Eastern Kentucky University

Presents Scholarship Week
Celebrating the culture of scholarship, research, and creative endeavors at EKU

13th Annual Undergraduate Presentation
(UP) Showcase
Friday, April 18, 2014

Honoring Student-Faculty Collaborations
From the Creative Arts to the Discovery Sciences

Eastern Kentucky University
Richmond, KY 40475
Undergraduate Presentation Showcase

Honoring Student-Faculty Collaborations from the Creative Arts to the Discovery Sciences

The purpose of the UP Showcase is to give Eastern Kentucky University undergraduate students and their mentors a venue in which to share their scholarly and creative work with a public audience. Students in all disciplines are invited to present their work in the form of posters, creative art displays, and original dance. This is the only event on campus that encourages undergraduate students, in all disciplines, to share scholarly and creative work that is done in collaborations with faculty/staff mentors. These collaborative projects require a substantial amount of time and a commitment from students and their mentors that extends well beyond regular classroom activities.

Funded by:

- Office of Undergraduate Research
- University Programs
- EKU Noel Studio
- EKU Teaching & Learning Center
- College of Arts and Sciences
- College of Business and Technology
- College of Education
- College of Health Sciences
- College of Justice and Safety
- Graduate School

Cover: Dr. Bob Brubaker, EKU Cammack Building
Department of Psychology

The front cover showcases a building/facility of the EKU campus and has occurred every year since the first UP Showcase
April 2, 2014

At Eastern Kentucky University, we highly value and celebrate the achievement, creativity and scholarship of our students. That’s why I am proud to join the rest of our campus community to honor the outstanding efforts of the student presenters and performers spotlighted in our 13th annual Undergraduate Presentation Showcase.

This eagerly anticipated event honors the hard work by our entire University community to lift up and inspire critical thinking, dynamic communication and creative endeavor. These undergraduate research projects exemplify our Quality Enhancement Plan and validate the emphasis we place on the teaching-learning process.

Each student whose work is celebrated here has benefited from close collaboration with an outstanding faculty/staff mentor. That personal touch and a pervasive passion for student success have long defined The Eastern Experience. I have heard countless alumni testify to the life-changing experience they enjoyed on his campus. Frequently they cite specific faculty and staff members who’ve gone above and beyond the call of duty to positively impact their lives.

I extend my hearty congratulations to the students for a job well done and my sincere appreciation to all the mentors who worked with them. The scholarly skills developed in preparation for this Showcase form the very essence of a lifelong educational journey.

Sincerely,

Michael Benson
President
Schedule of Activities

12:00 – 1:00 pm………………………… Lunch
   Location: 1st Floor Library

1:00 – 1:10 pm………………………… Opening Remarks
   EKU Provost Janna Vice
   Location: 1st Floor Library

1:10 – 1:30 pm………………………… EKU Dance Theatre Performances
   Location: 1st Floor Library

1:30 – 4:00 pm .............................. UP Showcase Presentations
   Location: 1st Floor Library
   (along the perimeter)

4:00 pm ................................. UP Showcase Conclusion
   Presentation Removal
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Ms. Cheryl L. Ramey  
Dr. Dustin Wygant | Psychology |
| Dr. Michael J. Bradley  
Dr. Michelle Gerken  
Dr. Jon McChesney | Recreation and Park Administration |
THERE COMES A TIME WHEN EVERY FLOWER MUST BLOOM

CHOREOGRAPHY: Ally Kegley

MUSIC: *The Projectionist* by Sleeping At Last

DANCERS: Tess Campbell, Peyton Hammonds, Kaylee Carr-Harrison, Phil Hood, Lucy Link, Paige Peltier, Courtney Rader, Emily Sizemore, & Savannah Turpin

“As long as we are persistence in our pursuit of our deepest destiny, we will continue to grow. We cannot choose the day or time when we will fully bloom. It happens in its own time.”

- Denis Waitley

IS IT WORTH THE FIGHT...

CHOREOGRAPHY: Kaylee Harrison

MUSIC: *Fire* by Bipolar Sunshine

DANCERS: Daron Andrus, Corey Barnes, Kayleigh Graves Ashley Hartz, Phil Hood, Lucy Link, Courtney Rader, Emily Rice, Zach Schoner, Alyson Tate, Cortlyn Todd, Savannah Turpin, & Becca Vicini
Technologic America

Jacob Dean King

*Mentor: Dr. Gay Sweely, Art & Design*

The flag of the United States of America is one of the nation's most widely recognized and beloved symbols. Within the United States, our flag is a staple of the American Dream. With that dream comes a use of new technology; discarding the technology from the past. A floppy disk, or diskette, is a disk storage medium composed of thin and flexible magnetic storage medium, sealed in a rectangular plastic carrier, lined with fabric that removes dust particles.

Within the past 15 years, floppy disks were replaced with the compact disk. The idea I wanted to envision for my exhibition project was to use recycled goods, such as the floppy disk: to be used to create a special and appropriate American flag. This flag is a stacked shingle effect of painted floppy disks. The work measures 4-ft. wide by 3-ft. tall. This special artwork for the UP Exhibition in 2014 is attached to a white MDF board that has a high-gloss white finish.
Sequoia National Park Redwood Trees

Jill Conrotto

*Mentor: Dr. Gay Sweely, Art and Design*

I have had the privilege of traveling much of the United States when I was younger, including driving across the country with my family. I will never forget the sights I saw on this trip. One of the most amazing places I visited was the Sequoia National Park in California. The trees loomed far above me. They were large enough to drive a car through their massive trunks, and Native Americans used to burn and hollow out homes for themselves under their branches. The oldest trees are approximately 2,000 years old!

My painting for EKU’s Showcase is collaged from hand-printed mono prints on a permanent commercial gelatin plate or “Gelli Plate.” Handmade versions of the Gelli Plate are simply Jello and made with boiling water and Knox gelatin. These hand-pulled prints are made with acrylic paint and are stamped with repurposed items or handmade stencils. I love the textures and the element of serendipity. I have an idea how the print might turn out, but each time I lift it from the plate – it is a surprise. Each paper, and therefore, the entire collage, is completely unique – just like the Sequoia redwood trees themselves. The individually printed papers are the trees, and the collage represents the forest in my special artwork.
ABSTRACT UG 3

Exploring the Themes in the Art of Christo and Jean-Claude on a Local Stage

Jeremy Newell
With Model Laboratory students Trisha Brockmeyer and Sara Elliott

Mentor: Dr. Gay Sweely, Art & Design

The artistry of Christo and Jean-Claude have spanned five decades and received responses ranging from despised derision to unquestioned adoration. Regardless of aesthetic standing, their works simply can’t be ignored. This husband and wife team (until Jean-Claude’s death in 2009) was known for creating large-scale installation sculptures. These temporary pieces included surrounding 11 islands near Miami, Florida, with 6.5-million-square-feet of bright pink fabric, erecting a 24-mile long fabric fence in California, and also covering the Reichstag building in Berlin, Germany, with silver fabric. Their work deals with themes of environmental interaction, the role and identity of objects, and the altered environment. The elements and principles of proportion, space, contrast, and movement are particularly important in Christo and Jean-Claude’s artworks.

My collaborative team decided to explore this idea of altered/destroyed roles of objects on a local level. There were three student-artists involved in this project: Trisha Brockmeyer, Sara Elliott, and myself. We decided to wrap local monuments on Eastern Kentucky University’s campus in a temporary installation project. These are local “monuments” that are very well known and physically wrapping them in fabric was an act that was not to be ignored. Covering these objects changed their aesthetic presence and offered a totally new identity of the objects. These temporary installation pieces were documented through photography. The images strive to give a sense of the mystery and perplexity of these wrapped objects as they were temporarily viewed in their environment.
Monumental America

Ben Cheatham

*Mentor: Dr. Gay Sweely, Art & Design*

*Monumental America* is a series of drawings representing some of our nation’s best-engineered monuments and what they have come to stand for in today’s society. American monuments have been used to pay glory to, to identify significance and importance, and to display aspects and beauty of the home landscape. The United States of America is rooted in a deep history of symbolism in which we use to envelop our culture, beliefs, and patriotism. We showcase these monuments, not only for their grand beauty, but we also use them as bookmarks across this nation’s vast landscape. For a country that has had such little history, as compared to other world countries, these American monuments almost hold a special place in the history of the development and significant times of our national heritage.

