

**CELEBRATION  
OF SCHOLARSHIP  
& CREATIVE ACTIVITY**

**April 27, 2017**

**24th Annual Event  
Abstracts Booklet**

UNIVERSITY OF  
WISCONSIN  

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OSHKOSH





# CELEBRATION OF SCHOLARSHIP & CREATIVE ACTIVITY

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Posters are displayed from 8:30 a.m. to 4:00 p.m. in the Reeve Ballroom.

Visual Art exhibits are in the Steinhilber Gallery from 8:30 a.m. to 4:00 p.m.

Poster and Visual Art presenters will be available to discuss their work from 11 a.m. to 1 p.m.

\* Denotes a recipient of the FY 2016-17 Student/Faculty Collaborative Research program grant awarded by the Office of Student Research and Creative Activity.

† Denotes a graduate student.



## **Activating Gallery White Space**

Aimee Maher

Contributors: Tony Rodriguez and

Emily DeValkenaere

(Andrew Redington)

Art

Visual Art

Steinhilber Gallery (11:00 a.m. – 1:00 p.m.)

Art galleries and artists have the tendency to display pieces in reliable ways. Paintings are hung on walls and sculptures are placed on podiums. Artists and curators fall back into pattern behaviors because there is already “a way of doing things, a way that works.” The problems associated with human habit and ritual are innumerable. From an art standpoint, habit and ritual might be expressed through creating, but when it is continually used as a mode of exhibition, it must be questioned. Finding alternative approaches in the art field is a necessity; pushing boundaries is the one reliable ingredient art history is made from. Why must the gallery walls be flat, and why must art hang on them? Why is this mode of display the habit, or the easy thing, the comfortable thing? When considering how best to paint the body in a space, I also asked how best to display the body in a space. There is a conversation between the 2d gallery wall and 2D painting, and the 3d display here, including the physicality of the paint. The definitions of painting and sculpture either blur together, or something new must be considered.

## **A Gorgeous Pot**

Eune Na (Craig Clifford)

Art

Visual Art

Steinhilber Gallery (11:00 a.m. – 1:00 p.m.)

The style of pot that I made is from ceramic history. The painting around the pot describes my culture.

## **Self-Understanding through Art**

Tony Rodriguez (Trina Smith)

Art

Visual Art

Steinhilber Gallery (11:00 a.m. – 1:00 p.m.)

Engaging in critical thinking, self-reflection, and synthesis are a few of the principal skills taught in higher education; and the applications of these intrapersonal skills, once understood and practiced, are numerous—if not infinite. Honing these vital

skills in each individual takes thoughtful effort and diligence, but may be cultivated in many ways thus resulting in many forms. Despite the differences in form, the function of these properties remains constant: self-understanding. From a research perspective this study seeks to record (through a personal case study) and demonstrate (through visual art) the process of inscribing one’s internal development into an aesthetic artifact. My hypothesis is that contemplation of another’s processes can activate one’s own mental faculties and, in turn, enhances one’s own self-understanding.

## **Ancient Cardboard**

Laurel Skrober (Craig Clifford)

Art

Visual Art

Steinhilber Gallery (11:00 a.m. – 1:00 p.m.)

My piece was a class assignment for Ceramics 1. The assignment was to create a vessel representing a mixture of ancient and modern art. I chose to create a modern vessel, cardboard box, upon which I would later carve an Ancient Greek inspired design based on images researched. My final piece includes two quotes engraved in the Greek language by two Greek philosophers.

## **Bacteriophage Interactions in the University of Wisconsin Biodigester**

Jordan Black (Dr. Eric Matson)

Biology

Poster Presentation (P1)

The UW Oshkosh biodigester supplies energy that meets about 10% of the University’s demand. Numerous species of bacteria and Archaea contribute to the generation of energy through a complex network of metabolic interactions during the degradation of organic waste. It is hypothesized that viruses (known as bacteriophages) of these microbial species detract from the efficiency of the energy-generating process. The objective of this study was to isolate and identify a bacterial species that is abundant in the biodigester and investigate its potential susceptibility to bacteriophage particles present in digester fluids. A Gram-positive species of *Bacillus* (strain B1) was isolated from unfiltered digester effluent and identified by SSU rRNA gene sequencing. Bacteriophage populations were also isolated from the effluent but after filtering to remove

bacterial cells. To determine whether or not infectious bacteriophages were present, filtered effluent containing bacteriophage populations were introduced to cultures of *Bacillus* str. B1. By analyzing plaque sizes, we identified at least two distinct bacteriophages capable of infecting *Bacillus* str.

B1. Plaque assays were also used to study the ability of bacteriophage particles to remain virulent over time under biodigester conditions. Measurements that were conducted 1, 2, 4, and 7 days during exposure to digester conditions showed that virulence was lost beyond day 2 using *Bacillus* str. B1 as the host. Finally, in order to understand the production of bacteriophages in this environment, we analyzed the burst sizes of bacteriophages capable of infecting *Bacillus* str. B1 and calculated that the number of bacteriophage particles produced during infection was approximately 10 to 40 per cell. Together, these results suggest that viruses of bacterial species could influence bacterial populations and their function in the biodigester environment.

### ***Deinococcus aquaticus* Strain Variability in Biofilm Formation**

Danielle Dolinac (Dr. Sabrina Mueller-Spitz)

Biology

Poster Presentation (P2)

Bacteria primarily exist within biofilms, which are defined as bacteria attached to biotic or abiotic surfaces. Their attachment is facilitated through an extracellular matrix that may be composed of sugars, proteins, and DNA. Bacterial biofilm physiology is relatively unstudied when comparing strains of the same species. We are interested in understanding how population structure corresponds to cell attachment and biofilm formation potential. The research objectives are to characterize *Deinococcus aquaticus* variability in attachment and correlate how isolation habitat and genomic variation relate to biofilm formation. We hypothesize that all *D. aquaticus* strains will be strong biofilm formers because they readily attach to surfaces when grown under laboratory conditions. Eighteen *D. aquaticus* strains from three habitats (e.g. metal, wood, and concrete) were compared using biofilm formation assays, genomic profile, and individual gene variation. The majority of strains were classified as intermediate biofilm formers. When coupled with genomic variation, this supports the occurrence of cross-habitat colonization by individual strains or subpopulations. However, *D. aquaticus* dominance within freshwater

biofilms is not impacted solely by biofilm formation. To better understand this phenomenon we must examine how environmental conditions impact protein adhesion expression and extracellular material.

### **Can Thermal Imaging Noninvasively Detect Copulation Date in Captive Female 13-Lined Ground Squirrels?**

Cassandra Duncan (Dr. Dana Merriman)

Biology

Poster Presentation (P3)

The thirteen-lined ground squirrel (13LGS; *Ictidomys tridecemlineatus*) is a popular research organism, but is difficult to breed in captivity. UW Oshkosh breeds them successfully, but we still struggle to detect the copulation date, so we just wait to see if a litter is born. Copulation date is needed for clients who study embryology and genetic modification. This study hypothesized that skin thermography could detect local elevation of surface temperature, due to enhanced blood flow in the vulva on the day of copulation. Fourteen 13LGS females were studied in April–May 2016. Their abdomens were imaged with an infrared camera thrice weekly, until a litter was born or until 53 days had passed. Copulation date was determined by subtracting 28 days from birthdate. Vulvar temperatures on copulation date and prior to mating (baseline) were compared. A Student's t-test revealed no significant difference ( $p = 0.45$ ,  $n = 11$ ). This study disproved the hypothesis that the vulva's surface temperature can signal the copulation date.

### **Cystolith Structure and Composition**

Nicholas Gabel (Dr. Robert Wise)

Biology

Poster Presentation (P4)

Several plant families contain curious structures in their leaves called cystoliths (literally, "cell rocks"). Cystoliths are large, complicated concretions of organic cell wall material and the inorganic mineral calcium carbonate ( $\text{CaCO}_3$ ). Despite having been recognized in the botanical literature since the early 1800s, the function of cystoliths remains an enigma and our understanding of cystolith structure, development and composition is limited as well. Due to the many unanswered questions, on the composition and structure of cystoliths in the plant family *Acanthaceae* (called "acanth" throughout this application). The study chose acanth due to their

prevalence in scientific literature as having cystolith with a unique morphology. The student and faculty collaborators have developed information on the location, morphology and, to a limited degree, composition of the cystoliths. Several methods (fixation, dehydration, fresh, and frozen) were used to preserve leaf samples from each species. Light and electron microscopy were applied to photograph the structures. For the composition of cystoliths, X-ray microanalysis and atomic absorption elemental analysis were utilized to localize calcium, silicon, magnesium, and other elements.

### **Fecal Sex Steroid Lag Time of 13-Lined Ground Squirrel**

Elainna Jentz and Cassandra Duncan  
(Dr. Dana Merriman)  
Biology  
Poster Presentation (P5)

Confirming early pregnancy is an urgent need of the UW Oshkosh ground squirrel breeding colony, a unique scientific resource with clients world-wide. This project extends our ongoing efforts to create reliable protocols for monitoring reproductive state. One such protocol is fecal progesterone analysis (Miller & Merriman, in preparation). Progesterone in the bloodstream climbs during pregnancy, so it can serve as a pregnancy test. However, repeated blood draws to detect this rise are invasive and stressful, so we have turned instead to analysis of excreted hormone in squirrel feces. This humane substitution introduces an unknown: the lag time between a hormone's initial appearance in the animal's bloodstream and its excretion in feces. Our project began in fall 2016 by administering a single injection of LHRHa to female squirrels. LHRHa triggers a burst ("flare") of estrogen into the blood. Estrogen is a sex steroid with biochemistry similar to progesterone. Using ELISA analysis of feces produced in the first 3 days after LHRHa injection, our fall data suggest a 24 hour lag time of the estrogen flare. This is the best evidence yet for a similar lag time for fecal progesterone. We will repeat this experiment in May 2017 for a technical replicate.

### **The Effects of Flow Rate and Organic Matter on Nitrate Retention in Laboratory Sediment Columns**

Richelle Kasten (Dr. Robert Stelzer)  
Biology

### **Poster Presentation (P6)**

Nitrogen is an important element in an aquatic ecosystem and is needed by all organisms to survive. As nitrogen flows through groundwater and organic matter, the concentration alters and can then affect the surrounding ecosystem. Nitrate is an easily accessible and measurable source of nitrogen in aquatic systems. We are looking at the effects that flow rate and organic matter have on the retention of nitrate in sediment columns. These experiments are in progress and no data has been collected thus far.

### **Characterization of Ultra-Fast Growing *Synechococcus* Sp. UTEX 2973 Cyanobacteria as Host Platforms for Solar-Powered Carbon Conversion to Chemicals**

Kyle Kettner (Dr. Toivo Kallas)  
Biology  
Poster Presentation (P7)

Mitigation of carbon emissions is an urgent economic, ecological and national security imperative. The recently re-discovered *Synechococcus* sp. UTEX 2973 (Yu et al., 2015 Scientific Reports) is an ultra-fast growing cyanobacterium that has great potential for economical carbon sequestration enabled by production of high-value chemicals. Our group has previously generated isoprene production in the related cyanobacterium, *Synechococcus* sp. PCC 7002. Our current project endeavors to characterize carbon capture, growth, and biomass accumulation in UTEX 2973 and its potential for production of isoprene chemicals. We are introducing genes for isoprene production into plasmid and chromosomal sites in UTEX 2973. These genes are being introduced by a 'tri-parental' mating process that we have successfully adapted for use in our lab. Transgenic UTEX cyanobacteria will then be characterized for growth and isoprene production as a function of temperature, light intensity, and cell density. Fitness of engineered strains and the stability of introduced genes will be assessed via growth and competition experiments in photobioreactors and by DNA sequencing of transgene regions. Understanding of these metrics will be critical for optimizing isoprene-producing UTEX 2973 cyanobacteria for potential scale-up to industrial applications. This work is being supported by a UW Regent Scholar grant awarded to Dr. Toivo Kallas.

