



A CELEBRATION OF
SCHOLARSHIP
EDINBORO UNIVERSITY

April 4, 2018

Welcome: Patricia Claster

April 4, 2018

Dear Students, Faculty, Staff, and Guests,

It is my pleasure to welcome you to Edinboro University's 6th annual *Celebration of Scholarship!* We are here to recognize a variety of outstanding student-faculty works of scholarship and creativity taking place across our campus and to show off the fruits of our academic collaborations. There are so many exceptional projects on display here today and so much to celebrate! Most importantly, this event gives the entire Edinboro community the opportunity to connect and engage in dialog with our talented students and learn firsthand more about these exciting projects that are taking place at our great University!

In closing, I would like to express my sincere gratitude to all of those who have contributed to this year's *Celebration of Scholarship*. I am grateful to be a part of such an important event. If you have any suggestions, comments, or recommendations, please don't hesitate to bring them to me or to any member of the Celebration of Scholarship Committee.

Thanks to all of the students, faculty, administrators and staff members here to celebrate these momentous accomplishments!

Best wishes,

Patricia Claster, Ph.D.
Department of Sociology
Edinboro University of Pennsylvania
Chairperson: Celebration of Scholarship Planning Committee

Acknowledgments

The Celebration of Scholarship Committee would like to thank:

Reviewers

Dan Bennett	Erik Bentsen	Patricia Claster	Matt Foradori	Qun Gu
Wayne Hawley	Susan Maloney	Monty McAdoo	Tim Meyer	Greg Morrow
Denise Ohler	Doug Puharic	Jane Puhlman	Eric Straffin	

Judges

Dan Bennett	Erik Bentsen	Matt Foradori	Qun Gu
Wayne Hawley	Jingze Jiang	Anthony McMullen	Mary Jo Melvin
Tim Meyer	Greg Morrow	Denise Ohler	Everett Painter
Bill Pithers	Doug Puharic	Jane Puhlman	Thaddeus Rada-Bayne
Eric Straffin	Whitney Wesley		

Additional Thanks To:

- Dr. Joyce Jagielo, Dr. Gregory Morrow: Program Editors
- Dr. Joyce Jagielo: Abstract Review and Judge Coordinator
- Dr. Michael Hannan, Acting President
- Dr. Denise Ohler, Interim Dean of the College of Science and Health Professions
- Dr. Scott Miller, Dean of the College of Arts, Humanities and Social Sciences and Dean of the School of Business
- Dr. Erinn Lake, Executive Director of the School of Graduate Studies and Research
- Mr. William Berger for assistance in designing the program and the COS logo.

Celebration of Scholarship Planning Committee

Patricia Claster (Chair)	Dan Bennett	Samuel Claster	Shuang Feng
Qun Gu	Joyce Jagielo	Amy McClune	Gregory Morrow
Eric Straffin	Judith Kubeja		



The Friends of the Baron-Forness Library Student Grant Program has been established to support both undergraduate and graduate student scholarship throughout the University. In so doing, this grants program seeks to highlight, encourage, and support student scholarly activity. Examples of scholarly activity include but are not limited to: research, performances, exhibitions, projects, and publications. Applications will be available and awards are made every Fall semester.

Eligibility

This grants program is open to any current degree-seeking student at the University with the following stipulations:

1. Undergraduate students must have completed a minimum of 75 credit hours and have a minimum of a 3.25 grade point average. Graduate Students must have completed a minimum of 15 credit hours and have a minimum of a 3.5 grade point average.
2. The student must be the primary scholar on the activity.
3. The scholarly activity must be completed under the supervision of a faculty member who must attest to its value and the ability of the student to complete the project.
4. The scholarly activity must be related to the completion of the degree and grant funding must be used to support the completion or presentation of a scholarly project related to the student's program of study.
5. The scholarly activity must be completed and funds must be expended within twelve months of the award notification.

Awards

1. The maximum award per student per degree will be \$500. (Please note that if it is a group scholarly project, the limit of \$500 will be applied to the group.)
2. The funds can be used to purchase materials, equipment, and/or to defray travel expenses related to the undertaking of the project or the presentation of the completed work.
3. Award recipients are expected to attend a Spring recognition event (typically in late April or early May) at which they will provide a poster (to the library) and a brief presentation summarizing their scholarly activity.

Questions

Please contact Dr. Monty L. McAdoo for more information (x1070, mmcadoo@edinboro.edu, Baron-Forness Library, Room 128).

All activities take place in Van Houten Dining Hall North.

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College of Arts, Humanities and Social Sciences

HEALTHY U? A QUALITATIVE ASSESSMENT OF THE STUDENT EXPERIENCE WITH CAMPUS HEALTHCARE

Josh Swanson

Sociology

Project Advisor(s): Dr. Patricia Cluster

Health is one of the most important aspects of an individual's life. The World Health Organization defines health as a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity (Smith and Smith 1990). As college students immerse themselves into the college experience, they are exposed to a number of potential challenges and stressors that may result in a range of new social, physical and mental health problems. The availability of healthcare services to college students may be limited due to both financial and geographic factors, based on limited income and limited services available in the area. Good student health and social bonding are fundamental for student success at the post-secondary level (Dorman and Christmas 2002). Students who do not receive adequate care are at greater risk for poor academic performance, absenteeism and dropout. Despite its importance, there is a relative absence of research on the care received by students on college campuses. The purpose of this study was to explore the perspectives and experiences of students who have attended the Ghering Health and Wellness Center located on the Edinboro University campus. This research assessed how frequently students use the healthcare center on campus, their awareness of the various services that are provided, students' opinions about the healthcare received as well as suggestions for how the services can be improved.

Poster
CAHSS-1

EDINBORO UNIVERSITY CLIMATE SURVEY ON SEXUAL MISCONDUCT, REPORTING, AND RESOURCES

Morgan Adams

Sociology

Project Advisor(s): Dr. Samuel Cluster

University institutional research on sexual misconduct was initiated with the practical goal of discovering the prevalence of sexual misconduct on its campus and improving the effectiveness of resources available to students who fall victim. In 2016, a pilot climate survey was created and implemented at a small Northeastern Public University. The survey asked students about their experiences regarding four topics: sexual misconduct, Title IX, campus resources, and reporting measures. In 2017, the survey was redesigned to increase the validity of the data. Changes included an expansion of the definitions of sexual harassment, discrimination, and violence, further specifications of other questions, and a list of resources for participants to contact if the survey created personal discomfort. Compared to the 2016 data, the prevalence of sexual misconduct was more adequately represented. Additionally, the survey showed that official reports of incidents increased.