My vision for this 2014 UP Showcase presentation was to recreate the beauty of our nation’s monuments and instill a presence of glory that harkens back to their magnificence to display their towering presence and busyness of today’s man-made landscapes by preserving these American monuments, former creations, and settings to an American-style backdrop. With this exhibition piece, I submit my interpretation of the “America the Beauty” landscape theme. My submission, created on thick-stock drawing paper and pencil will set the tone and color of our nation’s natural landscape and glorious monuments.
Captain America Wants YOU to Suit Up!

Lindsey Carr

*Mentor: Dr. Gay Sweely, Art & Design*

For the 2014 UP Showcase, my American (US) Art History course was challenged to create the most American piece we could think of (concerning something along the lines that was more American than Apple Pie and Baseball). Instantaneously, Captain America came to my mind; what is more American than Captain America? Because of his life as a soldier in World War II, I was inspired to make my own propaganda poster for that world war with Captain America in place of Uncle Sam. In true super-hero form, Captain America is challenging the American men to “Suit Up” and joins the fight against Hitler. The coloring of the poster is faded to recreate the vintage feel that old propaganda posters usually exude. My poster also uses few colors, a money-saving tactic that would be very helpful during wartime.

My entry to the art exhibition portion of the UP Showcase is meant to be a fun piece; it celebrates the joining of two different generations (that of World War II and also that of our current super-hero obsessed 21st century culture. For my course project, I believe that this idea artistically embodies America.
My Thorne Miniature Room ala the Art Institute of Chicago

Madeline Lee

Mentor: Dr. Gay Sweely, Art & Design

The Thorne Miniature rooms are an original idea of Mrs. James Ward Thorne. There are sixty-eighty miniatures featured within the collection. The themes of the rooms include European, American, and Asian rooms. The European rooms span in time from the late thirteenth century to the 1930s. The American rooms span in time from the seventeenth century to the 1930s. Mrs. James Ward Throne, born in 1882 as Narcissa Hoffman Niblack, left her rooms to be exhibited at the Art Institute of Chicago after her death in 1966 (they have been on exhibition since 1954).

The idea to recreate a Thorne Miniature came from a statement on the Art Institute of Chicago’s website. The catalogue states, “Painstakingly constructed on a scale of one inch to one foot, these fascinating models were conceived by Mrs. James Ward Thorne of Chicago and constructed between 1932 and 1940 by master craftsmen according to her specifications.” The word “painstakingly” presented a challenge. The purpose of the project was to recreate a Thorne miniature, the Japanese Traditional Interior c. 1937, to scale.

The Thorne Miniature recreation is constructed from commonly found art supplies such as acrylic paint, and common everyday items such as cardboard. Each article of the room had to be recreated by hand. They were then placed at their proper locations within the room. The miniature room is constructed to scale, one inch equaling one foot, just as the Japanese Traditional Interior c. 1937.

The Thorne Miniatures are an artistic feat of their century. The craftsmen planning and building the rooms had to overcome the challenges presented by the miniscule details required by the idea. Inspiration also came from Dr. Sweely, and my family, who both come from a Chicago background. The Thorne Miniature Rooms are a cherished collection of Chicago and will be for years to come.
The Fitchburg Furnace

Marla Marrs

Mentor: Dr. Gay Sweely, Art & Design

I grew up in Irvine, Kentucky (Estill County), and one of the things I admire the most is the Fitchburg Furnace that’s located in my hometown. Fitchburg is the largest charcoal furnace in America, and it is one of the largest iron furnaces in the world, constructed during the 1860’s and 1870’s. The Fitchburg Furnace resides in the Daniel Boone National Forest in Kentucky. Iron ore surrounds the furnace in the nearby hills and was smelted to make iron for the railroads during the late 19th century. After the iron ore was smelted, it was shipped down the creek when it was flooded and then it would proceed to the Kentucky River for further dispersal and use. The furnace itself is made out of limestone that was found around the area.

This structure is very American because of the impact it had on America in the years that it was producing iron for the railroads. I am a dual major in graphic design and photography, and I have produced several photographs that capture the beauty of this fantastic furnace. I photographed the furnace as a whole, and I then took several details shots of the beautiful historic furnace and the surrounding area.
Cherokee Indian Pottery

Meagan Wyatt

*Mentor: Dr. Gay Sweely, Art & Design*

When Dr. Sweely told us that we could make an artwork as a research and study project for ARH 498, U.S. Art History, to go into the UP Showcase, I began thinking of a topic and what to make. Our theme was “My Artwork Is More American than Apple Pie or Baseball.” I began to think how America was built up of people from different ancestries and cultures. America is itself a super great melting pot.

My own ancestry goes back to the Cherokee people around this region, and I am a ceramics art major here at EKU. Thus, I wanted to bring the two (my EKU major and my own ancestry) together and make something that is truly American. The Cherokee people were known for their basket making, but they also made beautiful pottery. For my UP Showcase presentation, I wanted to make a truly native-American coil pot, following the traditions of the Cherokee Nation. I also wanted to make the same decorative patterns that my native ancestors used on their own decorative pottery.
“Petunia” the Wood Cut Pig: Repurposing an Old Cutting-Board into Fine Art Prints

Susan Bradish

Mentors: Dr. David Afsah-Mohallatee, Art & Design
Dr. Gay Sweely, Art & Design

*Petunia* is a wood block print created by carving a design into an old cutting board I found at a flea market in Nicholasville, KY. The board, as found, was shaped like a pig. It reminded my own Pennsylvania-Dutch heritage and me of my grandmother’s farm in northwestern Pennsylvania. These immigrants were not from Holland, as the name implies, but from Germany (Deutschland).

This piece pays homage to my grandmother, Amanda, who had a very hard life. She raised eight children of her own, three grandchildren, and nursed her mother-in-law through a long, painful illness until her death. She had very little in her life that was joyful or beautiful. One of her few delights came each spring when her “posy beds,” as she called them, would begin to bloom. She loved crocuses, tulips, jonquils, peonies, iris, and lilies: anything she could depend on to come back after the hard winters. Dahlias were an exception; they required digging in the fall and winter storage in the root cellar. She felt the extra effort worth it, though, since these blooms were exceptional and lasted all summer. The largest flower on the woodcut represents a dahlia. She also had a rambling rose, represented in the design on the pig’s hindquarter. My mother used to tell a story of a pet pig they had as kids named *Petunia*, hence the title.
Does Affectionate Parenting Affect Bullying in Students?

Joshua Back, Jennifer Duke, & Mary Dusing

Mentor: Dr. Richard Osbaldiston, Psychology

Bullying in schools is prevalent throughout the world. Bullying can be described as repeated, unwanted, aggressive behavior that involves a real or perceived power imbalance. Several different types of bullying have been identified: verbal, physical, and social/relational. With the increased use of social media, cyber-bullying has also emerged as another significant type of bullying. Parenting styles can vary from family to family. One of the most important components of parents’ styles is affection, or the amount of warmth, fondness, and liking expressed by the parent toward the child. We hypothesized that parents who are highly affectionate are less likely to have children engage in bullying behaviors. However, our findings did not support our hypotheses. The correlations between parenting style and bullying behavior are very small ($r < .10$), and no moderator variables that we measured influenced this relationship.