## **Diversity of Longhorned Beetles along a Gradient of Urbanization**

Sean Kirkpatrick (Dr. Robert Mitchell)

Biology

Poster Presentation (P8)

The Cerambycidae is a family of wood-boring beetles made up of over 35,000 species that feed in trees throughout Wisconsin. We were interested to see if cerambycid diversity could be used as a measurement of the urbanization affecting Wisconsin forests. Urbanization, the development of cities, is recognized as a factor that reduces species diversity in many habitats, and we hypothesized that the more urbanized communities will have less diversity. In this study, we used attractive lures to collect and identify longhorn beetles in habitats that varied in their proximity to the city of Oshkosh. We chose communities in the city ("urban"), peripheral to the city ("semi-urban"), and completely out of the city ("rural") and analyzed the impact of urbanization by measuring the alpha (diversity of one community) and beta (species found in multiple communities) diversity of these communities. We found that the rural and semi-urban communities followed our predicted pattern of alpha diversity while the urban communities had higher diversities than expected. Beta diversities of all three communities were very similar. This is likely due to the intentional planting of diverse species in the urban communities.

## **Beach Sanitary Research**

Aleesha Koslica (Dr. Sabrina Mueller-Spitz)

Biology

Oral Presentation Session II

Reeve Room 305 (8:30 – 9:00 a.m.)

I worked at the Racine County Health Department from May until September and then from December to February on two projects. The first few months I worked doing beach water quality testing, and then over the winter I spent time analyzing the research from the summer testing. I researched the background on the city demographics, the history of the beaches and mainly I researched how beach health will impact human health. I researched beaches in Illinois for the Illinois DNR project. The beaches I researched were Waukegan North, Waukegan South and Winthrop Harbor. I began my search by searching the databases for information on the beaches and the impact on human health. I found that there are many aspects of beach health that could cause harm to humans, such

as the sand or algae in the water. On the other hand there are things humans do that can impact the beach health. There are many businesses in the area that could be doing damage to the beaches; there is also a boat facility that could be potentially harming the beach environment. I also analyzed the data from the summer and put the data into tables for the project.

## **Sugar Consumption on Campus**

Jenna Meurer (Brian Kermath, UWO Director of Sustainability)

Biology

Poster Presentation (P9)

I will be collecting data of all the vending machines on campus. I am looking specifically at sugar content and the popularity of drinks and snacks. I will be looking at the amount of drinks and snacks bought in a month's period at UW Oshkosh. Facts on sugar content of the vending machine contents and how sugar affects the human body will also be included in the research. I will also explore the sugar content of an average Mi Taza meal at the cafes in Sage, Halsey, and Clow.

Excessive sugar consumption is a primary problem in today's society and a major player in diabetes, among other health issues. According to diabetesresearch.org, "type 1 diabetes is significantly higher in people under age 20. According to a 2008–2009 study of 23,525 youths with diabetes, 78% were newly-diagnosed with type 1 diabetes vs. 22% who were newly-diagnosed with type 2 diabetes." With sugar consumption at an all-time high, food and drink consumption should be reevaluated. Convenience is a major factor when deciding what to eat. This is especially true amongst college students. The information collected will demonstrate a clearer picture of how much sugar is consumed on campus.

## **The Will to Survive: Natural Competency and the Effects of Plasmid DNA on the Desiccation Tolerance of *Deinococcus aquaticus***

Zachery Stuebs and Alexander Horkman  
(Dr. Sabrina Mueller-Spitz)

Biology

Poster Presentation (P10)

Bacterial survival has been driven by numerous evolutionary mechanisms, including the ability to uptake and incorporate foreign genetic material into

their genome. *Deinococci* have been shown to withstand environmental stresses such as desiccation through complex physiological responses. Natural competence, the ability to uptake extracellular DNA, helps repair DNA, provides additional nutrient sources, and may cause alterations of the recipient genome. We hypothesized that recovery from desiccation in the presence of extracellular plasmid DNA would promote survival and improve transformation efficiency. The experiment focused on natural competence and the effects of desiccation on survival in *Deinococcus aquaticus*. *D. aquaticus* strain P71 was found to uptake and maintain an *Escherichia coli* plasmid. 0.46% of the starting cells survived one week of desiccation. When the plasmid was introduced upon rehydration, survival doubled to 0.93% for cells desiccated for one week. The reverse trend was measured for plasmid DNA introduced upon desiccation, leading to a 2.2-fold survival increase following a two week period. No transformants were detected in the desiccated cells. It appears that *D. aquaticus* is capable of uptaking plasmid DNA. Our work suggests that natural competence is a mechanism that can improve survivability within a bacterial species' ecological niche.

### **Comparison of Two Experimental Outreach Kits for the Discovery of Inexpensive, Effective Catalysts for Solar Energy Conversion**

Zac Chambers and Amanda Leichtfuss (Dr. Jennifer Schuttlefield Christus)  
Chemistry  
Poster Presentation (P11)

The Solar Energy Activity Lab (SEAL) and the Heterogeneous Anodes Rapidly Perused for Oxygen Overpotential Neutralization (HARPOON) outreach kits distributed by the NSF-funded Center for Chemical Innovation Solar Fuels were designed to use combinatorial screening for the discovery of inexpensive, effective catalysts for the conversion of solar energy to useable chemical fuel. These nationally distributed outreach kits both aim to encourage students across the world to discover unique, efficient mixed metal oxide catalysts for photoelectrolysis though the methods of detection are different. The SEAL kit uses the production of photocurrent via illumination from LEDs to determine if a newly created catalyst is worth further analysis as a catalyst or possible light absorber, while the

HARPOON kit utilizes direct detection of the oxygen evolved by mixed metal oxide materials during electrochemical water oxidation to assess catalyst activity. By analyzing various material combinations on both kits to investigate if a catalysts would be determined to have high activity on one kit then would it also be determined to have high activity on the alternate kit. Current results show there isn't correlation between catalyst activity on either kit, meaning that active catalysts on HARPOON show little, to no activity on SEAL.

### **Magnesium Oxide: A Sustainable Nutrient Recovery Tool**

Erica Kirinovic\* and Amanda Leichtfuss  
(Dr. Jennifer Schuttlefield Christus)  
Chemistry  
Poster Presentation (P12)

Clean, useable water supplies are a growing concern as the world's population continues to rise. The unavoidable result of population growth and societal development are wastewater systems with excessive amounts of phosphorus (P) and nitrogen (N) compounds. This causes substantial eutrophication issues in the environment and problems for the wastewater treatment industry. Current methods of nutrient removal from wastewater are mostly based on insoluble Fe, Al, and Ca salt formation followed by landfill disposal without returning them to the environment. Struvite,  $MgNH_4PO_4 \cdot 6H_2O$ , is a promising chemical platform for recovering these nutrients prior to the treatment process, which can then be recycled and used as a fertilizer. Our objective was to examine the potential of low solubility, naturally abundant magnesium inorganic materials for the utilization of nutrient recovery from wastewater. Thus, we attempted to synthesize struvite via the reaction of inexpensive, widely available Mg precursors ( $MgCl_2$ ,  $MgO$ , and  $MgCO_3$ ) and simulated wastewater (i.e. dilute solutions of dibasic ammonium phosphate). Reactions formed struvite powder, which were characterized using attenuated total reflectance-Fourier transform infrared spectroscopy, scanning electron microscopy, and X-ray diffraction. The results herein suggest Mg precursors have the potential to be used as nutrient recovery tools which should be further investigated.

## **Environmentally Recycled Material for Use in Fertilizers**

Amanda Leichtfuss (Dr. Jennifer Schuttlefield Christus)

Chemistry

Oral Presentation Session II

Reeve Room 305 (8:30 – 9:00 a.m.)

Clean, usable water supplies are a growing concern as the world's population rises. The unavoidable result is wastewater systems with excessive amounts of phosphorus (P) and nitrogen (N) compounds. This causes substantial eutrophication issues in the environment and problems for the wastewater treatment industry. Current methods of nutrient removal from wastewater are mostly based on insoluble Fe, Al, and Ca salt formation followed by landfill disposal without returning them to the environment. Struvite,  $MgNH_4PO_4 \cdot 6H_2O$ , is a promising chemical platform for recovering these nutrients prior to the treatment process, which can then be recycled and used as a fertilizer. Our objective was to examine the potential of low solubility, naturally abundant magnesium inorganic materials for the utilization of nutrient recovery from wastewater with the addition of organic compounds. Thus, we attempted to synthesize struvite via the reaction of inexpensive, widely available Mg precursors ( $MgO$ , and  $MgCO_3$ ) and simulated wastewater (i.e. dilute solutions of dibasic ammonium phosphate with salicylic acid). Reactions formed struvite powder, which were characterized using attenuated total reflectance-Fourier transform infrared spectroscopy, scanning electron microscopy, and X-ray diffraction. The results herein suggest Mg precursors have the potential to be used as nutrient recovery tools which should be further investigated.

## **Elucidating the Role of the 4-coumarate:CoA Ligase Enzyme in Plant Cell Wall Biosynthesis**

Wesley Morioka\* (Dr. Christopher Bianchetti)

Chemistry

Poster Presentation (P13)

Fossil fuels are the largest contributor to global warming and our dependence on this non-renewable source of energy is unsustainable. Renewable energy sources such as bioethanol derived from plant biomass have the capability to reduce and even replace fossil fuels. Currently, bioethanol is produced

from energy intensive food crops, such as corn and sugar cane, and are unsustainable in the long run. Bioethanol derived from plants and plant-derived materials would be sustainable, but it is difficult to obtain the carbohydrates needed to produce bioethanol encased by lignin. Lignin, a complex molecule found in the tissues of plants, provides the plant with shape, rigidity, and chemical transport. 4-coumarate:CoA ligase from tobacco (Nt4CL2) plays a pivotal role in the biosynthesis of lignin by activating the building blocks of lignin. Here we present the crystal structure of Nt4CL2 and the enzymatic properties associated with its preferred reactants. Mutational analysis was also performed to investigate the key components in catalysis. An understanding of how plants produce and synthesize lignin allows us to potentially create genetically modified plants with less or easier to break down lignin; leading to a reduction in time and energy in the sugar extraction process.

## **Synthesis of Non-Natural Amino Acids**

Marissa Munoz (Dr. Brant Kedrowski)

Chemistry

Poster Presentation (P14)

Non-natural amino acids are a class of synthetic organic molecules that have applications in medicine. In specific interest to the scientific community are alpha, alpha disubstituted amino acids. These particular non-natural amino acids are bulkier in size and affect protein-to-protein interactions. Specifically, the larger structure of these amino acids have the potential to inhibit the deterioration of proteins, as well as stabilize protein structure, which is incredibly important in protein-based medicines. However, the precise manufacture of alpha, alpha disubstituted amino acids has yet to be optimized. The proposed research aimed to assess the efficiency of utilizing porcine liver esterase (PLE) and a Curtius Rearrangement as a method to produce non-natural amino acids. Thus far, the purity of individual compounds have been assessed by calculating the percent yields at each pivotal step, obtaining proton nuclear magnetic resonance spectroscopy data, carbon nuclear magnetic resonance spectroscopy data, as well as gas chromatography and mass spectrometry data. To further gauge the productivity of this method, future research should include measuring the stereoselectivity of PLE by determining which enantiomer is produced in relation to the other (% ee),

as well as obtaining infrared spectroscopy data for all novel compounds.

### **Investigating the Structure and Function of a Protein Involved in Manganese Homeostasis in *E. coli***

Katherine Senn (Dr. Lauren Waters)  
Chemistry  
Poster Presentation (P15)

Bacteria require manganese and use it as an enzyme cofactor and as protection against oxidative stress. However, manganese is toxic in excess, so cells require a system of proteins to maintain manganese homeostasis. In the model bacterium *E. coli*, a novel protein, MntS, has been linked to manganese homeostasis. Although its specific function is unknown, one model is that it is a manganese chaperone. This project aimed to examine its function by determining fundamental properties of the protein, including its functional form in vivo, the proteins it binds to, and the structural features it uses. We have shown that translation of MntS predominantly begins from an internal Val10 start codon using mutagenesis and Western blots. Additionally, MntS can interact with itself when manganese is present in a two-hybrid assay. The roles of certain regions of the protein in this interaction were investigated using MntS truncations, and the contributions of specific amino acids were examined by assaying a protein that is homologous to MntS. We manipulated environmental conditions to determine their effects on the interaction. The investigation of MntS structure and interaction provides insights into the protein's isoforms, its potential function, and the protein structure's impact on its function.