Poster
CAHSS-2

POTENTIAL FOR UNDERWATER ARCHAEOLOGY ON LAKE ERIE SOUTHERN COASTLINE

Jennifer Martin

Criminal Justice, Anthropology and Forensic Studies

Project Advisor(s): Dr. Lenore Barbian

Not much is known about the prehistoric inhabitants of the southern shores of Lake Erie, particularly those of the central basin. Archaeologists speculate that evidence of occupation on prehistoric coastlines is now buried beneath the waters of Lake Erie. Bathymetric studies of Lake Erie determined that the water level from 10,000 years ago slowly rose to its approximate current level about 3,500 years ago. Studies also show that as the water level rose it submerged land that may have been occupied by humans. Archaeologists have determined that the Great Lakes region starting becoming inhabited with prehistoric hunter-gatherers around 11,000 years ago. If they occupied the coastlines and moraines of Lake Erie, those sites may now be located beneath the water.

Archaeologists in the Great Lakes and around the world are now locating submerged archeological sites, wooden artifacts, and other organic materials. The anaerobic underwater environment helps to preserve artifacts that would otherwise decay at terrestrial archaeological sites. This allows archaeologists to find new evidence of past life. My research includes current underwater archaeological methods, preservation of artifacts under water, bathymetric studies of Lake Erie, the changes of Lake Eries coastline over time, and human occupation surrounding Lake Erie. Due my research on these topics, I believe it is possible to find underwater archaeological sites off the southern coasts of Lake Erie. Specifically, the Norfolk Moraine stretching from Erie, Pennsylvania to Long Point, Ontario holds excellent potential for submerged evidence of human occupation based on the timelines of rising water levels and patterns of human occupation.

Poster
CAHSS-3

EFFICACY OF A DIGITAL STORYTELLING INTERVENTION AT REDUCING ANXIETY AND DEPRESSION IN TRANSGENDER INDIVIDUALS

Milo Orr

Art

Project Advisor(s): Dr. Penny Orr

This research explored the use of an online art therapy group for transgender persons, using digital storytelling methods (Lambert, 2014) to create community and to reduce symptoms of anxiety and depression. Participants created multimedia digital stories and discussed them in group as a method of processing the stories' emotional content and meaning, giving voice to personal experiences, and supporting fellow group members. Participants completed pre- and post-surveys and the SLR-90-R assessment, which were analyzed quantitatively. Qualitative data, such as the researcher reflective notes, participant digital story artifacts, observation of group interaction and discussion, and narrative storytelling were analyzed using the grounded analysis method of open, axial and selective coding, in which the themes of acceptance and rejection, conformism and rebellion, and support and loss emerged. The quantitative results and qualitative themes provided insight into the worldview of the transgender population, the unique challenges that they face, and the need for more mental health support groups.

Poster
CAHSS-4

FIGURES FROM THE PAST: ARCHAEOLOGICAL ANALYSIS OF CUCHIMILCOS FROM THE CENTRAL COAST OF PERU

Abigail Bennett

Criminal Justice, Anthropology and Forensic Studies

Project Advisor(s): Dr. Stacy Dunn

Cuchimilcos are small painted clay figurines and are one of the most easily recognized and iconic items from ancient central coast Peru (approximately 1000-1476 AD); most museums have one in their collection. Despite this, very little is known about their purpose in society - are they representations of deities, ancestors, elites, or political leaders? Are they deeply symbolic, or simply decorative? To address these questions of function and meaning, I recorded attributes of figurines from online museum databases to determine if there is any pattern in decorative designs, sex of figurines, construction techniques, etc that may aid in interpretation. Preliminary analysis revealed that the figurines are predominantly female and almost all of them have two holes in the sides. This contributes to our understanding of ancient craftsmanship and manufacturing. It also challenges previous assumptions, based mostly on research on the Inca, that there existed a pan-Andean focus on gender duality; the coastal societies may have been more in favor of high-status females or matrilineal ancestry. This research serves as the starting point for a full-scale project to analyze this distinctive item of material culture.

Poster
CAHSS-5

College of Science and Health Professions

DETERMINATION OF HEAVY METAL CONCENTRATIONS USING FLAME ATOMIC ABSORPTION SPECTROSCOPY

Cassidy Taylor, Jason D'Urso, Alexandra Osborn

Chemistry

Project Advisor(s): Dr. Qun Gu

Heavy metal poisoning due to degrading pipelines or contaminated watersheds is a potential threat to communities with aging infrastructure and potential sources of pollution. Drinking water samples were collected across the Crawford, Erie, Mercer and Venango county region as well as various locations in Edinboro University. The samples consisted of water from both public drinking fountains and residential taps located in new and old structures, as well as from a monitoring well on a private land off Route 99 in Edinboro. Standard solutions of analytical grade lead, mercury and chromium nitrate were prepared in 5% nitric acid. Quantitative analysis was performed using a Thermo Fisher Solaar S4 Atomic Absorption Spectrometer. The standards were used to create a calibration curve (using least square fit method), based on which concentrations of the selected metals in samples of drinking water were determined. The concentrations obtained were compared to the EPA safety limits for these heavy metals.

Poster
CSHP-1

LOWERING THE TIME COMPLEXITY OF THE COLLATZ SEQUENCE THROUGH PARALLEL PROGRAMMING AND NUMBER THEORY

Austin Porter

Mathematics and Computer Sciences

Project Advisor(s): Dr. Douglas Puharic

This project was inspired by Project Euler, a website that host a series of challenging mathematical and computer programming problems. The research focused on solving and reducing the amount of time to find which number under one million produces the longest Collatz Sequence. The Collatz sequence is determined by the function f where $f(n) = n/2$ when n is even and $f(n) = 3n+1$ when n is odd. The problem is first solved with a brute force method and noted on how fast the computer can solve it with a single process. The brute force process time is compared to the time of parallel processing with multiple processes, and compared to a method that uses mathematical fact to reduce the search space.