No prior meta-analysis on affectionate parenting in correlation to bullying in students has been done.
Feasibility of Installing a Sustainable Multiuse Trail at EKU’s Maywoods

Andrew Wiley

Mentors: Dr. Michael J. Bradley, Recreation and Park Administration
Dr. Melinda Wilder, Natural Areas

This study was performed to determine if a mountain bike trail would be feasible at Eastern Kentucky University’s Maywoods Environmental and Educational Laboratory. To determine this, the researchers created and distributed a needs assessment to students, faculty, staff, and local bike shops. The researchers performed analysis to determine if stakeholders showed interest in a mountain bike trail, and analysis shows a mountain bike trail that was supported by the stakeholders. The researchers identified specific criteria for sustainable mountain bike trails, and then performed a site evaluation to determine if the site would be appropriate for a mountain bike trail. Several trail measurements were taken at specific points on the trail and this data was analyzed alongside with the survey and sustainable trail criteria to conclude if a mountain bike trail would be appropriate for Maywoods. When researchers completed trail measurements, it became evident that a trail was not feasible at the proposed location or within Maywoods.

This study can show people how to perform a feasibility study for a mountain bike trail and what to consider before constructing one; it can also be a guide for constructing a mountain bike trail.
Gender Differences in Facebook Profile Content and Its Link to Personality

Alexandria Bryant

Mentor: Dr. Jonathan S. Gore, Psychology

This study examined how the profile pictures of participants’ Facebook were related to their personality traits. Participants \( (n = 198) \) recorded the number and type of profile pictures they had, especially those depicting themselves, and later completed a self-report survey that measured their personality on each of the traits. A surprising distinction among males and females was made. Males who depicted more close-ups of themselves in their profile pictures were found to be more depressed, to have less life satisfaction, and to be less securely attached. Males, who chose their profile pictures to be of themselves in a context such as playing a sport, were found to be more narcissistic and aggressive. Females, on the other hand, were found to be more agreeable when their profile pictures were of them smiling and having eye contact. It can be concluded from this study’s findings that profile pictures on Facebook are related to certain personality traits, which are different for males and females.

This is the first study to examine the nature of profile pictures involving oneself, and how it’s linked to personality differently depending on gender.
Exploring Coating Methods for Protein Containing Sensors

Connor Smith

Mentor: Dr. David Cunningham, Chemistry

Proteins have many biological functions for nature including catalyzing metabolic reactions, replicating DNA, and responding to stimuli in humans. While proteins are useful in their natural state, they can also be useful in man-made devices. One of these uses is in sensors, including the enzyme glucose oxidase that is used in glucose test strips commonly used by diabetics to test for glucose concentration in blood. The analyte tested in this example is glucose but other enzyme proteins can be used for a number of other analytes. For proteins to be used in sensors, they must first be accessible to the biological substance and thin coatings are necessary for the sensor to have a fast response. To explore ways to make thin coatings, we have dissolved the protein in a solution containing a monomer and photoinitiator, which was then coated onto a wafer or slide. The coating can then be treated with UV light to polymerize the polymeric monomer. This process immobilizes the protein, while still allowing a biological fluid to access the protein. The slide, or a portion of it, can then be used in a sensor to test for the analyte associated with the enzyme.

Solutions containing a protein, a monomer, and a photoinitiator have been studied. The solutions produced have been spin coated onto slides for examination of thickness of the coating and enzyme activity of the protein. Evaluations have been conducted visually with a microscope to determine the physical uniformity of the coating. UV absorption has been used for evaluation of the coating thickness and the enzyme activity of the protein. Stability tests have been conducted using formulations that were prepared and placed in nine different environments, varying in humidity and temperature with total study duration of nine months.

This study could lead to sensor coatings that are thinner and more stable at room temperature. Thinner coatings are less costly and generally give faster test results. The suitability of these new, thin coatings was evaluated to assess their physical and chemical stability.
An assessment of the 1966 flood of the Arno River, Florence, Italy, from new mapping of historical data

Chandler T. Hale, Whitney Tara Maynard, & Erin M. Watts

Mentors: Dr. John C. White, Geography & Geology
Dr. Tyler Huffman, Geography & Geology

The Florence basin in Italy has a great history of floods throughout the area, the most famous example being the 1966 flood of the Arno River on 3-4 November which resulted in 101 deaths, left more than five thousand families homeless, and destroyed or damaged a great amount of art. The Arno River is ~240 km long and drains an area of~8230 km², all of which located is Tuscany, Italy. Florence is affected by various climatological and physiographic factors that result in very large floods, which devastated the city in 1333, 1557, and 1844. After the 1966 flood of the Arno the city of Florence placed permanent flood markers around the downtown area to show the extent and depth that the flood reached throughout its duration. We collected GPS and elevation data based on these flood markers in order to map the extent of the 1966 flood. The most intense flooding occurred east of the Ponte Santa Trinita in the center of Florence. In order to understand why the flooding happened in this way we analyzed the terrain and urban structures that run along the Arno River.

This project was conducted as part of an independent study project during the 2013 KIIS Italy program. The students scoured Florence with GPS to document the extent of the flood.
Does child abuse positively correlate with borderline personality disorder?

Stevy Jones & Lauren Mahoney

*Mentor: Dr. Richard Osbaldiston, Psychology*

Abuse of any kind is a horrible event. Individuals are left with physical and emotional scars that can last a lifetime. Abuse during childhood can be detrimental to a person’s psychological adjustment during adolescence and adulthood. We sought to answer the research question, “Does child abuse positively correlate with Borderline Personality Disorder?” We analyzed 12 studies that compared different types of child abuse and the effects it has on Borderline Personality Disorder (BPD). For these 12 studies, the average effect size was \( r = .22 \). Emotional abuse had the highest correlation \( (r = .26) \) and then sexual abuse \( (r = .22) \). The other moderator variables did not have significant results. The average effect size is a moderate size, and it does show that there is an important correlation between abuse and BPD.

This study was the first meta-analysis of this topic that we know of.
Conservation genetics of crawfish frogs at Big Oaks National Wildlife Refuge

Dana Leigh

Mentor: Dr. Stephen Richter, Biological Sciences

Crawfish frogs (*Lithobates areolatus*) have been experiencing significant population declines across their range over the last several decades due to widespread habitat loss and fragmentation. The Big Oaks National Wildlife Refuge (BONWR) in southeastern Indiana, the easternmost locality of crawfish frog populations, houses recently discovered populations of crawfish frogs. We studied these populations to (1) determine the diversity and distribution of genetic variability among populations at BONWR and compare this to other genetic studies of crawfish frogs and (2) examine how landscape features and distance affect the distribution of genetic variability. We used 7 microsatellite loci to genotype frogs collected from eight sites on BONWR from the 2012 and 2013 breeding seasons. Data will be presented in the context of how landscape features and distance between sampling sites impact genetic variation and distribution across the landscape.

Data from this study will provide a better understanding of patterns of gene flow among crawfish frog populations on the BONWR, yielding data necessary to inform management initiatives for this endangered species.
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National Survey of the Model Aquatic Health Code

Keidre’ Long

*Mentor: Dr. Sheila Pressley, Environmental Health Science*

When it comes to recreation, the safety of the people is one thing that should not be ignored. As Swimming pools and spas have grown more popular over the years, so have the risks associated with using and going to these recreational places. Despite a large U.S. population potentially at risk, there has been limited federal guidance on how to best regulate the facilities. To date, pool codes are regulated at the local and/or state levels, which allows for variation by each state. The Model Aquatic Health Code (MAHC) has been drafted using best practices so the public will feel at ease about their personal health and safety at these establishments. The MAHC also provides uniform standard guidelines for states to consider adopting. The purpose of this research study is to ascertain the number of state departments of public health who have adopted the MAHC, which is recommended by Centers for Disease Control and Prevention (CDC). In addition each state department will be surveyed to determine how they are using the MAHC and to what extent they have changed standard operating procedures.