### **The Effect of Acid Strength of an Intramolecular Acidic Substituent on a CO<sub>2</sub> Reduction Catalyst**

Kong Choua Thao (Dr. Sheri Lense)  
Chemistry  
Poster Presentation (P16)

Our main goal in this research is to find a way to increase the effectiveness and efficiency of the catalyst that converts carbon dioxide to carbon monoxide. To do so, we added a fluorine group to help strengthen the acidic group on the catalyst, which preliminary results helped reduced the activation energy of the reaction, resulting in a more

efficient catalyst. With this findings, we are able to produce carbon dioxide more readily, which can then be used as starting material for fuels and plastics.

### **Analyzing the Progress of the Sustainable Development Goals**

Landyn Mills\* (Dr. Marianne Johnson)  
Economics  
Poster Presentation (P17)

In 2015, the United Nations unanimously passed the Sustainable Development Goals (SDGs) by the UN. There is a need for a tool for countries to diagnose and identify the source of the problems that inhibit SD. This project introduces a model that just does that by using a production function for goods playing a central role in achieving the SDG in question. Since this method confronts goals dependent on a country consuming a specific good, it cannot be used for every SDG. It can be applied to seven of the 17 goals that fall under the umbrella of social development. In order to evaluate whether a country has achieved a SDG, the new SDG index is used. Each of these goals have a unique production function that diagnoses the problem in achieving that SDG as either a production or distribution problem. From there, specific sources can be identified giving policymakers an effective tool to create effective policies that confront the underlying problems. Additionally, this project demonstrates the practicality of the model by using the model in two SDGs which are the second (ending hunger) and sixth (clean water and sanitation).

### **Culturability of Pathogenic Bacteria in an Anaerobic Digester**

Shannon Johnson\*, Jordalyn Simpson and Chelsea Smies (Dr. Gregory Kleinheinz)  
Engineering Technology  
Poster Presentation (P18)

Anaerobic digestion (AD) has the potential to reduce organic wastes and produce renewable energy from the degradation of organic materials for biogas. However, mixed substrate anaerobic digesters may create a suitable environment for opportunistic pathogenic bacteria. The fate of potential pathogens has been studied in manure-based digesters but their survival is not well understood when digesters are co-fed with food waste. Mixed substrates may change internal conditions and subsequently pathogen survival, resulting in concerns for general environmental health. The purpose of this study was

to enumerate potentially pathogenic bacteria in a bench-scale AD system. Food waste and percolate were used as substrates to examine the survival of five species of bacteria (*Campylobacter jejuni*, *Staphylococcus aureus*, *Salmonella enterica*, *Enterococcus faecalis*, and *Escherichia coli*) that were selected on likelihood of entering a digester or they are indicators for groups potentially located in digesters. It is hypothesized that incomplete acidogenesis – from mixed substrates – may increase volatile fatty acids, lower pH, and therefore decrease pathogen survival. A modified membrane filtration method, with selective and differential media, was used to enumerate the microorganisms. The reduction of four of the five organisms, early in AD, indicates co-fed digesters can reduce pathogens and lower environmental health risks.

### **Fostering Critical Thinking: Using Bloom’s Taxonomy during Writing Center Sessions with Underperforming Recent High School Graduates in a College Bridge Program**

Savannah Block (Dr. Crystal Mueller)  
English  
Poster Presentation (P19)

This investigation sought to explore the ways a writing center guided incoming first-year writers in a college bridge history course. The researcher assessed the critical thinking skills of three students enrolled in the Titan Advantage Program (TAP) by referencing their completed homework, written papers, and writing center sessions. Sessions for two participants intentionally utilized the higher order thinking skills hierarchy, Bloom’s taxonomy, while one participant’s sessions did not. The study used two surveys—a General Critical Thinking Skills Level and Need for Cognition (NFC)—at three different intervals to dictate evidence and predetermined engagement of elevated critical thinking among participants. Such surveys were then utilized to narrow the research to the five most pivotal sessions during the six-week program. Significant areas of concern that arose from multiple sources of data were participants’ fear in synthesizing balance between thoughts and quotes, inability to develop narrow and expansive narratives, and lack of unambiguous definitions within course texts and assignments. Whether used intentionally or not, Bloom’s terms, such as recollecting, comprehending, applying, analyzing, synthesizing, and evaluating were understood and explained by

students from both primary and secondary investigators’ sessions near the end of the TAP program.

Keywords: critical thinking, Bloom’s taxonomy, writing center

### **Black American Women Redefine “The American Dream” through Entrepreneurship**

Shakura Salahaladyn (Dr. Norlisha Crawford)  
English  
Poster Presentation (P20)

In the 21st century, Black American Women (BAW) are the fastest growing group of entrepreneurs by race and gender in the United States. Yet, there is limited research available about the group. What do scholars see as reasons why BAW significantly exceed their counterparts to be the fastest growing group of entrepreneurs? In this study I will employ an overview of literature in the area of BAW in business to assess the value of this group of entrepreneurs and what they have endured to achieve success. The research will expose barriers and historical ventures to bring light to this growing group of business women. The current state of BAW in business is influenced by the legacy of their pasts, including restrictions related to slavery, followed by Jim Crow segregation. As opportunities later were presented to blacks in the post-Modern Civil Rights Movement, they were, and are, still forced to begin their businesses without the normal supports gained by middle-class white women. Those supports include: overwhelmingly positive media representation; constant and varied kinds of sponsorships; promotion by networks of friends and colleagues; associations that reinforce their fields; encouragement for risk-taking in the workplace; access, if limited, to fair advancement; and the gender wage gap being addressed to some degree. BAW are not included in that model. With this study the researcher acknowledges the body of literature addressing BAW entrepreneurs. Hopefully this review of the literature that has been published up to this point will be the first step as other researchers advance the study of this group of women comparatively across race, ethnicity and gender.

## **Phosphate Mineralization of an Oligocene Unconformity Surface, South Island, New Zealand**

Kira Bausch (Dr. Eric Hiatt)

Geology

Poster Presentation (P21)

Phosphate is an important natural resource on which the world depends for food production and it plays important roles in oceanic productivity. Phosphate-rich sedimentary rock (phosphorite) is the largest source of phosphorus for fertilizer. The focus of our research is a thin phosphate-rich interval in Oligocene-aged sedimentary rocks along the coast of the South Island, New Zealand. The surface is interpreted as a wave-swept marine bedrock surface on which phosphate formed as sea level rose. The area has experienced uplift exposing the deposit. An unusual phosphate crystal coating occurs on this unconformity surface. We hypothesize that this phosphate coating formed under a sediment layer that was removed by erosion. Similar-aged phosphorite occurs offshore on the New Zealand shelf near the Chatham Islands, and this could be an on-shore analog.

We determined the mineralogy of the phosphate-bearing samples using X-ray diffraction, and we are using petrographic and scanning electron microscopy to determine the origin, nature and relative timing of phosphate phases present. There are at least three generations of phosphatization that include two carbonate replacement events and the phosphate crust that is the focus of this study. Understanding these processes will help us understand the origin of this phosphate deposit.

## **Review of the Distribution of Mammoth Remains in East Central Wisconsin**

Ashley Boegh (Dr. Joseph Peterson)

Geology

Poster Presentation (P22)

The North American proboscidean *Mammuthus* sp. (Woolly Mammoths and relatives) is well represented in the Pleistocene fossil record of East Central Wisconsin. Despite this, due to casual collection and incomplete documentation there has yet to be a comprehensive review of their distribution in the region. In order to construct a preliminary review of local *Mammuthus* remains, a series of local museum collections were studied where specimens were

measured, photographed, and digitized specimens into 3D models. Furthermore, original collection localities were determined by available archival documentation. Finally, results were compared to online databases for the distribution of similar remains in other parts of the state and the Midwest. Though preliminary, results suggest that all studied *Mammuthus* remains were initially collected from the Horicon Till member of the Holy Hill Formation, deposited during the late Wisconsin Glaciation of the Pleistocene Epoch, 16,000-30,000 yr BP. However, one specimen (UWO-1989-4, "Mucks Mammoth") is among the northernmost *Mammuthus* sp. remains discovered in the state of Wisconsin. While this study is currently hindered by the lack of abundant specimens available in museum archives, the potential inclusion of privately-owned specimens may increase the resolution of *Mammuthus* sp. distributions in East Central Wisconsin.

## **Developing Pressure-Temperature Paths for Rocks of the Rincon Range, New Mexico**

Jordan Foote\* (Dr. Benjamin Hallett)

Geology

Poster Presentation (P23)

Metamorphic rock samples were collected from the Rincon Range, New Mexico, to obtain chemical data in order to interpret the nature of metamorphism across the mountain range. The Picuris Orogeny, a tectonic event causing mountain building in the southwestern portion of North America, metamorphosed these rocks at ~1.4 Ga. There is much debate on whether this area experienced an earlier metamorphic event during the Mazatzal Orogeny (~1.65 billion years ago), in addition to the Picuris Orogeny. Garnets within the rocks were analyzed with the electron microprobe at UW Madison. Chemical data were collected and interpreted into element maps, which display element variations throughout the garnets, potentially representing different growth zones, particularly of the sample RR16-17a. The element maps show spatial changes throughout each garnet in Ca and Fe, as well as variations between garnets. Low core values of Ca, otherwise stated as mole fractions of grossular (XGr<sub>s</sub>), are 0.025 or 2.5%, and FM is 0.65 mole fraction, (Fe/(Fe+Mg) = FM) gradually transition to high calcium (XGr<sub>s</sub> = 0.058) and iron rims (FM = 0.84).

This supports the conclusion for a single metamorphic event, including two garnet growing phases during an increase in temperature, producing such variations from core to rim within the garnets.

### **Comparisons of Fidelity in the Digitization and 3D Printing of Vertebrate Fossils**

Mark Krippner (Dr. Joseph Peterson)

Geology

Poster Presentation (P24)

Innovations in the field of additive manufacturing (AM) and three-dimensional (3D) printing have led to significant reductions in the cost and complexity of utilizing such techniques. As the technology develops, it opens new venues for paleontology. However, until recently, the use of 3D printed samples as research specimens has remained infeasible due to the overhead associated with high-quality AM devices and limitations of the technology, such as low print fidelity. This study explores the quality of digitization and 3D printed specimens in quantitative terms to determine if usage of AM for research is feasible for most paleontologists. Resin casts of a tooth and osteoderm were digitized using two different techniques: white-light structured scanning and laser scanning. Each resulting digital model was statistically compared for differences in morphology. Next, the resulting digital models were then printed on two different fused deposition modeling (FDM) printers. The printed models were microscopically compared for differences from the original digital file. The results of this study suggest that, while differences in digitization methods and 3D printing units exist, these differences are exacerbated by original object morphology variations. As such, even low-cost digitization and 3D printing systems are suitable for many paleontological research initiatives.

### **Exceptional Preservation of an Oligocene (ca. 28 Ma) Invertebrate Marine Fauna, Otekaike Formation, South Island, New Zealand**

Monica Preston (Dr. Eric Hiatt)

Geology

Poster Presentation (P25)

Marine invertebrate carbonate-secreting organisms form limestone, and their skeletons record the evolution of marine life. Calcareous invertebrates biomineralize through precipitation of the minerals

aragonite and calcite. Aragonite is unstable in meteoric water, which leads to dissolution and replacement by calcite; this process cements most limestones. Aragonite skeletal material is rarely preserved in rocks more than a few hundred thousand years old. In contrast, our study has shown that the aragonitic invertebrates in the Oligocene (ca. 28 million years before present) Otekaike Formation of New Zealand have not undergone dissolution or replacement.