Poster
CSHP-2

A COMPARISON OF LANGUAGE QUALITY AND QUANTITY ACROSS TWO ROUTINES

Sydney Weber, Kelsey Leasure, Julie Rivers

Communication Sciences and Disorders

Project Advisor(s): Dr. Jane Puhlman

The amount of digital information and entertainment taken in by children has increased exponentially. Television is the most viewed digital medium among children, with one-third of children under the age of seven having televisions in their bedrooms (Radesky & Christakis, 2016). Children are given greater access to not only television programs but games on hand held devices such as iPads. A notable negative impact of watching television is that the child is not receiving beneficial parental engagement which may encourage and support child language (Krikorian et al., 2009). This study will investigate the lexical diversity also known as type token ratio (TTR). It will also calculate language complexity also known as the mean length of utterance (MLU) of the children's language during television watching and in play. To examine the lexical diversity and language complexity, 13 children, ages 4 to 7 years, were recorded for over 16 hours a day using the Language ENvironmental Analysis (LENA) device. The audio files were reviewed, and 20 minutes of television use and play was spliced from the larger language sample. The spliced audio files were then transcribed and TTR and MLU were calculated and then compared across routines. Preliminary analysis shows a significant difference in language output within media use and play. Results suggest that children's television routines show no significant difference in lexical diversity or language complexity than during play.

Poster
CSHP-3

CIPHERS AND THEIR RELATION TO POLYNOMIALS AND MODULAR ARITHMETIC

Jacob Simmons

Mathematics and Computer Sciences

Project Advisor(s): Dr. Douglas Puharic

A cipher is an algorithm for performing encryption or decryption. In other words, a cipher is a series of steps that can be followed to encode or decode a secret message. This project will explore different ciphers that employ modular arithmetic and various polynomials to encode any message. To this end, different polynomials will be explored to discover the relationships with modular arithmetic that allow certain polynomials to be used in ciphers and why other polynomials cannot be used. Along with ciphers being used to encrypt messages, we will investigate how to decrypt messages using these ciphers and how to recognize specific ciphers, such as the Caesar cipher and affine cipher. Once the premise behind these ciphers are understood, a program can be written that will quickly code or decode any message for a given cipher.

Poster
CSHP-4

BOOK OR MOVIE? STORY RETELL IN CHILDREN WITH HEARING LOSS

Molly Eiler, Hannah Stull

Communication Sciences and Disorders

Project Advisor(s): Dr. Jane Puhlman

Story retelling tasks are reliable and predictive language aspects that provide a rich description of children's oral language skills. In addition, they are sensitive to both the amount and type of language different between children that are typical and atypical. The purpose of this project is to compare children with hearing loss' ability to retell a story when it is presented as a traditional storybook and when presented as an animated movie. The comparison of the movie to gain access to their stories may indicate that one form of media (either movie or book) for a story retell gains a greater amount of information regarding a child's language abilities than the other. This pilot study examines the story retelling ability of ten children with hearing loss that are between the ages of 4 and 9 years. The children are asked to retell a story that is presented as a movie and as a physical book. The quantity of language, measured by number of different words and mean length of utterance (how long each sentence is), and the quality of retell, measured by number of story grammar elements (such as, characters and setting, etc.) is compared. Results indicate both a quality and quantity of language difference when stories are presented as a movie compared to a book format.

Poster
CSHP-5

RELATIONSHIPS BETWEEN STUDENT ACADEMIC ACHIEVEMENT, EMPLOYMENT, AND PERSONALITY MEASURES

Adam Tartaglia

Psychology

Project Advisor(s): Dr. Thaddeus Rada-Bayne

A large factor that influences people who are in college is their finances. Scholarships on their own may not completely cover the cost of tuition, particularly when paired with books, supplies, and living expenses. To help cope with the financial pressures associated with attending college, many students choose to work while they are in school. Doing so poses many challenges for students, who must balance a rigorous course load with their work demands. Student resources such as time and energy may be taxed by these competing demands, leading to struggles in one or both areas. However, working can also give students an outlet to meet new people, and attain a degree of financial stability. Past research on this general topic has found a variety of relationships between work responsibilities and school achievement. This study aimed to examine this relationship, along with student personality traits, among Edinboro students.

An online survey was used to collect data from 282 Edinboro students who were enrolled in psychology courses during the fall 2017 semester. Students who worked ($N = 167$) spent an average of 19.1 hours per week at work ($SD = 10.3$), and the sample as a whole took an average of 14.5 credit hours ($SD = 2.3$). All variables were measured using self-report scales. We found that student academic achievement was unrelated to level of work responsibilities (as measured by GPA, and the number of work hours they average per week, respectively). We also found generally small relationships between academic achievement and each of the five personality traits we measured. Consistent with expectations, the personality trait conscientiousness had the strongest relationship with GPA. These findings suggest that Edinboro students vary in terms of their work responsibilities and their school performance-some students balance these demands successfully, while others appear to struggle.

Poster
CSHP-6

ANALYSIS OF ACTIVE PLANT COMPOUNDS FROM THE COMMON FOXGLOVE, *DIGITALIS PURPUREA*

Emma Morgan, Emily Porter

Biology

Project Advisor(s): Dr. Matthew Foradori

Angiogenesis is defined as the growth of new blood vessels throughout an organism. Although this is a normal physiological process, it can also impact the body negatively, in the form of cancer. Through the discovery of and research with angiogenesis inhibitors, it may be possible to decrease or completely inhibit the development of new blood vessels. In theory, if one can inhibit the growth of blood supply to a tumor, one can live with tumors in the body. Angiogenesis inhibitors work by interfering with the ability of growth factors to promote migration and proliferation of vascular endothelial which would prevent new blood vessel formation and tumor survival. Our research will examine the ability compounds extracted from the Common Foxglove have on bovine aortic endothelial cells (BAOEC) proliferation and migration, two hallmarks of angiogenesis. Foxglove has long been known for its medicinal uses, including a treatment for epilepsy and multiple heart conditions. After homogenization and extraction, a sample of the concentrated Foxglove was initially applied to a Bio-Scale Mini UNOsphere Q sepharose column for fractionation. These fractions were then used to challenge the BAOECs ability to proliferate and migrate in the presence of a growth factor.