Many recreational water illnesses happen annually in the pool/spa environments that are preventable. According to CDC, more than 4,000 people suffer annually from chemical injuries associated with pools and spas and about 56.8% of spas are in violation of local ordinances.
Incidene of Antibiotic Resistant Genes in Well Water From South-Eastern Kentucky

Megan Holmes, Heath Ward, & Brook Johnson

Mentors: Dr. William Staddon, Biological Sciences  
Dr. Jason Marion, Environmental Health Science

The objective of this project was to determine if there are antibiotic resistant genes in well water samples collected from south-eastern Kentucky. Water samples were filtered (0.45µm) and then DNA isolated with a MOBIO PowerWater® kit. Polymerase chain reaction (PCR) was used to amplify the tetA gene and the products were separated by agarose gel electrophoresis. Evidence of tetA was seen in several of the well water samples. The implications of observing genes for tetracycline resistance are unclear but suggest that identifying their source warrants investigation.

Little is known about the incidence of antibiotic resistant genes in well water across southeastern Kentucky. This study suggests that further research in this area is warranted.
Do Close Relationships Have an Effect on Goal Attainment?

Amanda Brady, Nichole Davis, & Jennifer Wilson

*Mentor: Dr. Richard Osbaldiston, Psychology*

Everyone has goals that they desire to achieve in their lives. These goals span across many areas: relationships, education, career, health, etc. There are many factors that motivate people to achieve those goals. We were specifically interested in examining how goal attainment was different if people were personally motivated or if they were motivated by a significant other in their lives.

Our research question was: “Do close relationships have an effect on goal attainment?” We located studies that compared personally-autonomous reasons (PAR) in children and adults to relationally-autonomous reasons (RAR) in children and adults.

We compared 19 studies that analyzed this relationship. They found that RAR ($d = 0.27$) for goal pursuit were higher than PAR ($d = 0.18$). Comparing children to adults, a larger difference was found: RAR in children ($d = 0.30$), RAR in adults ($d = 0.26$), PAR in children ($d = 0.70$) and PAR in adults ($d = 0.15$).

No previous meta-analysis has been done on the effects of close relationships on goal attainment.
Studying the Effects of Movement and Music on Depression in Geriatric Patients

Whitney Peters

Mentors: Dr. Robert Mitchell, Psychology  
Dr. Rosanne Lorden, Psychology  
Ms. Cheryl L. Ramey, Psychology

Many geriatric people have problems with depression. In the poster, I examined treatments in music and movement to lower depressive mood. Overall, my findings indicate that dance/dance therapy did not have an effect on depression. Exercise had some effect on lowering depression, but only by exercising regularly and for a certain amount of time each day. Music/music therapy had some effect on lowering depression as well, but the results seem biased.

There is not much research on this topic, and the elderly population will greatly benefit from something other than pharmacology to alleviate their depression.
A Mixed-Method Assessment of Urban Flooding in Richmond, Kentucky to Aid Mitigation Efforts

Nicholas Middleton

Mentors: Dr. Don Yow, Geography & Geology
Dr. John White, Geography & Geology

Repeated urban flooding events in Richmond, Kentucky have prompted city officials to evaluate its existing storm water infrastructure and develop appropriate strategies to mitigate flooding hazards. A portion of downtown Richmond was constructed in the floodplain of Dreaming Creek. The stream’s headwaters are on the northern side of Eastern Kentucky University’s (EKU) Richmond campus and its channel roughly follows portions of present-day Second Street and Water Street in downtown Richmond. Replacing natural land covers with impervious surfaces on EKU’s campus exacerbates flooding in the downtown area downstream. Preliminary investigation reveals numerous businesses along this course have experienced flooding issues in the recent past. Qualitative assessment of more detailed follow-up interviews with these entities will allow us to create cascading threat models to identify the causes and severity of the hazard’s impacts. The cascading threat models will be supplemented by quantitative analysis of both real and hypothetical flooding events. The Dreaming Creek watershed will be divided into sub-watersheds using digital elevation models and the amount of impervious land cover within each sub-basin will be calculated using remotely sensed imagery. This information will then be used to calculate potential storm water volume running off of these surfaces for a given amount of precipitation. Empirical estimates will quantify the volume of storm water exiting each sub-watershed and thus the infrastructure needed to accommodate the incoming flow. Any areas producing exceptionally high storm water volume will be evaluated for potential methods to reduce runoff rates such as temporary water capture and storage. Ultimately, the combination of qualitative and quantitative analysis will lead to the development of well-reasoned mitigation strategies to lessen the frequency and impact of urban flooding in downtown Richmond.

To identify variables, using geospatial techniques, which contribute to urban flooding in the area of downtown Richmond, KY and utilize mixed methods to help prevent and mitigate future flooding in the area.
Choosing and Implementing an Electronic Health Record Using the Systems Development Life Cycle Model

Caleb Cobane, Jessica Price, Alecia Oldfield, Madison McKinney, Ashley Baker, Nancy Nduhira, & Matthew Harris

Mentor: Cathy Andersen, Health Promotion and Administration

Healthcare is changing rapidly and the adoption of new technology is quickly becoming the norm. This demonstration project selected an Electronic Health Record (E.H.R.) System for a privately owned and operated outpatient Nephrology clinic. Surveys completed by the clinic’s administrative and clinical staff identified the need for information technology, including mobile applications, clinical modules, business support, and the ability to connect to the Kentucky Health Information Exchange (KHIE). The student team acted as the clinic’s Performance Improvement Team to evaluate the nephrology practice in its current state and then choose an E.H.R. vendor to best suit the needs of the practice. Several vendors were considered, with the final choice made after utilizing several analysis tools, including the Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis, the fishbone diagram, numerous flow charts, and a cost-benefit analysis. Once the E.H.R. system was chosen, the team developed security policies for the new system and planned training and implementation procedures. Evaluation plans were also put in place for future evaluation of the new E.H.R. system.

Using an E.H.R. system allows the clinic to share patient data with KHIE. In turn, KHIE shares the data, within legal constraints, with other health care providers. The ultimate goal is improved patient care.
Childhood Disorders as Predictors of Adult Antisocial Behavior

Adam Kimbler, Tessa Conlin, Alajywon Dean, & Kayla Pingleton

Mentor: Dr. Richard Osbaldiston, Psychology

Antisocial behavior is thought to be strongly related to criminal activity, and as many as 47% of men and 21% of women exhibit the criteria to be diagnosed with antisocial personality disorder (ASPD). In this study the researchers were seeking to answer the question “What common childhood disorders are predictors of adult antisocial behavior (AAB)?” A meta-analysis of 13 studies was conducted to analyze the relationship between specific childhood disorders and adult antisocial behavior, and the overall effect size was $r = .29$. The strongest predictor was substance abuse disorder ($r = .31$) followed by conduct disorder ($r = .29$), attention deficit hyperactivity disorder ($r = .20$), and anxiety disorder ($r = .07$). In conclusion, several childhood disorders have a small effect on the prediction of adult antisocial behavior and it may be beneficial to focus on these childhood disorders in order to prevent future antisocial behavior.

No meta-analysis has been conducted examining these specific disorders as predictors of adult antisocial behavior.
Identifying Eastern Wild Turkey (*Meleagris gallopavo*) roost site preferences with regard to geographic features

Chelsea Czor

*Mentor: Dr. Tyler Huffman, Geography & Geology*

The purpose of my research is to identify geographic features that wild turkeys seem to prefer during roost site selection. I obtained a restricted area badge through the Bluegrass Army Depot (BGAD), here in Richmond, to gain access to restricted areas where wild turkeys can be observed. During the summer of 2013, using a hand held GPS unit, I identified roost trees (visually or by sign) and recorded the coordinates of these sites. Various GIS layers (land cover, water features, slope, aspect, etc.) and ArcMap functions were used to determine wild turkey preference for roost sites within my study site. I expect to find some preference regarding water availability and habitat type (grasslands vs. forested areas) in roost site selections.