We used X-ray diffraction to document the minerals present and employed petrographic study of microstructures. We focused on invertebrates composed of aragonite including gastropods, scaphopods, bivalves, and annelid worms. The skeletal elements of these organisms show minor alteration including replacement of the nacreous layer by calcite and minor recrystallization of the cross-lamellar microstructure. Organisms that were originally high magnesium calcite have undergone minor recrystallization and appear to have lost Mg. Our results show that tectonic uplift and a cool, semi-arid climate led to limited interaction with meteoric water. As a result, the Otekaike fauna provides an excellent model to access the role of aragonite preservation on ancient fossil assemblages.

### **Diagenesis of Iron and Phosphate Minerals in Glaciomarine Sediments Deposited During the Last Snowball Earth Ice Age, 640 Million Years Before Present, Mato Grosso, Brazil**

Maxwel Schwid (Dr. Eric Hiatt)

Geology

Poster Presentation (P26)

Intense climate change and subsequent low concentrations of deep-ocean oxygen during the most extreme ice age in Earth history, ca. 640 million years ago. These are associated with sedimentary rock rich in the economically important iron-ore mineral hematite and phosphate (phosphorite), an important resource for food production and critical for life. Whereas widespread hematite deposition occurred before 640 million years ago, phosphorite occurs almost entirely in the Phanerozoic Eon (<540 million years), and provides a record of nutrient and oxygen levels in ancient oceans. Phosphate is supplied to marine sediments via organic matter decomposition and desorption from iron and manganese oxyhydroxides. These two biochemical sediments

only occur together in very well-preserved 640-million-year-old rocks from Mato Grosso, Brazil. Although this succession provides an unparalleled record, it experienced alteration. To document the replacement relationships and track the chemical conditions that these unique sedimentary rocks have experienced, we used petrographic and scanning electron microscopy, as well as X-ray diffraction. Contrary to previous studies, we have found that the succession experienced hydrothermal alteration (chlorite and pyrite), and later oxidative alteration (goethite). Without understanding these reactions and replacement relationships, analysis of chemical signatures would produce misleading results and make interpretation of paleoenvironmental conditions nearly impossible.

### **Multiple Dolomitization Events Recorded in Neoproterozoic Cap Carbonate Rocks, Mato Grosso State, Brazil**

Anna Sweeney (Dr. Eric Hiatt)

Geology

Poster Presentation (P27) **WITHDREW**

Dolostone is an economically important carbonate rock that forms aquifers, petroleum reservoirs, and is an important industrial resource used to make concrete. The mineral dolomite forms when limestone is altered by addition of magnesium. This can occur in many different settings from tidal flats through deep burial and, because of this, dolostones are often composed of multiple dolomite phases. 24 dolostone samples were collected from the Araras Group across Mato Grosso, Brazil. These Late Neoproterozoic dolostones directly overlie rocks of the Marinoan ice age, marking the end of one of the most extreme ice ages in Earth history and the beginning of the Ediacaran Period.

To identify the dolomite phases and to determine their origins, we prepared microscope slides (thin sections) and analyzed them using petrographic and cathodoluminescence (CL) microscopy. The samples come from an area that saw a large range of tectonic disturbance from relatively little to major tectonic activity associated with the Brasiliano orogeny. This tectonic event was caused by the collision of continental fragments to form the supercontinent Gondwana. The dolostones are complex mixtures of dolomite that formed early after burial and contain cement phases associated with

hydrothermal waters that moved along faults during major tectonic events.

### **Detrital Zircon Age Patterns Over Earth History**

Brooke Vander Pas (Dr. Timothy Paulsen)

Geology

Poster Presentation (P28)

Sedimentary rock successions hold important records for understanding the age and chemical evolution of Earth's crust. In particular, zircons contained within such deposits are robust time capsules that retain a wealth of chronologic and compositional information about the parent rocks in which they formed despite subsequent erosion, transport, burial, and metamorphism. The vast majority of detrital zircons typically yield Th/U ratios  $>0.1$  that are generally accepted as the product of igneous crystallization, whereas those yielding Th/U ratios  $<0.1$  are commonly accepted as the product of metamorphism. Recent analyses of large detrital zircon U-Pb age datasets suggest that increased zircon abundance in the sedimentary rock record correlates with episodes of supercontinental accretion, the significance of which has been attributed to increased magmatic activity or preservation bias. Detrital U-Pb zircon ages are commonly tied to igneous and metamorphic events. However, whether metamorphic U-Pb zircon age datasets display the same first-order peaks shown by large detrital zircon (dominantly igneous) U-Pb age datasets remained unclear. This work presents new results of detrital zircon analyses that were conducted with the intent of determining the patterns and significance of metamorphic and igneous zircon age populations over Earth history.

### **Determining Indicators of Groundwater Recharge in a Fractured Dolomite Aquifer**

Patrick Wanzeck (Dr. Maureen Muldoon)

Geology

Poster Presentation (P29) **WITHDREW**

Many people in Northeastern Wisconsin rely on groundwater for their water supply. Some residents of Kewaunee County, Wisconsin, became concerned when they noticed brown water coming from their tap. Tests of groundwater samples collected from the faucets of these residents identified pathogens harmful to human health. Because water may contain pathogens even with no discoloration or odor, and because current tests for pathogens are impractical for

continual monitoring of domestic wells, understanding pathogen travel within groundwater systems and finding a more practical indicator would be beneficial to determining when the aquifer is most vulnerable to pathogen contamination.

In this study, we will be examining water level, conductance, pH, chloride, dissolved organic matter, and water temperature data recorded by sensors placed in two non-pumping wells in Kewaunee County and correlating that data with air and ground temperature, and precipitation data obtained from nearby weather stations. The goal is to increase understanding of groundwater recharge processes in the fractured dolomite groundwater system. Our focus will be on determining a chemical signature that can be used as a proxy for predicting recharge and the corresponding transport of pathogens into the aquifer.

### **A Preliminary Record of High Grade Metamorphism from Chemical Zoning Preserved in Garnet from Pelitic Schists of the Northern Taos Range, New Mexico**

Ali Wiemer (Dr. Benjamin Hallett)

Geology

Poster Presentation (P30)

Metamorphosed sedimentary/volcanic rocks from the northern Taos Range of north-central New Mexico record burial and heating that occurred in the lower to middle continental crust. Significant garnet growth occurred within a schist with the minerals garnet + biotite + quartz + muscovite + plagioclase + sillimanite ± [cordierite] + Fe–Ti oxides + accessory minerals. Cordierite, a mineral found when pelitic rock is metamorphosed at high temperatures, was present with garnet though it is completely replaced by new minerals sillimanite + quartz ± biotite ± oxides ± phyllosilicates. Electron microprobe mapping of major elements in garnet provides clues to the metamorphic history of this rock.

Analysis shows garnet chemical zoning with an increase of Fe/(Fe+Mg) in a 200 micron-thick rim of sample TR25. Another schist, TR19, from a higher elevation outcrop contains the assemblage garnet + biotite + quartz + plagioclase + sillimanite + muscovite + tourmaline + Fe–Ti oxides + accessory minerals. Garnet zoning in both rocks show no evidence for polymetamorphic overgrowths (from repeated burial and heating), nor cation diffusion related to resorption along garnet rims. These

preliminary results are interpreted to indicate regional metamorphism during a single tectonic cycle associated with the ~1.45 -1.35 Ga Picuris Orogeny.

### **World War I: People of Oshkosh**

Christopher Gauger and Elizabeth Potter

(Dr. Gabriel Loiacono)

History

Poster Presentation (P34)

We are commemorating World War I in Oshkosh by researching individuals who lived in Oshkosh during the war. This poster will present initial fruits of that research.

### **Capturing Farmers' Perspectives through Oral History**

Madeline Hass (Dr. Stephen Kercher)

History

Oral Presentation Session I

Reeve Room 306 (8:30 – 9:30 a.m.)

Over the past century, American society has become increasingly disconnected from the farmers who are the source of the food on which the population relies. As Edwin Hagenstein says in *American Georgics*, "Farming has become enormously productive, but also in many ways as isolating and alienating an industry as the American economy has yet devised." In the context of the history of the isolation of farmers, my research will focus on the interactions between farmers and the non-farming community, along with how this relationship has changed over time, from the 1950s to the present. While some information can be found on this relationship, the farmers' own understanding is lacking. Therefore, my research will use first person accounts sourced primarily from oral histories that have been collected for use in the Wisconsin Farms Oral History Project. By focusing on these collected oral histories, my research will uncover farmers' attitudes toward – and experiences with – the outside community, and how this relationship has changed. I expect to find that farmers feel increasingly isolated from the outside community, with varying experiences based on the nature of the specific farm.

### **Namibia and Brunei Position Paper for the United Nations Environment Assembly**

Alexander Horkman, Zachery Stuebs, Maxwell Honzik, and Garrett Martin (Dr. Kenneth Grieb)  
International Studies

Oral Presentation Session III  
Reeve Room 305 (9:30 – 10:30 a.m.)

The world faces a diverse number of environmental challenges. Namibia, a sparsely-populated desert country, and Brunei, a country nearly entirely dependent on hydrocarbon extraction for its income, have very different perspectives on these challenges, but also some similarities. Position papers from both countries for the United Nations Environment Assembly, the preeminent forum of the international community for discussing environmental issues, explain these countries' positions on three topics: Illegal Trade in Wildlife, Implementation of the Paris Agreement, and Sustainable Use of Oceans, Seas, and Marine Resources.

### **Namibia Position Paper for the United Nations High Commissioner for Refugees**

Stephanie Liechty and Alex Siebers (Dr. Kenneth Grieb)

International Studies

Oral Presentation Session III

Reeve Room 305 (9:30 – 10:30 a.m.)

In the wake of the Syrian refugee crisis and a number of conflicts with grave humanitarian repercussions, it is vital to coordinate efforts to protect the rights of refugees. The Office of the High Commissioner for Refugees is the main United Nations body responsible for this monumental task. However, given the number of refugees and countries' reluctance to accept them, there is a need for innovative solutions to integrate or safely repatriate. The position paper of Namibia addresses three topics: Promoting Livelihoods and Education for Refugees and Displaced Persons; Addressing Protracted Displacement; and Environmental Migration and the Future of Displacement.

### **Namibia Position Paper for the Second Committee**

Christopher Stočkus (Dr. Kenneth Grieb)

International Studies

Oral Presentation Session I

Reeve Room 306 (8:30 – 9:30 a.m.)

The presentation will focus on an analysis of three international economic issues from the perspective of the African country Namibia. As a member of the Second Committee of the United Nations General

Assembly, Namibia must balance its status as an up-and-coming economic power of Southern Africa with its extremely low population density and high inequality. The three topics discussed are Implementing the Addis Ababa Action Agenda, Harnessing the Green Economy to Eradicate Poverty, and Designing Effective Policies and Institutions to Reduce Inequalities.

### **Namibia Position Paper for the Human Rights Council**

Lachlann Swanson and Josey Strand

(Dr. Kenneth Grieb)

International Studies

Oral Presentation Session I

Reeve Room 306 (8:30 – 9:30 a.m.)

Countries have very different definitions of human rights. These differences clash in the Human Rights Council (HRC), a body of the United Nations tasked with ensuring adherence of States to international human rights law. Namibia offers its perspective on human rights in its position paper to the HRC on three different topics: Protecting and Promoting Human Rights to Prevent and Counter Violent Extremism; Contribution of Firearms Regulation to the Protection of Human Rights; and Human Rights Violations and Abuses against Rohingya Muslims and Other Minorities in Myanmar.

### **Recital Program**

Matthew Beecher (Dr. Nathan Krueger)

Music

Performance Presentation Session II

Reeve Ballroom 227C (9:30-10:15 a.m.)

This is a recital program that I used to audition for the Honors Audition, to which I was accepted as a finalist.