Poster
CSHP-7

ENCOURAGING WOMEN TO PURSUE PHYSICS

Jordan Gregor, Halie Lewis, Corinne Schaeffer

Physics and Technology

Project Advisor(s): Dr. Corinne Schaeffer

The field of physics suffers from a lack of diversity, prompting several studies to be conducted that investigate the reason for the low number of women in the field. Instead of focusing on why there is a lack of women in physics, this research project looks to find what has contributed to the success of the women that are currently in the field of physics with the goal of finding better ways to encourage young women to study physics. This was accomplished by interviewing 51 women that fit the study's pre-determined criteria. Every woman was asked questions regarding why they like physics and chose the field, as well as how they believe women should be encouraged to pursue physics. Several common themes were identified in the women's answers that may be applied to STEM initiatives or may be useful to physics educators.

Poster
CSHP-8

EXAMINATION OF ISOLATED COMPOUNDS FROM BEE BALM (*MONARDA DIDYMA*) AS A POTENTIAL TREATMENT FOR TUMOR ANGIOGENESIS

Kimberly Pintabona, Blake Podger, Matthew Foradori

Biology

Project Advisor(s): Dr. Matthew Foradori

Angiogenesis is defined as the formation of new blood vessels. Although normal physiological systems undergo this process, angiogenesis is also one of the main hallmarks of tumor growth. Without a blood supply, cancerous tumors are typically limited in size and growth rate. The formation of new blood vessels grants cancerous tumors the ability to thrive and grow exponentially. To cut off the ability for a tumor to undergo angiogenesis would mean depleting it of necessary nutrients in order to survive, and thereby disrupting the ability of the tumor to grow and spread via metastasis. One of the mechanisms that can control angiogenesis is a family of molecules known as angiogenic inhibitors. Bee Balm is known for having medicinal properties such as being a stimulant, carminative, and a rubefacient. Our research looks for the possible presence of angiogenic inhibitors in Bee Balm leaves and stems. After initial plant homogenation and compound extraction, four milliliters of dialyzed Bee Balm concentrate was fractionated using a Bio-Rad EG-1 Econo Gradient Pump with a Bio-Scale Mini UNOsphere Q sepharose column. These fractions were then introduced to bovine aortic endothelial cells (which line the inside of blood vessels) to assess their ability to inhibit proliferation and migration.

Poster
CSHP-9

COMPARING A CHILD'S EXPRESSIVE LANGUAGE IN RESPONSE TO A PARENT'S STATEMENT, QUESTION, OR DIRECT COMMAND

Jolene Choby, Makayla Gosser

Communication Sciences and Disorders

Project Advisor(s): Dr. Jane Puhlman

Parents use many different language types when speaking to their children. This study focused on how three of those types impact the quality of expressive language produced by the child. Specifically, it sought to measure if one parent language type (e.g. statements, questions, and direct commands) enhances the quality of their child's expressive response. Using audio files of 25 children (ages 2-4 years) pre-recorded from a larger study, play and meal time routines were spliced out of the larger audio files. The three most common parent language types (statements, questions, and direct commands) were coded within these routines. The quality of the children's expressive language, measured by mean length of utterance, number of words, and type-token ratio, were then examined in response to the parents' language.

Poster
CSHP-10

RAIL CROSSING ACCIDENTS IN ERIE COUNTY

Michael Balla, Jr.

Geosciences

Project Advisor(s): Dr. Richard Deal

This poster displays railroad crossing accidents in relation to the type of roadway where the accident occurred, assembled using data from the Federal Rail Administration to collect crossing locations and accident reports, and PennDOT Data for roadway types. Comparing crossings was done in a spreadsheet, using two custom fields: 'RdType', derived from an existing 'HIGHWAY' field, listing roadway types and 'Acc_Count' a count of accidents, which was populated by counting the number of accident listed when following a weblink provided in 'ACC_LINK'. The data suggests a lack of notable trend in need of immediate action or attention. Fifty-one crossings had multiple accidents from 1974 to 2017, a 44 year period. Of the crossings with multiple accidents, the highest number of accidents were located on busier train tracks inside of or in close proximity to the City of Erie, a major population center. The sole outlier was crossing 528526M on Union-Leboeuf Road, outside of Union City, with 5 accidents since 1974; however, a lack of active warning signals and a higher road speed limit may explain this crossing's accident rate.

Poster
CSHP-11

INACTIVATION OF *ESCHERICHIA COLI* ON SPICE-INFUSED MEDIA VIA RADIANT CATALYTIC IONIZATION

Elena Tran, Thomas McCoy, Roman Fedchik, Christopher Pasky, Andre Francis, Hitaiishi Patel, Cassandra Whitmoyer

Biology

Project Advisor(s): Dr. David Fulford

The Center for Disease Control and Prevention (CDC) estimated that foodborne pathogens cause approximately 79 million illnesses, 325,000 hospitalizations, and 5,000 deaths in the United States, annually. *Escherichia coli* is one of the most concerning foodborne pathogens. Food safety and handling research and methods development spotlights Radiant Catalytic Ionization (RCI) as an effective pathogen control measure and sanitizing technique in the food industry. The RCI process generates oxidative gases to produce reactive oxygen species which engage in lipid peroxidation of the bacterial membrane and result in reduced cell viability. For the research, various concentrations of *E. coli* are inoculated on several spice-infused media to simulate common food products. The media chosen for this study include Tryptic Soy Agar (TSA) and TSA infused with organic cinnamon, organic garlic, and organic ginger. The spices were chosen for their natural antimicrobial properties. Previous research has shown that RCI causes a 90% elimination of foodborne pathogens and then plateaus during a thirty-minute exposure. Further investigation in the decline in killing led to a focus in induced bacterial metabolism. A catalase assay is performed to analyze the enzymatic activity of the *E. coli* cells after exposure to RCI. This study examines the synergistic effects of the spices and RCI exposure and observes the reduction and metabolic kinetics in bacterial populations.