Implications include recognition of roost site preferences in order to more easily identify turkey roost sites in the future and determining turkey roost sites remotely through GIS.
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Effects of Dissolution of Biomass in Ionic Liquids Using Direct Analysis in Real Time (DART) Mass Spectrometry

Casey Howdieshell

*Mentor: Dr. Darrin Smith, Chemistry*

Biomass has become increasingly important in recent years. Through pretreatment and saccharification processes, sugars produced by algae result in biofuel production. For these processes to occur, cellulose must be separated from hemicellulose and lignin components. Major obstacles in development of these processes are lignin, an organic polymer that contributes to plant cell wall stability. Ionic liquids are low-temperature molten salts that possess chemical and physical properties which aid in dissolution of whole biomass. This study focuses on the interactions of quiescent switchgrass (*Panicum vigatum*) with nine different ionic liquids. These interactions were tested using microscopic techniques as well as Mass Spectrometry coupled with a DART ion source. The capacity for dissolution in various ionic liquids was quantified. Results from these studies show the effectiveness and parameters for separation of biomass components. Effective separation will lead to a better biofuel yield as well as potential for commercial scale lignin production.
In Vitro Fertilization: Scientific Advancement or Ethical Dilemma?

Andi Fields

*Mentor: Minh Nguyen, Honors Program, Philosophy and Religion*

In order to evaluate the debate over *in vitro* fertilization, I begin by articulating the various positions on this issue. I discuss the side opposing *in vitro* fertilization first, considering an argument advanced by the Roman Catholic Church, as well as an argument formulated by an expert within the scientific community. I then outline considerations in favor of *in vitro* fertilization by discussing its capacity to increase fertility and full-term pregnancies for those couples that have issues bearing children, as well as the important role it plays in contributing to scientific advancement. All things considered, although some may have a problem with the procedure, it is beneficial for the majority of society and religion should not impede scientific advancement.

This presentation outlines and assesses the scientific and moral arguments for and against *in vitro* fertilization. All things considered, the procedure is beneficial for the majority of society and religion should not impede scientific advancement.
Meta-Analysis of the Effect of Substance Abuse on Family Relationships

Dennis Deeken, Cody Vogelpohl, Kevin Gaerke, & India Barger

*Mentor: Dr. Richard Osbaldiston, Psychology*

It is estimated that 23.5 million people suffer from substance abuse disorders. Not only does substance abuse have a negative impact on the misuser but on others around them as well, and with such a large number of people struggling with addictions there must be a significant effect on society. It was decided to research, specifically; about the effect that substance abuse has on the family. To conduct the research, 20 studies that focused on how substance abuse affects familial relationships were included in this meta-analysis and categorized by internal and external conflicts. For these studies the average effect size was $r = 0.13$. We concluded that substance abuse does have a significant effect on the cohesion of families as a whole and that the individual lives of the family members are affected by their relative’s substance abuse problem.

This is the first meta-analysis on this topic that we know of.
Tholins: A study of Chemistry in Titan's Atmosphere

Walter Para

Mentor: Dr. Donghui Quan, Chemistry

The largest moon of Saturn, Titan, has an atmosphere rich in organic molecules. The conditions and components of Titan's atmosphere are similar to those of Primordial Earth. A class of compounds called Tholins has caused particular interest. Tholins are an organonitrogen-heteropolymer that is highly conjugated and very abundant in the atmosphere. Experiments done to synthesize Tholins have yielded interesting results. When Tholins are reacted with a solution of nitric acid, amino acid residues are produced. This leads to the possibility that these compounds could help form of carbon based life forms. In order to better understand the chemistry of Tholins and related compounds, computer modeling is necessary. This project focuses on investigation of radical reaction pathways that could lead to Tholins' formation and destruction. The project will calculate an abundance of Tholins in Titan's atmosphere and compare these to observations.

Study of Tholins could help shed light on the origins of carbon-based life.
Appalachia, Attitudes toward Authority and GPA

Sarah Thompson

*Mentor: Dr. Jonathan S. Gore, Psychology*

Previous research on Appalachian students has shown that collectivistic regional values play a role on academic performance. No previous research has examined college student’s attitude towards authority and its connection to GPA. It is hypothesized that the link between positive attitudes toward authority and GPA will be stronger among Appalachian students than among non-Appalachian students. Participants were 187 college students from Appalachia and non-Appalachian regions that completed survey assessments to measure attitude towards authority, regional origin and GPA. A regression analysis confirmed the hypothesis. Students from Appalachia with a positive attitude towards authority were more likely to have higher GPAs than non-Appalachian students. There was no relationship between attitude toward authority and GPA for non-Appalachian students. This suggests that regional values are important to a student’s success.

This is the first study to examine how Appalachian origin influences how perceptions of one’s instructors is linked to academic performance.
Comparison of *Odonata* Populations in Natural and Constructed Emergent Wetlands in the Bluegrass Region of Kentucky

Brittany A. Brookshire

*Mentor: Dr. David Brown, Biological Sciences*

With the degradation and destruction of many natural wetlands in Kentucky, there are high incentives to look at the remaining natural wetlands and the new artificial wetlands that are beginning to become prevalent among biologists. Wetlands are important to dragonfly populations just as dragonflies are vital to wetland function. In my study I looked at the fluctuation in *Odonata* (dragonfly and damselfly) populations at ten artificial wetlands and ten natural wetlands in the Inner Bluegrass region of Kentucky. In my study the dragonfly populations were monitored based on Shannon and Simpson's diversity, Species richness, and number of individual and species numbers. The wetlands were also compared on a season-to-season basis and the health of the wetlands was considered using a rapid assessment method. My research found that the artificial wetlands, though they scored low on the rapid assessment method, scored high in all categories except for species richness in the fall season of data collection. This study can be important in discovering the differences between natural and artificial wetlands, since Odonates are such an important biological indicator of wetland health and function. This could be vital in increasing the health of remaining natural wetlands and new artificial wetlands that are being created to supplement the lack of many of Kentucky's natural wetlands.

This project helps to build the needed data about artificial wetlands and adds on to the data already gathered for natural wetlands. It also gathers an Odonate species list for Madison and Fayette Counties.
Gender Differences in Religious Orientation and Psychological Well-Being

Jeremy Gibson

*Mentor: Dr. Jonathan S. Gore, Psychology*

Religion, a popular topic of research in today’s world, has previously been associated with positive and negative effects on individuals. In the present study, the association between religious orientation and well-being, and the differences between men and women, was examined. College students \((n = 501)\) took an online survey regarding their Christian religious orientation and current psychological well-being. Religious orientation was defined as Extrinsic, Intrinsic, Quest, or Orthodoxy. It was predicted that differences in the associations between religious orientation and psychological well-being would emerge between the sexes. Results of the study showed significant differences among gender. Male’s religious orientation \((n = 118)\) showed no significant correlation with any positive or negative psychological well-being variables. Women’s orientation \((n = 381)\) showed significant correlations regarding Intrinsic, Quest, and Orthodoxy. For women, intrinsic association was positively correlated with self-esteem, life satisfaction, and meaning in life, while negatively correlated with stress and depression. Quest orientation was negatively correlated with self-esteem, and life satisfaction, while positively correlated with stress and depression. Orthodoxy was positively correlated with self-esteem, life satisfaction, hope, and meaning in life, while negatively correlated with stress and depression. These results indicate that, while male religious orientation shows no relationship with their well-being, female religious orientation has a significant relationship with their psychological well-being.