### **Sonata in E Major K. 380 by Domenico Scarlatti**

Hannah DCamp (Dr. Eli Kalman)

Music

Performance Presentation Session I

Reeve Ballroom 227C (8:30 – 9:30 a.m.)

I will be performing Sonata in E Major K. 380 by Domenico Scarlatti.

## **Cello Suite No. 1 in G Major, BWV 1007: Allemande**

Stephen DCamp (Andrew Briggs)  
Music  
Performance Presentation Session I  
Reeve Ballroom 227C (8:30 – 9:30 a.m.)

I will be performing an unaccompanied cello solo.

## **Scherzo of Heroes**

Brandon Holl (Dr. Alison Shaw)  
Music  
Performance Presentation Session II  
Reeve Ballroom 227C (9:30 – 10:15 a.m.)

“Scherzo of Heroes” is an orchestral piece written by Brandon J. Holl. This composition displays heroic fanfares and develops a theme throughout the piece that continues to return. This theme represents a heroic character in the musical form of a scherzo, which has three sections of music. The middle section deviates from the first, and it is only when the third section begins that we hear familiar material in a slightly different way. This form helps to depict the character, their challenges, and how they overcome those obstacles.

## **Senior Recital Set**

Sara Neumann (Dr. Jessica Timman Schwefel)  
Music  
Performance Presentation II  
Reeve Ballroom 227C (9:30 – 10:15 a.m.)

I will be performing a set of music from my senior recital, which is the final requirement of my bachelor of arts in music degree. Throughout the past 5 years, I have been learning and preparing a wide variety of music for my recital, which includes both classical and musical theatre styles of music. I am studying music by prominent composers such as Robert Schumann, Wolfgang Amadeus Mozart, Manuel de Falla, as well as several other composers. Additionally, I have studied and will be performing a set of musical theatre selections from the shows *Big Fish*, *Unearthed*, and *Island Song*. Studying this diverse range of composers and styles has prepared me to be a versatile musician in my post-undergraduate career.

## **Philip Glass - Piano Solo**

Danny Schierl (Dr. Dylan Chmura-Moore)  
Music  
Performance Presentation Session I  
Reeve Ballroom 227C (8:30 – 9:30 a.m.)

Music is in a constant state of evolution. The purpose and meaning behind music reaches back to ancient times, which transformed to sacred songs, then progressed into secular works, and has been used to express an infinite world of emotion, theories and beliefs; the evolution will always continue. The lens of dissecting and appreciating contemporary music must be altered from which we view music in a traditional and classical way. The lens must evolve, just as music does.

Specifically exploring contemporary music of the minimalist genre, one must open their ears and minds to new concepts and ideas of musical compositions. Extended periods of repetition, exploration of the importance of rhythmic figures and development of form and structure of music are only a few characteristics of minimalist music of this genre. There is an underlying mass of complex figures, which include harmonies, rhythms and melodies, that are often overlooked. The mastery, understanding and manipulation of such musical attributions is a triumph that should be celebrated. The minimalist genre of the contemporary period is a genre that should not only be examined, but should be exposed, explored and appreciated by listeners everywhere.

## **Ballade Op. 52, No. 4 by Chopin**

Sarah Williams (Dr. Eli Kalman)  
Music  
Performance Presentation Session I  
Reeve Ballroom 227C (8:30 – 9:30 a.m.)

I will be performing Ballade Op. 52, No. 4 by Chopin.

## **A Critique of Convergent Realism and a Deconstruction of Hempel and Oppenheim’s Deductive-Nomological Model of Scientific Explanation**

Monika Greco (Dr. Evan Williams)  
Philosophy  
Poster Presentation (P35)

The last several centuries have been marked by remarkable scientific progress, and many have

attributed this success to our stringent scientific method. Through the rigorous testing of hypotheses, the scientific method is thought to be the foolproof way to delineate between science and pseudoscience, between truth and delusion. A positive epistemic attitude has been adopted toward our current theories and models—that is, people generally believe that the way science describes the world is the way that the world actually is. By evaluating all theories through the exacting lens of the scientific method, scientific optimists hope to one day be able to explain all natural phenomena.

Unfortunately, the scientific method is not as foolproof as scientific optimists would have us believe. In this paper, I will examine several core assumptions that scientific optimists hold. First, I will challenge the assumption that science progresses toward truth by introducing Laudan's pessimistic meta-induction. Second, I will argue that the deductive-nomological model of scientific explanation cannot explain the majority of natural phenomena. Third, I will argue that scientific optimists have stunted scientific growth by narrowly defining the "acceptable" methods for acquiring epistemic gains and by limiting "appropriate" standards of solution for scientific puzzles.

### **RR Lyrae Stars in the Sagittarius Globular Cluster NGC 5634**

Timothy Baker (Dr. Barton Pritzl)  
Physics and Astronomy  
Poster Presentation (P31)

It is thought that our Milky Way Galaxy formed, in part, due to merging with other, smaller galaxies. A current example is the Sagittarius Dwarf Galaxy, which is in the process of being ripped apart by our Galaxy; hence, its clusters of stars are being added to the Milky Way. NGC 5634 is a cluster that is thought to have once belonged to the Sagittarius Dwarf Galaxy. We have observed a particular variety of pulsating star, an RR Lyrae variable star, within the cluster. By studying such stars we can determine various properties of the system they belong to, including the distance to the cluster and its chemical content. We will present the properties of the RR Lyrae stars that we have detected in NGC 5634. In addition, we will also compare NGC 5634 to other known Sagittarius globular clusters and Milky Way globular clusters to determine which galaxy it may have originally belonged to.

### **Homogeneous Estimates of Physical Parameters of Galactic Open Clusters Based on Strömgren and Vilnius Photometries**

David Morser (Dr. Nadejda Kaltcheva)  
Physics and Astronomy  
Poster Presentation (P32)

The population of open stellar clusters in spiral galaxies is heterogeneous and can be divided into thin disc, thick disc and a halo component. The clusters forming these components differ in their overall characteristics, especially in their chemical composition and age. Our study is an attempt to develop a method for derivation of homogeneous parameters of open clusters that is based on Strömgren-H $\beta$  and Vilnius photometries. The combined  $v$  (Strömgren) –  $X$  (Vilnius) index repeats the behavior of the linestrength of the singly ionized calcium with respect to stellar surface gravity, stellar surface temperature and stellar metallicity. The spectral lines of ionized calcium are sensitive to the stellar atmospheric parameters. The  $v - X$  index, being virtually extinction-free, can be used in a similar way. Based on wellstudied stars in the Pleiades, Hyades and NGC 752 stellar clusters, we suggest a procedure for a photometry-based determination of cluster parameters that utilizes both Strömgren and Vilnius photometries. We apply this procedure to a larger sample of clusters with available Strömgren and Vilnius data. The derived homogeneous parameters are used to evaluate the association of the clusters in our sample in terms of the accepted stratification of the open clusters into populations.

### **RR Lyrae Stars in the Globular Cluster NGC 1261**

Adam Shelvik (Dr. Barton Pritzl)  
Physics and Astronomy  
Poster Presentation (P33)

We have searched the poorly-studied globular cluster NGC 1261 for pulsating variable stars called RR Lyrae stars. By examining the properties of these variable stars, we can determine such things as the distance and chemical content of the cluster. Several RR Lyrae stars were detected within the cluster. We present the results of this survey and what they reveal about the cluster NGC 1261. The properties of NGC 1261 are also compared to other Galactic globular

clusters. The overall goal of this research is to increase our knowledge of the Milky Way globular clusters to better understand the formation of the Milky Way Galaxy.

### **“A New Slavery of Caste”: An Evaluation of President Woodrow Wilson with Regard to Race**

Jennifer Depew (Dr. David Siemers)  
Political Science  
Oral Presentation Session I  
Reeve Room 306 (8:30 – 9:30 a.m.)

The presidency of Woodrow Wilson has been traditionally considered successful due to his administration’s progressive legislation and leadership during World War I. Recently, his positive reputation has been challenged on the grounds of his racist views. This paper argues that these challenges are legitimate by first establishing criteria for evaluating presidents based on constitutional rights and values, and then by examining the Wilson administration’s relationships to two race-based crises, the segregation of the civil service and mob violence. Wilson’s bigotry led him to consistently make decisions that negatively impacted the lives and livelihoods of millions of African Americans. His unwillingness to uphold the individual rights and equal protections promised to all Americans, regardless of race, represents a fundamental failure of his presidential duty. Failures like these should weigh heavily in any meaningful evaluation of presidential success.

### **Assessing the Integrity of Cortical Layering: An Application to Autism Spectrum Disorder**

Jeff Berger (Dr. Aaron Karst)  
Psychology  
Poster Presentation (P36)

In previous studies, physiological differences have been found through comparing the histological analysis of autistic and neurotypical cerebral cortical tissue. These differences—that have begun to describe autism spectrum disorder—include non-delineated transitions between layer VI and the white matter, as well as a jagged transition between layers I and II (Hutsler & Avino, 2010; Hutsler, Love, & Zhang, 2007). Methods employed in analyzing the transition integrity between cortical layers thus far

have been largely qualitative in nature, leaving an opportunity for the development of a quantitative technique. In an effort to accomplish this, a novel edge detection algorithm has been developed on the Matlab platform. It utilizes 31 kernels that have been rotated in two degree increments, and calculates a line of best fit within a compiled edge map to output a boundary line. The algorithm was applied successfully in a double blind setting, and was able to discern the transition between layers I and II of the cerebral cortex on both neurotypical and autistic images of tissue.

### **Proposal for a Trait-Orientated Approach to the Examination of Psychopathy: Evidence from a Value Endorsement Study**

Katheryn Bermann\* (Dr. David Lishner)  
Psychology  
Poster Presentation (P37)

Researchers have long assumed that psychopathic traits are associated with lower endorsement and adherence to moral values (Koch, 1891; Cleckley, 1941). Although this assumption is emphasized in fictional depictions of psychopathy (Furham, Daoud, & Swami, 2009), modern empirical studies suggest a more complex picture of psychopathy. In particular, the some studies suggest that psychopathy is generally associated with low levels of moral value endorsement (Jonason et al., 2014), whereas others find evidence of both positive and negative associations with specific levels of value endorsement (Djeriouat & Trémolière, 2014). The present study seeks to provide clarification on how psychopathy relates to value endorsement by examining how the four common factors of psychopathy (Hare & Neuman, 2008) are individually related to value endorsement. 556 participants completed the Moral Foundations Questionnaire, the Portrait Values Questionnaire, and the Self-Report Psychopathy Scale-III on Amazon’s Mechanical Turk website. Correlations and hierarchical regressions revealed mixed results regarding conformity to stereotypes of psychopaths. Findings are discussed with respect to popular portrayals of psychopaths, research methodology, and the importance of replication. Topics and directions for further research are also proposed.

## **The Effect of Suggested Misinformation and Multifaceted Questions on Memory for Witnessed Events**

Blair Braun and Paige Schreifels (Dr. Quin Chrobak)  
Psychology  
Poster Presentation (P38)

Previous research has demonstrated that multifaceted questions (which contain both true and false propositions in the same question) significantly reduce eyewitness accuracy (e.g., Perry et al., 1995). Chrobak, Rindal, and Zaragoza (2015) added to these findings by showing that the negative impact of multifaceted questions is magnified for participants who have been previously exposed to misleading information about the initial witnessed event. The current investigation extended these findings by showing that the effect is not eliminated when participants were instructed to only assent when all parts of the question were true. This was found regardless of whether participants were tested immediately or after a 1 week delay. Finally, misled participants were more likely to indicate remembering the misinformation (as opposed to believing it) than control participants – a finding exacerbated by a 1 week delay before final test. Both theoretical and practical implications for these findings are discussed.