Poster
CSHP-12

ELLIPTIC CURVE CRYPTOGRAPHY

Matt Bruno

Mathematics and Computer Science

Project Advisor(s): Dr. Douglas Puharic

Poster
CSHP-13

Cryptography is imperative in the digital age. Elliptic curve cryptography is one of the most secure and compact options for encrypting data. It benefits the public to be conscious of and at least partly understand what transpires behind their screens. This poster presentation serves to introduce the concepts of elliptic curves, finite fields, elliptic curves over finite fields, and how elliptic curves can be applied to cryptography. Furthermore, this poster presentation highlights how elliptic curves are connected to abstract algebra and number theory individually, as well as how elliptic curves blend the two topics together. Finally, this poster presentation will employ the popular open-source programming software, CoCalc, in order to show first-hand how elliptic curves can encrypt and decrypt data.

THE INFLUENCE OF SELECTION METHODS ON PERCEPTIONS OF ORGANIZATIONAL CULTURE

Alexa Sonney

Psychology

Project Advisor(s): Dr. Thaddeus Rada-Bayne

Poster
CSHP-14

Two large research areas in industrial-organizational (I-O) psychology concern the hiring process that organizations use to select employees, and the types of culture that can characterize an organization. Despite robust literatures on these topics, few studies have examined the possible link between them. This study aimed to address this gap by examining the role that hiring (selection) methods play on people's perceptions of the culture of an organization.

Study participants were asked to imagine themselves in the position of a job applicant, and then shown a short job posting advertising a management position. Participants were then randomly assigned to read about one of eight different hiring methods that would be used to make the hiring decision for this position. Four different selection methods were used in the study—an intelligence test, a personality test, a structured interview, and an unstructured interview. In addition, some people read about the test or interview being conducted online, while other read about it taking place in person.

Consistent with our expectations, we found that the selection method people read about had an impact on peoples' perceptions of the culture of the organization in the scenario. Specifically, when the organization was described as using an intelligence test, compared to one of the other methods, the organization was seen as more competitive and less supportive. In addition, the organization was seen as more attractive when it was described as using an interview to make the hiring decision, as opposed to a test. This is consistent with research in psychology in general that has found that people often dislike tests, and place greater faith in more subjective and intuitive methods of assessing people. A follow-up study to build on this research is currently underway.

THE PHYLOGENETIC POSITION OF TURTLES AMONG AMNIOTES

Tyce Schneider

Biology

Project Advisor(s): Dr. Matthew Foradori, Dr. Ulf Sorhannus

Turtles have always presented problems in the field of evolutionary biology; controversy particularly surrounds their evolutionary relations to other tetrapods, specifically amniotes (animals that develop in extra-embryonic membranes). Though phylogenies have been proposed, they are often in conflict with each other. Phylogenies based on morphological characters place turtles as a sister group of the superorder Lepidosauria (scaled reptiles) and Sphenodonts (tuataras). In contrast, phylogenies based on molecular characters group turtles with archosaurs, a clade that includes birds, crocodilians, and non-avian dinosaurs. Though analysis of both morphological and molecular characters provide crucial insights necessary to reconstruct evolutionary relations among organisms, molecular characters may provide better insight to relations that cross large spans of time. In addition, molecular characters are readily quantifiable when compared to morphological characters, providing a more objective reconstruction. This study will focus on investigating the proposed molecular phylogeny using 12 protein coding genes found within the mitochondrial genome. Genes will be aligned using Multiple Sequence Comparison by Log-Expectation (MUSCLE). Aligned sequences will then be concatenated using the phylogenetic software package DAMBE. The concatenated sequences will then be exported into the Molecular Evolutionary Genetics Analysis (MEGA) software program where a phylogenetic tree will be generated based on maximum likelihood methods and Bayesian inference, both supported using bootstrapping methods. Generated trees will hopefully aide in elucidating the phylogenetic position of turtles among amniotes.

Poster
CSHP-15

ASSESSMENT OF THE EFFECTIVENESS OF EQUINE-ASSISTED LEARNING

Kiersten Fielding

Psychology

Project Advisor(s): Dr. Joyce Jagielo

Equine Assisted Learning (EAL) is a program that employs horses to teach clients useful life skills and offers opportunities for personal growth. The natural behavior of horses, both individually and as a herd, is employed to aid in improving the clients' emotional and mental well-being. Studying the impact of these emerging equine-related practices is useful to determine their effectiveness in assisting various client populations. Data were collected at Blended Spirits Ranch in Fairview, PA. Populations tested include: veterans, women recovering from addiction, at-risk youth and children with autism, all of whom received this as supplemental therapy. Pre- and post-testing (8 weekly sessions) were conducted using measures such as the Beck Depression Inventory-II, Beck Depression Inventory-Youth, Social Responsiveness Scale-2, PTSD Checklist and Beck Disruptive Behavior Inventory, as appropriate for the client. In general, EAL had a significant impact on clients' responses from pre- to post-test. Implications of the findings will be discussed in terms of both statistical significance and clinical meaningfulness.