This is the first study to examine these associations using several forms of religious orientation and well-being, and it is the first to examine gender differences in this association.
Time-Dependent Modeling of Interstellar Nitrogen Bearing Organic Molecules

Allison Durr

*Mentor: Dr. Dongui Quan, Chemistry*

Relatively dense regions known as interstellar clouds are found in the interstellar medium, which lies in between the stars. These interstellar clouds are rich in chemistry. Many molecules, including organic ones, were detected toward these interstellar clouds. Sagittarius B2 (Sgr B2) is one of these interstellar clouds where, very recently, nitrogen bearing organic molecules, such as CH3CHNH, has been detected. Chemical modeling is needed to understand the mechanism for forming the nitrogen bearing organic molecule in Sgr B2. Several time-dependent models are suggested to simulate the complex physical conditions of Sgr B2. The possible formation channels of the nitrogen bearing molecules can be in the gas phase or on the surface of the dusts in the interstellar cloud followed by desorption into the gas phase. The nitrogen bearing molecules can be destroyed via various chemical processes. In kinetics models, some reactions can be dominate to the overall fractional abundance of the molecule of interest. The results from the modeling will be analyzed and compared with observed abundances. The major formation and destruction chemical reactions for the nitrogen bearing organic molecules will be identified and predictions of any related species could be reported.
Medical Issues with Auto Accidents Solved

Jessica Dove

*Mentor: Minh Nguyen, Honors Program, Philosophy and Religion*

With the support and encouragement of the Indiana Volunteer Fire Association, I created the medical alert sticker and ID program. The medical alert sticker and ID program consists of a simple sticker that is placed on the front and back windshields of vehicles to help identify medical issues that a person inside might have. The sticker will indicate for emergency personnel to look inside the glove compartment for an identification card. This card contains the basic identifying information about the person and a brief medical history that will follow the person to the hospital. The purpose of this program is to help identify allergies and other medical issues that could affect the treatment of the patient. Not only will this help the patient, but also police can help identify a possible difference between a drunk driver and a victim of a diabetic attack. Finally, allergic reactions to latex and other medications used in hospital settings will be resolved prior to the patient’s arriving in the emergency room by ambulance. This program will be used in auto accidents and with regular drunk driving patrols.

This poster concerns the medical alert sticker and ID program created to help citizens involved in auto accidents. This program will better prepare emergency responders and health care professionals to manage the victims’ medical issues.
Deaf Studies Through the Eyes of Anthropology

Emily Skanes

Mentor: Dr. Jennifer Wies, Anthropology, Sociology, and Social Work

For the years, the Deaf community has struggled to achieve their language to be seen as a true language and to have empowerment. Research in anthropology has aided the community in this effort by answering questions like: Is Sign Language a real language, what is deaf culture, and how do deaf view their identity? The concepts discussed include: deaf community, culture, identity, membership, ethnicity, and deafness vs. Deafhood. This Literature analysis will identify the efforts previous studies have done and identify what questions still need to be addressed. This paper suggests that more ethnographic research should be conducted with the deaf culture.

This Literature analysis will identify the efforts previous studies have done and identify what questions still need to be addressed. This paper suggests that more ethnographic research should be conducted with the deaf culture.
Alexithymia and its correlation with Post-traumatic Stress Disorder

Megan Fuller & Chris Miracle

*Mentor: Dr. Richard Osbaldiston, Psychology*

Post-traumatic Stress Disorder (PTSD) affects nearly eight million American adults. An issue that is related to PTSD is alexithymia. Alexithymia is defined as the inability to identify or describe your own emotions, and it generally involves a lack of empathy for others. A meta-analysis was performed to determine whether there was a relationship between alexithymia and PTSD. We located 19 studies with a total of 4,652 participants that compared people who had PTSD from childhood trauma, rape, military combat, and surviving the Holocaust to non-PTSD controls to. Each participant was given a Toronto Alexithymia Scale (TAS-20), and the results showed that there was a strong relationship between Alexithymia and PTSD ($d = 0.37$).

There has not been a previous meta-analysis on this topic.
Phylogenetic Supermatrix Analysis of the Flowering Plant Family Podostemaceae

William Ciocca

Mentor: Dr. Brad Ruhfel, Biological Sciences

Podostemaceae is the largest strictly aquatic flowering plant family with approximately 270 species. Their distribution is throughout the tropics, though a few species occur in temperate regions, including one species native to Kentucky. However, several species are critically endangered, and all species are restricted to rivers, an environment that is currently experiencing major changes due to human interaction in tropical areas through the expanded use of hydropower. In order to improve conservation efforts of these species, more needs to be known about the members of this family. Several recent molecular studies have sought to clarify relationships within Podostemaceae. However, data from these studies have not been combined in one comprehensive analysis. Our goal is to assemble all currently available molecular data and evaluate the evolutionary relationships of the members of Podostemaceae. To do this, we first collected the molecular data from eight previous studies via GenBank. From there, we aligned each gene region while maintaining reading frame. The alignments were then trimmed of poorly aligned regions and then concatenated. Finally, we conducted a supermatrix analysis of the data in a maximum likelihood framework. As a whole, the results agree with previous published studies on Podostemaceae, with improved support of the backbone of the phylogeny. One contradiction is the placement of Diamantina, which is placed as sister to the primarily Paleotropical clade of Podostemoideae, albeit with weak support. Fifteen taxa are supported as non-monophyletic and future investigation is needed in each case to reaffirm these discrepancies.

This research presents a new hypothesis of evolutionary relationships within Podostemaceae using all currently available molecular data. These results will help to develop a working taxonomy, which is needed for effective conservation efforts.
Natural Frequency of Polyvinyl Chloride (PVC) Pipes as a Function of Temperature

Bong Han Lee

*Mentor: Dr. Jing Wang, Physics and Astronomy*

Polyvinyl Chloride (PVC) is the most widely used plastic in the world, where it is mainly utilized as pipes for municipal and industrial applications. Due to its practical application in construction, it is crucial to analyze and determine its physical properties in order to prevent unforeseen damages. As wave phenomenon is inherent within matter, wavelike properties can utterly describe the physical conditions of a material. This wavelike property that identifies the mass, dimensions, and stiffness of the material is also known as natural frequency. The importance of the study of natural frequency enables us to not only understand the wavelike properties that identify the material but also to prevent damages with the material, such as resonance. As PVC pipes are exposed to many environmental conditions, it is of paramount importance to investigate the natural frequency of PVC pipes under these conditions in order to prevent resonance. Hence, this research will primarily investigate the effects of the variation of temperature in the natural frequency of the PVC pipes. The relationship between identified natural frequencies and measured temperatures for the PVC pipes will provide us with detailed insights of the wavelike behavior of PVC material constraint in the shape of a pipe as well as to predict its other physical boundaries.

The relationship between identified natural frequencies and measured temperatures for the PVC pipes will provide us with insights of the wavelike behavior of PVC material as well as to predict its other physical boundaries.
The Effect of Incubation, Mind Wandering, and Fixation on Creative Problem Solving

Joshua Back

Mentor: Dr. Catherine Clement, Psychology

An incubation effect refers to improvements in problem solving after an individual takes a break from working on the problem. Previous research suggests several explanations for incubation effects. For example, some research has shown that subjects benefit most from a break when they are given an undemanding rather than a demanding task during the break (incubation period) (Baird, Smallwood, Mrazek, Franklin, & Schooler, 2012). The undemanding task allows mind wandering, which is believed to create the opportunity for new insights into previously attempted problems. Other research has shown that a break allows subjects to overcome fixation on overly narrow approaches to a problem (Smith & Blankenship, 1989). In the present study we further explore these explanations. EKU Psychology students are asked to solve Unusual Uses Problems (e.g. find “unusual uses for a brick”) (Guilford, 1967). We look at success on second attempts to solve these problems among subjects who either do not receive a break, receive a break that includes a demanding task, or receive a break that includes an undemanding task. We also vary whether the problems initially given to subjects are presented in a way that does or does not induce fixation on a narrow range of solutions. We predict that a break with an undemanding task will lead to the greatest success later on previously attempted problems. We also examine whether the effectiveness of a break depends on prior fixation.