## **BS versus BA: The Role of Fear and Career Aspirations in the Decision Making Process**

Alexandria Ebert<sup>♦</sup>, Markus Oechsner and Caleigh Zimmerman<sup>♦</sup> (Dr. Lee McCann)  
Psychology  
Poster Presentation (P39)

Undergraduate students majoring in psychology (N = 277) completed a survey assessing their rationale for pursuing either a Bachelor of Arts (BA) or a Bachelor of Science (BS) degree. Students pursuing a BA indicated significantly greater math avoidance than those pursuing a BS and significantly greater science anxiety, and science avoidance. Students pursuing a BS reported significantly greater foreign language anxiety and foreign language avoidance than those pursuing a BA. This suggests students may choose degrees based on their aversion to the subjects required in the alternative degree; students pursue a BA to avoid science, while other students pursue a BS to avoid foreign language. Overall, in choosing a

degree, long-term career goals have the most influence and advice from family and psychology faculty the least.

## **Narcissism, Empathic Concern, and Personal Distress: Does Perspective Taking Mediate the Link between Narcissism and Affective Empathy?**

Alexandria Ebert<sup>♦</sup>, James Barnes<sup>♦</sup>, Kyra Bowe<sup>♦</sup> and Tiffany Becker<sup>♦</sup> (Dr. David Lishner)  
Psychology  
Poster Presentation (P40)

Findings regarding the link between narcissism and affective empathy are mixed in the literature. Specifically, both the affective empathy-malleability hypothesis and the affective empathy-rigidity hypothesis assert that there is a negative relation between narcissism and affective empathy. However, the affective empathy-malleability hypothesis posits this relation is either greatly reduced or completely eliminated when participants engage in perspective taking (Hepper, Hart, and Sedikides, 2014), whereas the affective empathy-rigidity hypothesis posits that the relation persists despite perspective taking. More recent work has found no relation between narcissism and several forms of affective empathy (Lishner, Hong, Jiang, Vitacco, & Neumann, 2015). The present study seeks to further clarify this relation. To do so, participants were presented with an empathy-inducing story, ostensibly about a student in distress. Participants were randomly assigned to either adopt an imagine-other perspective, adopt an imagine-self perspective, or were given no perspective to adopt (no perspective). After reading the story, participants completed measures of empathic concern, personal distress, and narcissism. Hierarchical multiple regressions will be used to analyze the data. Data collection is ongoing.

## **Solidarity versus Conflict in Face-to-Face Interactions between Young Adults and Their Grandparents with Dementia**

Alexandria Ebert<sup>♦</sup> (Dr. Anca Miron)  
Psychology  
Poster Presentation (P41)

The current study explored the interaction concerns young adults experienced in their interactions with grandparents diagnosed with dementia, and their ways of coping with these concerns, through the lens of a

solidarity-versus-conflict conceptual framework (Bengtson, 2001; Wicklund & Vida-Grim, 2004). Fourteen college students who reported having a family member diagnosed with dementia participated in focus group sessions and group questionnaire sessions. Interpretative Phenomenological Analysis was used for analyzing the data. Participants' concerns and coping strategies can be both classified along two dimensions of social interaction: solidarity (e.g., motivation to maintain the relationship and help the grandparent/great-grandparent) and conflict (e.g., dealing with self-focused concerns and the lack of skills and knowledge). These interaction coping strategies have multiple functions, ranging from shielding the self from attributions of interactional incompetence (Wicklund, 2008) to protecting the welfare of the grandparent/great-grandparent and continuing the face-to-face interaction with the other person (Miron et al., 2016). Reducing grandchildren's self-focused interaction concerns should lead to more meaningful interactions in which focus switches from the grandchild's fear of interactional incompetence to an other-focus and openness to engaging with the close other.

### **Language Acquisition in Children with Language Delays**

Shaylah Grogan, Erin Seidler and Madeline Bartels  
(Dr. Sarah Kucker)  
Psychology  
Oral Presentation Session IV  
Reeve Room 306 (9:30 – 10:30 a.m.)

Language acquisition is a central component of learning in young children. As vocabularies increase, children are better able to understand and interpret the world around them. However, delays in when children start to learn words can lead to significant consequences. "Late talking" children are at a much higher risk for developing future academic delays, having poor performance in reading and writing, and having significant effects on social development. However, not all "late talking" children will have difficulties throughout their life, and a reliable method for identifying which children will have later-life delays has not yet been identified. Our research focuses on children's learning of a single new word and asks if in-the-moment processing and object retention of that new word can reliably identify "late talking" children who will have delays in the future. Through examining the word learning ability of 153 children between the ages of 17-47 months, our

results suggest that in-the-moment processing and retention of new words significantly differs between normal talking and "late talking" children. If we can reliably identify children with normal language from children with delays by their cognitive process of learning a single word, we can better intervene to help future academic delays now.

### **He Can but She Can't: Examining the Sexual Double Standard toward Initiators of Consensually Nonmonogamous Relationships**

Jocelyn Hart and Sarah Stefaniak (Dr. Ashley Thompson)  
Psychology  
Poster Presentation (P42)

Although support for the sexual double standard (SDS; women judged more harshly than men for comparable sexual activity) is well documented (Bordini & Sperb, 2013), recent work suggests that the SDS has narrowed and may only be endorsed for non-traditional sexual behaviors (Jonason & Marks, 2009). Thus, our study examined SDS endorsement for individuals engaging in a variety of forms of consensual nonmonogamy (CNM; romantic relationships that are sexually and/or emotionally nonexclusive). A total of 380 heterosexual adults (192 men, 188 women) were randomly assigned to read one of five vignettes depicting a man or woman initiating a form of CNM (polyamory, swinging, open relationship, group sex, or dyadic sex) and were then instructed to respond to a variety of questions related to their judgments of the initiator. Although our results revealed that initiators of CNM ( $M = 4.50$ ) were judged more harshly than initiators of dyadic sex ( $M = 5.42$ ),  $F(4, 368) = 11.02$ ,  $p < .001$ , there was no evidence of a sexual double standard, indicating that gender inequity may be improving in our society. This study has important implications for those working to reduce bias toward minority individuals, particularly those interested in non-traditional relationship structures (e.g., CNM).

### **Evaluating the Narcissism-Affective Empathy Hypothesis Using Three Measures of Narcissism: A Replication Study**

Carissa Harvey<sup>♦</sup>, Sandra Michels<sup>♦</sup>, Elle Moore<sup>♦</sup> and Edrose Heiny<sup>♦</sup> (Dr. David Lishner)  
Psychology

#### Poster Presentation (P43)

The present study contributed to a series of replications testing the widely held claim that narcissism is associated with diminished capacity to experience affective empathy. Participants ( $N = 192$ ) completed a task designed to covertly measure two forms of affective empathy—emotional contagion and empathic concern. All participants completed emotion rating scales in response to images of emotionally expressive and neutral adult faces, as well as a need provoking and neutral news story. Participants then completed three narcissism inventories. Narcissistic trait subscales from each inventory were used in multiple regression analyses to simultaneously (within each inventory) predict nine different affective empathy change scores while controlling for sex of participant. Of the 117 narcissistic trait-empathy change score pairs, only 5 revealed evidence consistent with the expected negative association predicted by the narcissism-affective empathy hypothesis. Specifically, Vulnerability and Neuroticism each uniquely predicted change in fear to fearful faces, Contingent Self-Esteem predicted change in sadness to sad faces, and overall Narcissistic Personality predicted change in empathic concern to infant faces and change in fear to the need story. Importantly, none of the effects were consistent in magnitude to those in previous studies, raising further doubt about the tenability of narcissism-affective empathy hypothesis.

#### **The Effect of False Memories in Audio Short Term Memory; DRM Paradigm Extended to Sounds**

Amy Hodel, Kilee Garrity, Kimberly Majerus, Paul Kluz, Jeffrey Richardson, Sam Simonis and Shandi Janz (Dr. Justyna Olszewska)  
Psychology  
Poster Presentation (P44)

False memories are well-established, episodic memory phenomena studied in various paradigms. One of the most widely used is the DRM paradigm (Roediger & McDermott, 1995), which reliably elicits false memories for critical, semantically related, non-presented words in recognition tasks. Recently, the DRM procedure was used to study semantic errors in short term memory. In the current study, we extended prior working memory results, demonstrating a reliable false recognition effect for meaningless but related sounds. In addition, auditorily presented

sounds and words were integrated into one testing procedure. Our study is the first that directly compared memory performance for related words and sounds in both, short- and long-term memory. To assess this, we used a hybrid short- and long-term memory test (Olszewska et al., 2015) to show how memory trace for words and sounds decay over time. The findings are discussed in the context of a large body of research that relate to auditory stimuli processing. Moreover, we point to practical applications, particularly in a legal context.

#### **Stepping into Your Shoes: Reducing the Actor-Observer Discrepancy in Judgments of Infidelity through the Experimental Manipulation of Perspective-Taking**

Danica Kulibert<sup>\*†</sup> (Dr. Ashley Thompson)  
Psychology  
Poster Presentation (P45)

Research indicates that a partner's behavior is often judged as indicative of infidelity to a greater extent than one's own (i.e., actor-observer bias). Reducing this actor-observer difference is important because it could help to prevent or overcome negative outcomes stemming from infidelity. One technique that could be used in these situations is perspective-taking, or the ability to see a situation from another's point of view. Thus, 346 adults (203 men and 143 women) were recruited to examine the influence of perspective-taking on the actor-observer discrepancy related to judgments of infidelity and associated gender differences. Results from a mixed design ANOVA revealed that women judged behaviors as more indicative of infidelity than did men ( $F[1, 338] = 9.33, p = .002$ ) and that those engaging in perspective-taking judged behaviors as more indicative of infidelity than did those who did not ( $F[1, 338] = 5.64, p = .02$ ). Interestingly, individuals did not judge their own hypothetical behavior any differently than their partner's,  $F(1, 338) = 1.66, p = .20$ . In sum, although research has supported the utility of perspective-taking when reducing conflict in romantic relationships, these finds suggest that perspective-taking in certain situations may cause an adverse effect, particularly in infidelity-related scenarios.

## **From Job Insecurity to Burnout: The Mediating Role of Work Rumination and the Buffering Effect of Affective Commitment**

Charity LaBuy (Dr. Lixin Jiang)

Psychology

Oral Presentation Session IV

Reeve Room 306 (9:30 – 10:30 a.m.)

Employees who encounter job insecurity are subject to consequences that are detrimental to health, attitudes, and work behaviors. In the context of the COR theory, job insecurity taxes resources and may lead to strain. In this study, we specifically explore burnout as an outcome of job insecurity via work rumination. We contend that job insecurity and work rumination may deplete cognitive and emotional resources, which result in burnout. However, we argue that employees can use affective commitment as a buffer to counteract the negative effect (e.g., burnout) of job insecurity. Taken together, our study examined work rumination as a mediator and affective commitment as a moderator in the relationship between job insecurity and burnout. Results from the two-wave study collected via student recruitment (N=101) showed that rumination indeed acted as a mediator in the job insecurity- burnout relationship. Additionally, our results confirmed that affective commitment acted as a buffer against the indirect effect of job insecurity on burnout via rumination.

Keywords: job insecurity, burnout, rumination, affective commitment

## **Abusive Leadership and Emotional Exhaustion: A Moderated Mediation Model of Work Rumination and Negative Gossip**

Markus Oechsner (Dr. Lixin Jiang)

Psychology

Oral Presentation Session IV

Reeve Room 306 (9:30 – 10:30 a.m.)

Previous research has found abusive leadership to be a source of emotional exhaustion; however, this relationship between abusive leadership and emotional exhaustion may be neither direct nor unconditional. Utilizing the Conservation of Resources theory, we sought to explore whether work rumination may be the underlying explanation for why abusive leadership may be associated with

emotional exhaustion. In addition, we explored whether negative gossip may moderate the relationship between work rumination and emotional exhaustion—as well as the indirect relationship between abusive leadership and emotional exhaustion through work rumination. In order to examine our hypotheses, we used a cross-lagged survey design to collect two-wave employee data with one month between measurement points. We found support for our hypotheses: work rumination mediated the relationship between abusive leadership and emotional exhaustion and negative gossip attenuated the indirect effect of abusive leadership on emotional exhaustion via work rumination.