Poster
CSHP-16

TROPOMYOSIN RECEPTOR KINASE B AND THE SEXUAL BEHAVIORS OF MALE RATS

Lauren Buynack, Deandra Mosura, Wayne Hawley

Psychology

Project Advisor(s): Dr. Wayne Hawley

Poster
CSHP-17

Learning and memory play a critical role in the development of a number of behaviors, including sexual behaviors. Accordingly, male rats become more efficient in the execution of sexual behaviors with each successive experience. The increased efficiency is likely due to males learning the relationships between behavioral and sensory cues associated with the female and the rewarding aspects of sex. Tropomyosin receptor kinase B (TrkB) is expressed in brain areas important for sexual behaviors and learning and memory. Therefore, the goal of the current study was to determine if administration of a TrkB antagonist during initial sexual experiences interferes with either the acquisition or the long-term expression of sexual behaviors in male rats. Male rats were treated with either a vehicle control or ANA-12 (0.5 mg/kg) prior to each of the first four tests of sexual behavior with sexually receptive females. ANA-12, N-[2-[[[Hexahydro-2-oxo-1H-azepin-3-yl]amino]carbonyl]phenyl]-benzo[b]thiophene-2-carboxamide, is a small molecule and a selective non-competitive antagonist of TrkB. Two months after the fourth test of sexual behavior, male rats were tested once again, but under drug free conditions, in order to determine if there were long-term effects of the TrkB antagonist on the expression of sexual behaviors. Although the sexual behaviors of male rats improved with repeated experience, there were no immediate effects of the TrkB antagonist on the acquisition of sexual behaviors. Alternatively, male rats treated 2 months earlier with ANA-12 exhibited a significant reduction in their mounting efficiency prior to first ejaculation and took significantly longer to ejaculate than male rats treated with vehicle. These results suggest that TrkB in male rats may play a role in consolidating aspects of initial sexual experiences, but not in the acquisition of sexual experiences.

PROGESTERONE MODULATES MOTIVATIONAL AND CONSUMMATORY ASPECTS OF SEXUAL BEHAVIOR IN MALE RATS

Deandra Mosura, Wayne Hawley

Psychology

Project Advisor(s): Dr. Wayne Hawley

In adult males of a variety of species, high doses of progesterone during adulthood have been shown to decrease levels of consummatory sexual behaviors, such as the ability to mount, intromit, and ejaculate. However, the effects of a high dose of progesterone on the consummatory sexual behaviors of male rats remains to be determined. Moreover, in males, high doses of progesterone also reduce androgen signaling, which has been shown to be important for sexually motivated behaviors. Therefore, the primary goal of the study was to examine the effects of a high dose of progesterone on sexually motivated behaviors. For 11 consecutive days, adult male rats were treated with either 10 mg of progesterone or a vehicle control. Sexual motivation was examined by allowing test male rats free access to all three chambers of a testing arena. Stimulus rat chambers containing a sexually receptive female and one containing a sexually experienced male rat were attached to the opposite end chambers of the larger testing arena. Progesterone treated rats did not exhibit a preference for the female during the early stages of testing. However, overall levels of sexual motivation were not reduced in progesterone treated rats relative to vehicle treated rats. With regard to the expression of consummatory sexual behaviors, progesterone treated rats exhibited significantly fewer intromissions and ejaculations than vehicle treated rats. Androgen sensitive tissues were excised on the last day of treatment. Progesterone treated rats had significantly lighter bulbourethral glands than vehicle treated rats. Overall, these results are consistent with the effects of progesterone in other species and suggest that high levels of progesterone impact the expression of consummatory sexual behaviors and androgen signaling. These results extend previous findings and suggest that progesterone seems to only play a minimal role in sexual motivation.

Poster
CSHP-18

PERCEPTIONS OF FALSE CONFESSIONS BASED ON SUSPECT'S AGE AND GENDER

Jakara Carr, Zachary Craddock, Elizabeth Myers, Kristen Thomson

Psychology

Project Advisor(s): Dr. Ron Craig

Jurors are often provided with confession evidence and must determine how truthful it is. Previous research has suggested that individual suspect characteristics may be taken into consideration and could potentially influence perceptions of a confession and thus guilt. In the current study, participants were randomly assigned to one of six conditions where they read a case summary of an individual confessing to a shoplifting incident that varied suspect age (13 vs. 30 vs. 70) and gender. This was followed by a questionnaire that examined perceptions of guilt of the suspect. It was predicted that age and gender would influence perceptions of the validity of the confession and ultimately guilt. This hypothesis was not supported, in that neither suspect age or gender had any influence on certainty of guilt. However, findings showed that participants were more likely to consider age in their decision if the suspect was juvenile or elderly which is consistent with previous research. Having previously discussed false confessions also influenced participants decisions of not guilty compared to those who had no previous discussion. Participants who have had previous exposure may have a greater awareness of the issues regarding false confessions. Potential limitations and future directions for research are discussed.

Poster
CSHP-19

GLOBAL INTERNET COVERAGE VIA LOW EARTH ORBIT SATELLITES

Matt Bruno, Cole Brown(Penn State Behrend)

Physics and Technology

Project Advisor(s): Dr. Darren Williams (Penn State Behrend)

In mid-2017 SpaceX announced its plan to launch thousands of satellites into orbit to provide internet access across the globe. I will collaborate with Cole Brown, a physics major of Penn State Behrend, to reproduce this feat in a simulation. In producing this simulated reproduction we will uncover the details of the most impactful forces that could possibly affect this operation such as the area of coverage provided by a single satellite at the altitude necessary for orbit, the lifespan of such a satellite, the varying temperatures, forces, and atmospheres experienced by the satellite, the demand for higher bandwidth in more densely populated regions, and the most efficient positioning of the satellites that will also minimize the chance of collision with one another. A program will be written in Python to track each force acting on each satellite as well as the overall orbits of each of the satellites. This simulation will give a reasonable estimate of the capital and astronomical knowledge necessary to launch humanity's broadband internet into orbit.

Poster
CSHP-20

CROSSLINKING CELLULASE TO ACTIVATED RESINS

Nicole Wagner

Chemistry

Project Advisor(s): Dr. Lisa Unico

Glucose acts as a carbon source for ethanol in alcoholic fermentation. Ethanol has the potential to be used as a biofuel, reducing the need for petroleum fuels. However, in order to fully take advantage of the ethanol product of alcoholic fermentation as fuel, the production of ethanol must be efficient and cost-effective. This research proposes using immobilized cellulase enzyme to produce glucose for later use as a carbon source in alcoholic fermentation. The reaction of cellulose with immobilized cellulase can be used as a renewable source of glucose; the cellulase can be repeatedly used to break down cellulose into its component monosaccharide, glucose. This would make the production of glucose cost-effective by eliminating the need to use additional cellulase for each glucose-producing breakdown of cellulose. Previous literature shows that enzymes including cellulase can be chemically cross-linked to activated Sepharose resins. The variations used in this project are cyanogen bromide activated Sepharose 4B and Concanavalin A Sepharose 4B. The success of the chemical cross-linking reaction can be evaluated using ultraviolet-visible (UV-Vis) spectrophotometry to quantify the amount of cellulase in a solution before and after a coupling procedure with the chosen resin. Activity assays can then be conducted by using quantitative Benedict's reagent to determine the concentration of glucose produced in the breakdown catalyzed by immobilized cellulase.