Prior research into incubation has not combined the effects of mind wandering with the effects of experimentally controlled fixation, and has not looked at fixation with the kinds of creative reasoning problem used here.
Effectiveness of PTSD Therapy Treatments for Veterans: A Meta-analysis of the Last Decade of Research

Denise Patrick, Patricia Ward, Virginia Jones, Elizabeth Haas, & Heather Petrone

Mentor: Dr. Richard Osbaldiston, Psychology

PTSD in veterans is both common and debilitating. About 30% of veterans returning from Vietnam had PTSD, and about 20% of veterans returning from Iraq have it, also. PTSD inhibits healthy adult life. Veterans with PTSD suffer from depression, substance abuse, and a variety of other negative life outcomes at much greater rates. Thus, it is important to determine the most effective treatments for veterans with PTSD. For this meta-analysis, we located 30 studies that compared non-pharmaceutical treatments for PTSD in veterans. All studies used a research design that was either pre-post or randomized clinical trial. Of the six types of treatments, all were shown to be fairly effective, but the most effective were prolonged exposure therapy and group-based exposure therapy. Both outpatient therapy and remote therapy (phone or internet-based) were more effective than inpatient therapy, but with the caveat that most inpatient patients probably had more severe symptoms to begin with.

This research focuses on non-medical PTSD treatments for veterans—no such meta-analysis has been done recently.
Home is where my stuff is: Students in transition and how possessions create home

Viviane Billings, Kendall Borders, Lingjie Cai, Janelle Coates, Nathan Eisenberg, Nicholas Gray, Nayoung Lee, & Jeremy Ray

*Mentor: Dr. Karen Hood, Management, Marketing and International Business*

The concept of "home" is different for every individual (Beaudrillard 1996), and the meaning of home is captured in the consumer value chain, specifically in how consumers use objects to create a home. Consumers acquire, use, and dispose of objects, assigning value along the way (Miller 2012). These objects also reflect the owner's concept of "self" in the process. Through these objects and their respective value that consumers construct meaning which reflects their cultures and their own identities. In the US, it is common for individuals to have several homes throughout their lifetime. Students create new homes when they come to college, whether in a dorm or apartment. This study looks at how students create “home” while attending EKU and their choices to acquire, move, store or dispose of possessions that in one place represent their concept of home, but may not do the same in another location. Using an ethnographic approach of "grand tour" interviews (Fetterman 1989) and in the tradition of consumer culture theory, our results will show common themes and processes of how students apply meaning to possessions and make decisions about those possessions in an effort to create a home in a new location.

This study will help us understand students as consumers better, and may provide insights that are valuable to university programs focusing on making students feel at home and be more productive while they're here.
Projecting the Self into a Virtual World

Kevin Smith

*Mentor: Dr. Catherine Clement, Psychology*

The purpose of the present study was to examine the effect of perspective-taking instructions (PTI) on (a) the tendency to project aspects of the self onto a video game character and (b) the degree “telepresence” within a virtual world. Perspective taking instructions encourage subjects to imagine themselves as a story character. It has been found in the past that PTI may cause an individual to merge identities with a story character in written stories (Goldstein & Cialdini, 2007) and films (Davis et al., 1996). This study replicated these findings using a video game. Male video gamers played a video game and completed character trait measures about themselves and about the game character. Subjects given perspective-taking instructions (PTI) had more overlap in the character traits ascribed to themselves and the character than did control subjects. PTI did not significantly impact telepresence. Positive and negative implications of these findings are discussed.

This is the first study to apply research on perspective taking to the video game environment. Results have implications for understanding empathy.
ABSTRACT UG 42

SWOT Analysis Applied to Therapeutic Recreation Services

Lindsay Dame

Mentors: Dr. Michelle Gerken, Recreation and Park Administration
Dr. Jon McChesney, Recreation and Park Administration

This qualitative study utilized a panel of four recognized experts in the field of therapeutic recreation for the SWOT analysis. There are currently 54 million Americans living with a disability, 830,000 of those people are living in Kentucky. 153,000 Kentuckians (4.0% of the population) have difficulties performing activities of daily living. The need for Therapeutic Recreation services is visibly needed, hence this qualitative study.

The purpose of this research is to define and determine the strengths, weaknesses, opportunities and threats to the field of Therapeutic Recreation. Strengths include holistic benefits, national and state statistics, personal interviews of the benefits of therapeutic recreation. Weaknesses of Therapeutic Recreation are insurance reimbursement in Health Care Services, and disconnect between academia and practitioners. Opportunities of therapeutic recreation include licensure for Kentucky, and help with the increased employment opportunities. Threats include the slow elimination of Therapeutic Recreation services in Kentucky.

The importance of this study is to show that there is a need for Therapeutic Recreation in the state of Kentucky and a real risk to it disappearing if nothing is done about it.
Watershed GPA?

Patrick Creager

Mentor: Dr. Alice Jones, Geography

In an effort to raise awareness of water quality issues and encourage citizens to be active in watershed protection, Kentucky River Watershed Watch (KRWW) has trained and organized volunteer monitors for more than 15 years. The challenge to organizations like KRWW is how to communicate the results over both time and space in a meaningful and easily understandable way to citizens who just want to know “is something wrong with my stream,” and “can I help fix it?” This project attempts to first assign a letter grade ranging from A to F based on the water quality parameters collected by Kentucky River Watershed Watch; and then use a series of easy to interpret maps to communicate these “grades” to the public. Each parameter is given a grade based on either the regulated standard or proposed limits (when there is not a standard.) All of the “grades” for a site are then aggregated into a composite grade for each site. The grades are then mapped using ArcGIS software and converted into KML format viewable using Google Maps to help viewers to see where the overall problems in the watershed exist at a quick glance; and also to view the specific parameters of a given site or set of sites to determine reasons for poor scores. Challenges in assigning individual site scores as well as creating simple but easily interpretable maps are discussed. The overall goal is to assist citizen water monitoring organizations communicate data more easily and effectively with their volunteers.

This project is designed to educate and communicate to the general public where water quality issues exist and where remediation efforts should occur.
Meta-Analysis on the Factors of Attrition

Dustin P. Griffin, Brendan Kirwan, & Jordan Hensley

Mentor: Dr. Osbaldiston, Psychology

This study meta-analyzed factors that influence job attrition. Attrition directly relates to a business’s greatest expense: the hiring, firing, and training of new employees. Twenty-three studies were synthesized into nine categories of factors, including worker type, turnover intention, reasons for leaving, job satisfaction, service history, demographics, individual characteristics, worker type, and social organization.

The factors accounted for an overall effect size of $r = -0.05$. The variable of worker type ($r = -0.17$), job satisfaction ($r = -0.17$), and social orientation ($r = 0.12$) were found to have the greatest effect size.

The implication of these results is that businesses that are looking to decrease attrition of their workers should focus on these three variables.

No former meta-analysis has been done for job attrition factors.
“Effects of Body Condition on Pregnancy in Moose: Is Fatter Better?”

Jesse Godbold

*Mentor: Dr. David Brown, Biological Sciences*

In many mammals, body condition, often assessed by measuring rump fat depth, has been found and related to pregnancy and reproductive success. Currently, there is a perceived decline in the Utah moose population. While moose occur further south due to transplants, Utah moose are significant because they represent the southernmost distribution of the species’ natural colonization and their body condition has not been evaluated. If moose are declining, evaluating body condition is a logical starting point in determining the contributing factor(s). R/K theory suggests there should be a nonlinear relationship between rump fat and pregnancy in moose (K-strategist) and there should be a fat-pregnancy threshold. However, most studies have only reported linear relationships, assuming fatter is better, which has important implications for moose management. To evaluate this relationship 120 cow moose were fitted with VHF collars in winter 2013 as part of a larger survival study. Pregnancy was assessed using a blood-serum assay. Of the 50 moose with body condition evaluated, 76% were determined to be pregnant. To assess the influence of rump fat depth on pregnancy a multiple logistic regression model was constructed. Results show a nonlinear relationship between rump fat depth and pregnancy with a threshold depth of 2mm and an equal likelihood of pregnancy past 2mm. These results are consistent with R/K theory, suggesting moose are resilient to environmental change (changes in rump fat) and if a decline in Utah moose is occurring, it is likely not due to a lack of females getting pregnant.