## **The Effects of Fantasy Engagement, Character Role, and Role Choice on Violent Video Game Aggression: A Direct Replication Study**

Megan Patterson<sup>\*</sup> and Trevor Henne<sup>\*</sup>

(Dr. David Lishner)

Psychology

Poster Presentation (P46)

The purpose of this research was to replicate a previous study by Preman, Lishner, and Kelso (2016) that examined the interactive effect of fantasy engagement, character role, and role choice on aggression following violent game play. Participants were randomly assigned to play a violent video game as either a heroic or deviant character. Prior to playing the game, an induced compliance manipulation of game choice was used by which participants were either randomly assigned directly to the character role or were given a choice of which game (and thus character role) to play. Following violent game play, participants completed a competitive task in which they selected the intensity and duration of noise blasts to deliver to an ostensible participant opponent across multiple trials. The average intensity and duration of noise blasts constituted a measure of aggression. After measuring aggression, participants completed various measures that assessed their perceptions of the violent game and competitive task as well as their tendency to fantasize. Multiple regression will be conducted to analyze main effects and interactive effects of predictor variables on aggression. Data collection is currently ongoing.

## **Examining the Mental Health Concerns of Region-Specific U.S. International Students Utilizing University Counseling Center Services**

Matthew Raymond, Jeramiah Gruendemann, Ben Saltigerald and Elle Moore\* (Dr. Ashley Thompson)  
Psychology  
Poster Presentation (P47)

As more students study abroad, issues facing international students are increasingly important. Research reveals international students face an increased risk for mental health concerns compared to domestic students (Mori, 2000). Although previous research has examined the prevalence of mental health concerns in international students (Hamamura & Liard, 2012; Szabo et al., 2016), little research has examined region of origin in relation to the pervasiveness of mental health concerns in international students. The current study examined differences in mental health concerns between 38 Latin/South American and 29 Middle East/Asian international students within the University of Wisconsin System. Participants (recruited at campus counseling centers) completed the Counseling Center Assessment of Psychological Symptoms (CCAPS), which is organized into eight subscales. The results of a 2 x 8 mixed design ANOVA revealed a significant main effect of subscale ( $F[7,455] = 23.025, p < .001, \text{partial } \eta^2 = .26$ ) and a main effect of region of origin ( $F[7, 455] = 2.174, p < .05, \text{partial } \eta^2 = .03$ ). These main effects were qualified by a significant interaction effect ( $F[1, 65] = 11.086, p < .001, \text{partial } \eta^2 = .15$ ), indicating that Middle East/Asian students scored significantly higher on the depression and social anxiety subscales.

## **Effect of Temperament on Language Milestones**

Rachel Roloff and Julianna Wojtowicz  
(Dr. Sarah Kucker)  
Psychology  
Poster Presentation (P48)

Temperament in children has had little scientific attention as it relates to language. Additionally, very little work has looked at parent personality and children's developmental language milestones. Individual differences and a child's response to their environment in the context of language are critical for understanding development. Parent personality and

child temperament are two ways to capture such individual differences. Using a "thin slice" approach, we make objective decisions on a child's temperament based on a short segment of a video of the child performing the language task novel noun generalization, and comparing the observed temperament to the information that parents have filled out about themselves and their child. Pilot work suggests that children high in effortful control perform better on language tasks, whereas children high in negative affect have difficulty achieving language milestones. Furthermore, parent personality accounts for more of the variance in children's vocabulary than age. Thus, individual differences matter and can help identify language developmental progress more than traditional measures such as age.

## **Predicting Variations in Young Adults' Implicit Attitudes toward Consensual Nonmonogamy Using the Five Factor Model of Personality**

Paige Schreifels, Sarah Stefaniak and Aaron Bagley\*  
(Dr. Ashley Thompson)  
Psychology  
Poster Presentation (P49)

Despite the growing interest in consensual nonmonogamy (CNM; sexually and/or emotionally nonexclusive romantic relationships), research reveals that young adults demonstrate an implicit negative bias toward CNM (Bagley et al., 2016). The assessment of implicit attitudes is important because it is argued that implicit measures bypass concerns related to response biases. Despite the advancements in the measurement of attitudes toward CNM, no study has explored variables that predict implicit attitudes toward CNM, particularly personality. To examine the predictive utility of the five factor model of personality on implicit attitudes toward CNM, 243 young adults (88 men, 154 women) were recruited. Participants held a strong negative bias toward CNM, with an IAT score of 0.73 ( $SD = 0.32$ ). Multiple regression analysis revealed that the five factors of personality did not account for a significant amount of the variance in IAT scores,  $R^2 = 0.04; F(5, 237) = 1.88, p > .05$ . However, Openness to Experience did uniquely account for a significant amount of the variance ( $\text{sr}^2 = -0.14; p = .04$ ), indicating that those scoring lower in Openness hold more negative attitudes toward CNM than those scoring higher. These results have implications for educators working to decrease stigma pertaining to CNM.

## **Semantic Knowledge in Children with Specific Language Impairment: An Examination through Late Childhood**

Alyssa Schultz-Bruecker (Dr. Sarah Kucker)  
Psychology  
Poster Presentation (P50)

Children build their vocabulary upon learning phonological word-forms and understanding the semantic-conceptual meanings of words. However, not all kids learn words easily. In particular, children with Specific Language Impairment (SLI) have a difficult time acquiring a vocabulary and research suggests deficits in processing the word-forms. Other work has begun to suggest children with SLI may also have difficulty with understanding the meaning of words. One way to look at the meaning of a word is to look at how it is defined. Thus, this study will examine and compare oral definitions of nouns in children with SLI across grade levels. Definitions will be coded for semantic-conceptual information, such as physical features, function, and categories (i.e. silverware, animals, etc.) in order to quantify a child's understanding of meaning. Previous research has shown that due to their small vocabularies, children with SLI were found to have limited semantic knowledge of age-appropriate words. Children with SLI lack a focus on shape and function, which are crucial in forming their early semantic representations in infancy. (McGregor, Newman, Reilly, & Capone, 2002). We will also investigate if the absence of an emphasis on visual features of objects, like shape and function, continues through late childhood.

## **Sexualized Breast Cancer Awareness Advertisements: Effects on Attitudes, Emotions, and Charity Donations**

Alyssa Schultz-Bruecker, Kaelyn Dagon and Carissa Harvey\* (Dr. Elizabeth Focella)  
Psychology  
Poster Presentation (P51)

Breast cancer awareness advertisements (BCAAs) often contain objectifying, sexually provocative images and slogans. While these may increase charity donations, previous research shows that objectifying media in general can have negative impacts on women, including disordered eating, body-shame, and negative emotions (e.g., Harrison & Fredrickson, 2003). The present experiment examines whether BCAAs that use sexually provocative images might

engender negative attitudes and emotions among women and examined whether these kinds of advertisements elicit greater donations among heterosexual men. To test this, female and male participants were randomly assigned to view either: sexually provocative BCAAs, non-sexualized BCAAs, or neutral advertisements unrelated to breast cancer. Participants then reported their attitudes toward the advertisements, their current emotional state, and their willingness to donate to a breast cancer charity. Results show that in comparison to non-sexualized BCAAs and neutral advertisements, sexualized BCAAs were least liked and elicited greater feelings of anger among both men and women. Further, although not statistically significant, heterosexual men who viewed sexualized BCAAs were willing to donate marginally more money to a breast cancer charity compared to men and women who viewed other ad types. While sexualized BCAAs may increase donations, organizations may consider the potentially negative consequences when constructing BCAAs.

## **The Effect of Technology and Socioeconomic Status on Vocabulary Acquisition**

Alyssa Scott and Blair Braun (Dr. Sarah Kucker)  
Psychology  
Oral Presentation Session IV  
Reeve Room 306 (9:30 – 10:30 a.m.)

Socioeconomic status (SES) plays an important role in children's language development. In addition, technology (e.g. tablets and smartphones) may also influence language development. However, there is very little work on the underlying cognitive processes of language acquisition and what role technology plays in language acquisition across SES boundaries. Learning new words requires encoding of the novel word along with the ability to retrieve it from memory. Prior exposure to technology could enhance connections made when learning novel words. In this study we will examine word learning in 17–30 month old children in five ways, (1) parents reported vocabulary; (2) parent reported technology accessibility; (3) direct naming (4) indirect naming; and (5) generalizing novel words. Although prior work has shown that the number of books parents read to children (Weisleder & Fernald, 2013) assists with word learning, there is evidence increased technology exposure at early ages has been associated with long term decreases in language ability (Kenney,

2012). This research will help identify where the language delay occurs and what future implications there are for technology use in assisting language acquisition.

### **Comparing Composites to Suspects: The Role of Perceived Guilt and Crime Severity**

Rece Weisling and Kyra Bowe<sup>♦</sup> (Dr. Quin Chrobak)  
Psychology  
Poster Presentation (P52)

Previous research has demonstrated that in forensic situations, those who are tasked with objectively evaluating the quality of evidence are often subject to a variety of psychological biases. The goal of the current study was to examine the impact of crime severity and presence of compromising evidence on participants' ratings of the similarity of a composite face sketch to that of an alleged suspect. Participants were presented with a narrative description of a severe crime (e.g., murder) or a relatively minor crime (e.g., theft). Half the participants were given information that implicated one of the suspects as the perpetrator. Finally, all participants were presented a four-person simultaneous lineup and asked to rate the suspect on a number of different dimensions. Results replicated previous research (e.g., Charman, Gregory, & Carlucci, 2009) by demonstrating that corroborating evidence increases similarity ratings. Importantly, however, this effect was magnified when the alleged crime was severe.

### **Experiences of Bias in Healthcare**

Christine Zanotelli, Alyssa Schultz-Bruecker and Carissa Harvey<sup>♦</sup> (Dr. Elizabeth Focella)  
Psychology  
Poster Presentation (P53)

A growing amount of literature at the intersection of psychology and medicine examines the possibility that healthcare professionals may unintentionally hold biases against patients (e.g., due to the patient's weight, race/ethnicity, gender). However, much less research examines the issue from the standpoint of the patients themselves. To address this gap in the literature, we conducted a study that attempts to examine patients' complex and varied experiences of bias in healthcare. Participants were asked a series of questions about their experiences with bias in medicine, including if they personally experienced bias, who was biased against them, and how, if at all,

they chose to address the bias. Participants were then asked to provide their own narratives about one experience in particular. A qualitative analysis of the narratives revealed four major themes in patients' experience of bias including the importance of family as an advocate in the medical encounter, issues with weight, feeling disrespected, and diagnostic overshadowing. Interestingly, most who experienced bias chose to ignore it rather than reduce it, indicating that perceived bias often goes unaddressed. Further, while research often examines physicians' bias, participants in our study perceived that bias was exhibited by a variety of healthcare professionals.

### **Mindfulness, Academic Performance, and Mood**

Caileigh Zimmerman<sup>♦</sup>, Alexandria Ebert<sup>♦</sup> and Matthew Hanson  
(Dr. David Lishner and Dr. Phan Hong)  
Psychology  
Poster Presentation (P54)

College students (N = 66) were randomly assigned to a CD-led mindfulness practice based on Kabat Zinn's mindfulness recordings or a non-mindfulness listening control task for 10 minutes, 2-3 times per week for a 14-week semester. Students then reported on mood, stress, attention, study habits, dispositional mindfulness, and exam grades earned in the course. There were no significant differences between conditions. Dispositional mindfulness, using the FFMQ [Wilkes'  $\lambda = .341$ ,  $F(30, 33) = 2.125$ ,  $p = .018$ ,  $\eta^2 = .659$ ] and the MAAS [Wilkes'  $\lambda = .402$ ,  $F(30, 33) = 1.638$ ,  $p = .084$ ,  $\eta^2 = .598$ ], showed a negative association between dispositional mindfulness and negative affect, procrastination, and stress. More research is necessary to understand the intricacies of these constructs and the motivational factors that contribute to successful implementation of mindfulness meditation, especially CD-led mindfulness practices that have become more commonplace in both clinical and nonclinical settings.

