton County, Ohio

The correlation between the Earth's crustal deformation and the water level to determine whether there is an aquifer present beneath the subsurface.

Name: Michelle Sire

Major(s): Psychology

Institution: Bowling Green State University

Faculty Advisor(s): Dara Musher-Eizenman

Poster #: 107

The Effects of Mindful Eating in Preschoolers

Food neophobia, a fear of unfamiliar foods, and problematic mealtime behaviors are common among young children. Child neophobia has been linked to poor dietary variety and nutrient intake, potential risk factors for establishing long-term, unhealthy eating habits (Johnson, Davies, Boles, Gavin & Bellows, 2015). Among adults, mindful eating (i.e., being present and aware of eating in the moment) has been associated with reduced calorie consumption and healthier snack choices; however, minimal research has explored the relationship between mindfulness and eating behaviors in young children (Jordan, Wang, Donatoni, & Meier, 2014). The present study describes a new mindful eating intervention for young children and examines whether it increases child mindfulness and decreases child neophobia and problematic mealtime behaviors. A sample of 30 preschoolers will be included in the intervention. So far, nine preschoolers, ages 4-6, and their parents have been recruited from a local daycare in Bowling Green, OH. Parents completed pre- and post- intervention questionnaires about their feeding practices and their child's mealtime behaviors. The preschoolers participated in 10 brief intervention sessions, as well as pre- and post-tests assessing their neophobia and mindfulness. Preliminary findings on this subsample suggest that the number of senses being used have increased from pre-tests and post-tests. The average number of senses used during pre-test for toys went from 3.78 to 4. The average number of senses used also increased from food pre-test post-test, from 3.56 to 5.4. The number of senses used in the pre-food test compared to the

Undergraduate Research Symposium Poster Presenter Abstracts

post food test came close to achieving statistical significance ($p = .082$). Further research will add a control group in which preschoolers will be exposed to novel foods without a mindfulness intervention.