Poster
CSHP-21

COMPUTER CREATOR

Sharon Steiner

Mathematics and Computer Sciences

Project Advisor(s): Dr. Dave Tucker

The purpose of my project is to produce a game for introduction to computer science students or other individuals who wish to learn about the inner hardware of a desktop computer. The players will take apart and learn about different components, including the motherboard, power supply, random access memory (RAM), hard drives, and more. It will be an educational tool for any of the professors teaching the introductory classes. By the time a student/player has become familiar with the end product, they will be able to:

- Name the main parts of a computer and describe their general purpose
- Have basic knowledge on how to install the parts
- Understand what all the ports on the back do and understand the cords that go into them

Why make this game? Couldn't the students just open up a PC instead of just playing a game? Well, yes, certainly, but not everyone has access to a high-end PC. They can poke around an old one, but how many families just have an old computer lying about to mess around with? There is also no possibility of breaking the computer, as students in an introductory class likely aren't too aware of what they're doing as it is. Plus, if they mess up, they'll immediately know what they did wrong and why, as this game will tell them what went wrong and how to fix it. This project provides a free, safe way for students to learn about the inner workings of a computer without hassle.

Poster
CSHP-22

THE EVOLUTION OF VILLAGE BRING DOWN

Christopher Persinger

Mathematics and Computer Science

Project Advisor(s): Dan Bennett

Originally designed as a recruiting tool, Village Bring Down is a first person virtual reality game. It was developed using the Unreal engine. This game employs both the Oculus Rift headset and the Oculus Touch controllers to make it feel like the player is actually in the game. In Village Bring Down the goal is simple, bring down the village by any means necessary. Whether it is with your bare hands, blowing it up with explosives, or burning it down with your super human powers.

Continued feedback from users, as well as the demands of demonstration environments have provided the motivation for continued improvement and development. As features are added to this game, the graphics requirements continue to become more complex and challenge the abilities of a basic gaming machine with minimal hardware. Therefore, maintaining a balance between scene complexity and overall realism represents constant struggle.

This poster presents the evolution of the game design as well as an overview of the current implementation. Future developments will be discussed and feedback for additional features will be encouraged.

Poster
CSHP-23

NATURAL PRODUCT EXTRACTION AND ISOLATION OF POTENTIAL ANTIMICROBIAL AGENTS

Kyle Rand, Sadie Brown, Ashley Moore

Chemistry

Project Advisor(s): Dr. Tracy Olin

The objective of this research is to extract and isolate the natural product components from plant material (lavender, ginger, etc.) and determine their antimicrobial properties. This can be accomplished in four main steps: extraction of the compounds from the plant material, separation of the different components (essential oils, tannins, terpenoids, alkaloids, flavonoids, etc.), characterization of the compounds (IR, NMR, UV-Vis, etc.), and finally analysis of the antimicrobial activities.

The purpose of this project is to identify novel techniques for extracting and purifying natural products from plants and then further examine these components as potential antimicrobial agents. One of the primary goals of this project is to reduce the amount of organic solvents used during extraction methods. With the push to make chemistry more "green", there is room for improving extraction technique, such as using steam distillation or cold-pressing. Another primary goal of this research is to study the efficacy of certain plant extracts on bacteria, fungus, molds, etc. Most extracts of plants are a complex mixture of compounds ranging from sugars to complex organic molecules. If these components can be efficiently separated, the molecules responsible for certain properties, such as antimicrobial activity, can be identified.

Another application of this research is to look at the effects of these natural products on biofilms. Because biofilms are mostly undesirable, as in hospitals, soil, food production, etc., finding new ways of destroying these microbial colonies is a topic of current research interest. Because of the nature of biofilms, it becomes very difficult to degrade these bacterial colonies, which currently require potent biocides. Once lead compounds could be identified as potential antimicrobials, they could also be looked at in the treatment of biofilms.

Poster
CSHP-24

EXAMINATION OF PROTEINS FOUND IN THE SHELF FUNGUS, *STEREUM INSIGNITUM* FOR ABILITY TO INHIBIT ANGIOGENESIS

Shelby Vaughn

Biology

Project Advisor(s): Dr. Matthew Foradori

The search for medical advances is ever growing, especially in the fields of cancer research and tumor growth. There is a natural process that occurs in the body where new blood vessels are created called angiogenesis. In terms of cancer, tumors use angiogenesis and are aided through proliferation and migration to create pathways of steady nutrients through blood vessels to the tumors. Proliferation is the rapid regeneration of cells, while migration is the movement of these cells towards the cancerous tumor. The key concept in this research is to identify organisms that could contain supportive biological materials that point to positive inhibition of these processes, then isolate these proteins from specific plants. In this case the shelf fungus, *Stereum insignitum*, will be used because of its close genetic connection with *Stereum ostrea* which has been believed to contain medicinal properties. To do this plant material is extracted in buffer, concentrated through Speed Vac centrifugation, and sent through an ion exchange chromatography to generate fractions. The fractions are then put into an environment where bovine aortic endothelial cells (BAOECs) are growing in the presence of basic fibroblastic growth factor (bFGF) and tested for the ability to inhibit BAOEC proliferation and migration. Both of these assays will be used to identify compounds in mushroom that might possibly lead to the treatment of cancerous tumor growth.

Poster
CSHP-25

CONSECUTIVE PRIME SUMS

Zachary Gransbury

Mathematics and Computer Sciences

Project Advisor(s): Dr. Douglas Puharic

The prime 41 can be written as the sum of six consecutive primes, from two - thirteen. This is the longest sum of consecutive primes that add to a prime less than one-hundred. A more challenging problem is to find the prime under one million that can be written as the sum of the most consecutive primes. This poster presents approaches to solving this problem including a sequential brute force search, a parallel version of this search and mathematical simplifications to these solutions which can improve search performance. Implementation and performance of the resulting algorithms will be discussed.