### **Mindfulness and Eating Enjoyment and Behavior in Preschool Children**

Caileigh Zimmerman<sup>♦</sup> and Matthew Hanson  
(Dr. Phan Hong)  
Psychology  
Poster Presentation (P55)

In a pilot field experiment, children were randomly assigned to mindfully consider food or were simply exposed to food (Nmindfulness = 9; Nexposure = 11) four days each week, over four weeks. Each week they either received celery, kidney beans, cauliflower, or chickpeas. The amount of food sampled and enjoyment ratings were assessed daily and averaged across each weekly assessment period. Participants sampled more celery, cauliflower, chickpeas, and overall food in the mindfulness condition than in the exposure condition, all  $t(18) > 2.63$ ,  $ps < .02$ , Cohen's  $d_s > 1.18$ . Individual and overall food enjoyment ratings, as well as the amount of kidney beans sampled did not differ significantly across experimental condition, all  $|t(18)| < 1.41$ ,  $ps > .17$ , Cohen's  $d_s < .63$ . Replication studies with larger participant samples should evaluate whether mindfulness may promote consumption, but not necessarily enjoyment, of vegetables and unfamiliar foods in young children.

### **Dining Honesty**

Alden Frautschy (Douglas Heil)

Radio TV Film

Film Presentation

Reeve Theatre Room 307 (8:30 – 8:45 a.m.)

People with disabilities must function in a world wired for normalcy. This autobiographical short narrative film explores what might happen after a young man tells his date he has muscular dystrophy.

### **Inked Skin: Tattoos' Effect on Employability**

Jacob Bloechl (Dr. Orlee Hauser)

Sociology

Poster Presentation (P56)

The number of people getting tattoos in recent years has been on the rise, especially among college students. Despite this increase, tattoos may still be perceived negatively by hiring employers and customers. This study, using a qualitative approach, will examine how college students with visible tattoos perceive their tattoos impacting potential employment. It also focuses on how acceptable tattoos are within the workplace, and what local employers' perceptions of tattooed applicants are. Other factors such as where the tattoo is located, how customers perceive tattooed employees, and what types of jobs tattoos seem accepted is also discussed. Finally, after further analysis, this study aims to

reveal how tattooed individuals feel a sense of anomie or personal unrest because of difficulty finding employment, and how tattoos impact an individual's cultural capital.

### **Community Food Systems**

Gerald Bufford III (Dr. Paul Van Auken)

Sociology

Oral Presentation Session III

Reeve Room 305 (9:30 – 10:30 a.m.)

Milwaukee, particularly the north side, has a major problem with food deserts—meaning food is difficult to obtain due to the availability, affordability, distance, or lack of number of supermarkets or grocery stores present in a given area. Many children, adolescents, and adults growing up on the north side of Milwaukee are either food insecure or do not have adequate access to healthy nutritional food. The focus of this research is to primarily find alternatives to fix these current issues community members face concerning lack of accessible access to nutritional food on Milwaukee's north side. One major solution to this ongoing problem is to find ways to drastically expand community food systems throughout the urban community. In correlation, the city of Milwaukee faces various complications with the utilization of vacant, foreclosed or abandoned houses and buildings throughout the city. These structures are known to be a nuisance to the community and neighborhoods due to their unappealing demeanor. An initiative to the research being done is to find ways to utilize these abandoned houses and buildings to help escalate community food systems within Milwaukee in a sustainable yet efficient way while also bringing light back to the north side of Milwaukee.

### **The Past Still Haunting Today's Native Americans**

Aliskwet Ellis (Dr. Orlee Hauser)

Sociology

Poster Presentation (P57)

There has been research done over the years on the rate of suicide in the Native American community. My research is on one tribe in Northeast Wisconsin. The Oneida Nation has their own reservation and resources that the tribal members can use. I propose the question if suicide is prevalent in this particular tribe and are the resources available to tribal members being used.

## **The Emotional and Practical Factors Affecting Human-Pet Relationships**

Haley Fullerton (Dr. Orlee Hauser)

Sociology

Poster Presentation (P58) **WITHDREW**

My research topic is the emotional and practical factors affecting human-pet relationships. I am going to only interview pet owners of cats and dogs; I think this is important to narrow down my study and those animals are the most common domestic animals in households. I am going to look at the gender and age differences, length of ownership and owner's living location and take those factors into consideration when evaluating my stats and responses from my interviewee. I would like to investigate the relationship between the different reasons humans depend on their pets; dividing those reasons up into two categories, those being emotional and practical. My sample will be UW System college students. I plan on doing face-to-face interviews because I feel I will get the best response in return. I will be able to have my interviewees elaborate beyond the basic question and hopefully in return receive the gold from my follow-up questions. I will be having a quota of 4 female and 4 male owners of dogs and cats that I will be interviewing. I believe the outcome of this research topic will be very interesting and useful and could help people understand the benefits about the relationship or bond that one can make with their pets, which hopefully will improve their quality of life.

## **Gender Differences in Department Chairs in Four Year, University of Wisconsin Campuses**

Philip Hebert (Dr. Orlee Hauser)

Sociology

Poster Presentation (P59)

It is going to look at the gender differences in department chairs among 13 four-year University of Wisconsin campuses in 12 different departments. I will determine if there are differences in departments regarding gender, income, education, faculty and positions. Then I will compare each university to see which campuses have a bigger gender difference and which of the categories, if any, would show the gender differences.

## **Stereotypically Ever After: Perpetrated Themes in Disney's Animated Films**

Brianna Jackson (Dr. Orlee Hauser)

Sociology

Poster Presentation (P60)

I have spent the last few months researching the social issues of good and evil stereotypes promoted in Disney movies, by analyzing race and gender of only the protagonist and antagonist in every animated Disney film. My official research question was, "Over time, how have Disney movies promoted good and evil stereotypes through race and gender?" With this question, I argued that Disney does promote good and evil stereotypes by how they use race and gender for their antagonist and protagonist.

## **Us and Them: Exploring the Relationship between National Identity and Tolerance of Diverse Cultures**

Jennifer Kohn (Dr. Orlee Hauser)

Sociology

Poster Presentation (P61)

Intolerance toward people of diverse cultures, often those who are not members of the majority group, is an increasingly relevant issue that I would like to explore. In this project I will survey students of the University of Wisconsin Oshkosh (UW Oshkosh, UWO) and identify a relationship between consciousness of national identity and tolerance of diverse cultures. This relationship is significant when one considers what makes someone an American. I believe this relationship could help to explain one reason why people are more accepting or less accepting of people of other cultures. For those with a more nationalistic perspective of their national identity for the basis of their self identity, I expect that they will be less tolerant of people from diverse cultures. In contrast, for participants whose results do not reflect a strong sense of nationalistic preferences, I would expect them to be more accepting toward people of diverse cultures in their communities. I anticipate that my findings will provide evidence for a significant relationship between national identity and tolerance toward other cultures.

## **Green Behind the Ears: Effects of Sustainability in University General Education**

Sean Kutz (Dr. Orlee Hauser)

Sociology

Poster Presentation (P62)

College students in the United States receive very little formal education and exposure to issues regarding environmental sustainability. Prior research has found that the college students who have increased interest in sustainability and are more involved in environmental activism have credited this to informal social experiences, rather than through their formal education (Meyer 2016). Due to this, interest in environmental activism increases with each year spent on campus through continued social interactions with peers. Increasingly, students who enter college as part of the “millennial” generation expect their university to demonstrate a civic mindset and make a difference in the world, but there still remains a gap between these expectations and willingness to take personal action (Valdes-Vasquez et al 2014). This research study will focus on the effects of introducing an environmental sustainability general education course and its effects on students’ attitudes and behaviors on the subject.

### **Tales from the Traphouse: Drug Culture Imagery in Commercial Rap Music Lyrics from 2005-2015**

Joshua O’Donahue (Dr. Orlee Hauser)  
Sociology  
Poster Presentation (P63)

My primary focus is to look for any patterns or trends associated with the number of lyrical occurrences over the years in comparison; the statistical comparison of general lyrical depictions, as well as to the specific classification of drug the reference targets.

To that end, my goal is to answer the following through my research: A) Have the number of references made about drug culture in commercial Rap music lyrics varied over time from 2005 until 2015? B) Have the number of references made toward specific categories of drugs within the culture varied from 2005 until 2015 in commercial Rap music lyrics? C) What is the nature of the lyrical context containing the depiction, be it positively or negatively in connotation?

### **Depiction of Women in Television Commercials**

Kelsey Randall (Dr. Orlee Hauser)  
Sociology  
Poster Presentation (P64)

My project will be looking more closely at how women are depicted in television commercials. Before beginning my research I formed the argument that commercial advertisements over time have kept alive stereotypes of beauty standards for women while still showing women as side objects in commercials instead of being important main roles. Throughout this project I hope to discover whether or not these stereotypes of women along with beauty standards are still being kept alive or whether commercials nowadays have taken a new approach much like some Dove commercials where they are promoting girl power and individuality.

### **Athlete Protests Past and Present: A Content Analysis**

Charlie Scott (Dr. Orlee Hauser)  
Sociology  
Poster Presentation (P65)

For my research project I want to find out how people are reacting to current protests by professional athletes to reactions from past athlete protests. My research question is: How do responses to athlete protests from the 1960s and 1970s compare to athlete protests from 2000–present? I’m doing a content analysis looking at newspaper articles from each time period. I’m then recording the direction of each article into three categories: critical response, neutral response, or supportive response. I hope to find out if there are any major differences between the two time periods.

### **Farmer’s Markets around Wisconsin**

Elora Stacey (Dr. Orlee Hauser)  
Sociology  
Poster Presentation (P66)

This project will be focusing on different markets around Wisconsin, looking at what a farmer’s market is intended for and what they might actually be doing. With that, we can see how the people in the surrounding areas are affected, if at all.

### **Superhero? Why Not Super-Heroine?**

Chee Nou Vang (Dr. Orlee Hauser)  
Sociology  
Poster Presentation (P67)

As people are regularly exposed to nearly infinite amounts of media, it’s important to consider the impact of stereotypes. The recent popularity of

superhero movies provides an opportunity to examine the production of gendered stereotypes. This study conducted a content analysis of Marvel superhero films produced during 1998–2017. The messages that are being portrayed in these superhero films will be discussed in this presentation.

### **College Athletes and Concussions**

Jaimee Warner (Dr. Orlee Hauser)  
Sociology  
Poster Presentation (P68)

Concussions in sports hasn't been a talked about subject until recently. This subject is a very high-profile topic in the professional sports of football and boxing. As a result, it's starting to get looked at more at the college and even high school levels. My research will be on how male and female college athletes feel about concussions; how they think concussions really affect them now and in their future; time away from their sport due to a concussion; the student athlete's willingness or unwillingness to tell their coach; and if they had to take the ImPACT test or not.

### **Leaning Out the Education System**

Katrina Schiedemeyer (Dr. Mike Godfrey)  
Supply Chain Management  
Oral Presentation Session III  
Reeve Room 305 (9:30 – 10:30 a.m.)

With over 50.4 million American public school students and only 3.1 million teachers, educators are faces with the seemingly impossible task: prepare a diverse group of students for the workforce using limited resources. As the United States deficit continues to increase, the decline of the education budget is at the forefront of many American's minds. Rather than demanding for an increase in education funding, lean manufacturing concepts can be applied to the education system; thus allowing educators to prepare the youth and eliminate unnecessary waste. Properly implementing lean process improvement concepts to the education system will effectively reduce waste, increase efficiency, and save money. This project takes a detailed look at the current education system in America and identifies areas for improvement if lean manufacturing concepts are applied to the classroom.

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\* Denotes a recipient of the FY 2016–17 Student/Faculty Collaborative Research program grant awarded by the Office of Student Research and Creative Activity.

♦ Denotes a graduate student.

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