Poster
CSHP-26

HOW TO BE A SUCCESSFUL WOMAN IN PHYSICS

Halie Lewis, Jordan Gregor, Corinne Schaeffer

Physics and Technology

Project Advisor(s): Dr. Corinne Schaeffer

In the field of physics, the lack of diversity is a well-known and documented problem, specifically the lack of women. Instead of focusing on why there is a lack of women in physics, this research project looks to find what has contributed to the success of the women that are currently in the field of physics. This was accomplished by interviewing women that fit the study's pre-determined criteria. For this study, 51 women were interviewed either in person or by video conference. The women identified coping strategies and resources that benefited them in their journey to success. They also provided advice for young women who look to pursue physics. The common theme of having a supportive environment was identified as a key component to the success of the participants. After the interview was conducted a mindset survey was sent to determine if the woman had a "growth" or "fixed" mindset. All participants displayed similar mindset scores, despite differing backgrounds. Future research may involve a similar study in other fields of STEM to see if the themes recorded are specific to physics or if they transcend fields.

Poster
CSHP-27

School of Business

SALES TRAINING PROGRAMS OF INSURANCE INDUSTRY

Drayke Karges

Business and Economics

Project Advisor(s): Dr. Asri Jantan

Significant effort has been given to investigate the effectiveness of the training programs of insurance firms within the past three decades. The sample of this study was derived from a snowball sampling technique of insurance sales representatives in the Erie County area. Out of 100 insurance reps contacted, 22 (22% response rate) agreed to participate in this study. Findings revealed that 77.3% of the sample agreed that insurance reps' sales training programs indeed exist and that they are very well managed. 95.5% of the respondents revealed that their training needs were assessed objectively. Among the important training goals that the insurance reps identified were improving prospecting (100%) and customer relationship (90.9%) skills. The top two training methods utilized were on-the-job training (100%) and the utilization of hi-tech (100%) methods. Critical topics that received the highest attention in this industry were company information (90.9%) and understanding excellent product information (81.8%). Overall, the study provides a cursive overview of the pertinent sales training elements of the insurance industry in our area. Future research should look into correlations between key training elements and sales reps' performance.

Poster
BUSN-1

HOW CLIMATE-CHANGE-RELATED NATURAL DISASTERS AFFECT US DOMESTIC AIRFARE

Avryn Jackson-Bonus

Business and Economics

Project Advisor(s): Dr. Jingze Jiang

Many scholars doing studies on airfare have been focusing on market competition, but fail to consider the impact of the climate-change-related natural disaster on the airfare uncertainty. The current study fills an important gap to examine the impact of 2017 hurricane Harvey on domestic plane ticket prices fluctuation, especially for the flights leaving Texas. We studied 2,042,428 tickets, from quarter 2 to quarter 3 in 2015, 2016, and 2017. We performed descriptive statistical analysis and further developed the regression model using the dummy variable for the occurrence of Hurricane Harvey, the population of the departure city, and the distance of the itinerary to predict airfare. We found that the prices were statistically significantly increased after Hurricane Harvey hit Texas. We also found that the distance of the itinerary had a statistically significant impact on airfares. The occurrence of the climate-change-related natural disaster is increasing, so the current study will assist airline industry stakeholders to manage the airfare risk related to abnormal natural disaster. Our current model is focusing on analyzing the impact of the natural disaster on airfare uncertainty, so our future work will focus on improving the prediction power of the model.

Poster
BUSN-2

SURVIVAL MODE: FINANCIAL OBLIGATION

Juanita Maria Stokes

Business and Economics

Project Advisor(s): Dr. Shaun Pfeiffer

Poster
BUSN-3

Education is an investment in your future, but you should be smart about your career choice and student loans. This presentation will inform students about their loan payments after they graduate. This presentation will also provide students with potential starting salaries in various careers upon graduation. Students will also be provided with courses on financial literacy and other resources. Information on how to avoid bounced checks and overdraft fees will be included in this presentation and students will be introduced to the counseling services offered through the Edinboro University Financial Aid Office.

School of Graduate Studies and Research

COVER-COPY-COMPARE FOR SPELLING INTERVENTION

Jessica Young, Edward Snyder, Joel Erion

Counseling, School Psychology, and Special Education

Project Advisor(s): Dr. Edward Snyder, Dr. Joel Erion

Spelling performance is important in young children. Spelling is vital to learn how to read and for life in general. Spelling allows us to express ourselves through written communication (Erion, Davenport, Rodax, Scholl, & Hardy, 2009). Inappropriate instruction can lead to writing and spelling difficulties in the future (Graham & Harris, 2006). Since spelling is so imperative for students, it is important that as educators and researchers we find a way to make learning spelling words effective, efficient and interesting enough for all students. The cover-copy-compare (CCC) model has shown to be effective in improving spelling performance and my current study replicates Nies & Belfiore, 2006.

Independent variable. The current study utilizes the CCC model as an independent variable. The CCC model is a way to teach students spelling words.

Instructional format. The CCC model consists of (a) the teacher says a spelling word and the student points to the word, (b) the teacher and students say the word as they point to the word, (c) the students cover the word then write and check the word (d) the teacher says the word as the students point, say, and spell the word, (e) evaluation of the response. If the students wrote the word incorrectly, they would erase and correct the spelling (Nies & Belfiore, 2006).

Dependent variable. The dependent variable in this research study is the percentage of letter sequences correct, in each of the conditions.

Procedures

This multiple baseline across student's research design will examine the effects of the CCC model on the learning of spelling words. The intervention will be given during a free period where academic lessons are not being given. The baseline will last for three weeks, for student one, four weeks for student 2, and five weeks for student 3, to get multiple baseline data points. In the intervention phase, for each student, it will consist of the CCC lesson that lasts approximately 20 minutes in duration. This will take place on the Thursday before the student's spelling test on Friday, to view if the child performs better on their spelling test with help of the CCC model. The next participant will start the intervention a week later than the participant before him/her. Each lesson will consist of ten spelling words from the 1st grade spelling list that is used in their classroom that week.

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GRAD-1

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