Study suggests if there is a decline in Utah moose numbers it is likely not due to a lack of females getting pregnant and that rump fat can used to evaluate body condition in moose.
The Lurking Element: A Study about the Dangers of Lead in Northern Kentucky Toy Vending Machines

Brittany Wells

*Mentor: Dr. Sheila Pressley, Environmental Health Science*

Imagine yourself walking into a Family Dollar store with a young child. As soon as you reach the door, the child is drawn to the vending machines that contain numerous toys. As a parent, you give your child a couple of quarters to get a toy of his or her choice. After the child receives the toy, she marks it by licking and chewing it. As a consumer, we tend to believe those toys are safe for use, but sometimes those toys can contain toxic chemicals, such as lead and other metals. In the environmental health field, lead exposure has been decreased tremendously over the past three decades. Even though this is true, there is more work to be done, especially in the toy vending machines in public places. A study was conducted by collecting numerous toys from the Northern Kentucky River Region and examining them with the XOS HD Prime TM Analyzer provided by Eastern Kentucky University. This study was created to illustrate that toy vending machines place children at risk for lead exposure, and that people need to be made aware. Results and conclusions are pending and should be completed by April 18th.

Researching lead is important because it can do damage to the central nervous system. I have chosen to analyze vending machine toys because these toys could potentially put a child at risk for lead exposure.
Effectiveness of Treatment on ADHD

Sarah Thompson, Kari Goodrow, Lindsey Walton, & Joe Livingston

*Mentor: Dr. Richard Osbaldiston, Psychology*

In the United States, millions of people are affected by Attention-Deficit/Hyperactivity disorder. There are several different options a person suffering from ADHD can pursue to lessen their symptoms. In this study, a meta-analysis was performed to test the efficacy of different treatment options for ADHD. Using 20 studies that analyzed the relationship between treatment type and its effect, the overall effect size was $d = 0.61$, representing a moderate relationship. The type of treatment the participants received had a large effect on the results. Therapy had the greatest effect on the participants, followed by medication then other types of treatment. The age of the participants also had a large effect on the results. Children that received any type of treatment did better than adults who received treatment.

No prior meta-analysis has been done on the effectiveness of treatment on ADHD.
Creating a Geospatial Inventory of Stormwater Drainage Features on Eastern Kentucky University’s Campus to Aid Urban Flooding Mitigation in Richmond, Kentucky

Ezra Dorsey & Whitney Tara Maynard

*Mentor: Dr. Donald M. Yow, Geography & Geology*

Repeated urban flooding events have occurred in downtown Richmond roughly between Water Street and the northern boundary of Eastern Kentucky University’s campus. Runoff from EKU’s campus is the primary source of storm water that drains into this area. Until now, no one had collected spatial data and pertinent attributes for anthropogenic drainage features on EKU’s campus. These data are critical information for evaluating the flooding situation in Richmond. To create an original spatial dataset, students in EKU’s department of Geography and Geology combed EKU’s campus to locate all storm water features. Each feature was geo-located using Trimble Juno SB handheld GPS units. Students also collected pertinent attribute information for each feature. These data were entered into a GIS, crosschecked with field notes, corrected as necessary, and mapped.

A total of 591 storm water features were mapped on campus: 68 storm sewer covers, 98 yard drains, 58 curb inlets, 54 area drains, 5 trench drains, 89 leaders off roofs, 15 culverts, sanitary sewer covers, and 94 miscellaneous drains. The large number of drainage features can be seen as a positive for storm water management as numerous opportunities for better storm water management exist. Two recommendations we have are installing rain barrels on some of the roof leaders, and placing one or more underground storage containers at strategic locations. Both strategies would decrease the volume of storm water heading toward downtown Richmond, reducing the incidence and severity of urban flooding events.

The City of Richmond has contracted CDP Engineers from Lexington, KY to develop a master plan for Richmond, which includes storm water management. The original GIS data collected during this project were shared with CDP to help them with their efforts.
The Association of Agency with Psychological and Physical Health

Cecily Stilley

*Mentor: Dr. Jonathan S. Gore, Psychology*

Agency is the amount of control people feel over their life. This study tested the prediction that agency is associated with both psychological well-being (i.e., high self-esteem, low stress and depression) and physical well-being (high exercise and health food consumption, low BMI, and low junk food consumption and substance use). Participants \((n=577)\) from psychology classes completed online surveys that assessed the participant’s levels of agency, self-esteem, stress, depression, exercise, junk food, health food, substance use, and BMI average. The results of bivariate correlation analyses showed that agency was positively correlated with self-esteem, and negatively correlated with stress, depression, junk food and substance use. The hypothesis was partially supported. These results show that agency may be linked more so with the avoidance of unhealthy behaviors than with the promotion of healthy ones.

This is the first study to examine the role of agency across multiple health outcomes.
The effectiveness of various treatments for depression

Gentry Hayes, Alexandra Szarabajko, Taylor Thomas, & Cody Martinez

Mentor: Dr. Richard Osbaldiston, Psychology

Depression is one of the most commonly occurring mental disorders in our society today. The purpose of this meta-analysis is to determine whether there are any significant differences between various forms of depression treatments. Some estimates show depression occurring in 9.1% of adults nationwide, with up to 4.1% of adults meeting criteria for severe depression. According to the 16 research articles compiled for this meta-analysis, the most effective treatment for depression is Cognitive Therapy, which scored much higher than the other treatments examined in these studies. With so many people suffering from depression, there is a need to provide effective therapies, and it seems that Cognitive Therapy is the most effective treatment.

No prior meta-analysis on measuring which treatment type is the most effective for treating depression has been done.
Social Media and the News

Jacob Blair

Mentor: Minh Nguyen, Honors Program, Philosophy and Religion

It wasn’t that long ago that wire presses and newsprint were commonplace to receive news information. Then that changed when radio and television began to broadcast news and today online coverage through news station or newspaper websites along with social media websites are where more and more people are looking to receive news. It used to be you that had to wait until the 11 p.m. newscast to see if anything happened after 6 p.m., but that is not the case any longer. It used to be that to see if storms were heading your way, even days in advance, you had to watch the local weather or The Weather Channel, but that is no longer the case. If you missed a high school or college athletic event, you had to wait for friends to tell you, pick up the newspaper the following day, or wait for sports at the tail end of the newscast, now people are tweeting scores almost non-stop. The way news is perceived by the general public has changed. If you want news, fast, this presentation will show that there is no better place to turn today than social media.

This presentation looks at how we used to get news information and how times have changed to where most news information is readily available on social media sites.
ABSTRACT UG 52

Linking the Triarchic Model of Psychopathy to the MMPI-2-RF

Jade A. Petty

Mentor: Dustin Wygant, Psychology

Psychopathy is a personality disorder characterized by a collection of pathological traits that include deficits in affective and interpersonal functioning as well as various behavioral problems. The Triarchic Model of Psychopathy was recently proposed as a means of capturing the phenotypic variance of the disorder with the constructs of meanness, boldness, and disinhibition. The purpose of the present study was to examine the triarchic factors of psychopathy in relation to the MMPI-2-RF in a sample of 139 incarcerated male offenders. We used exploratory structural equation modeling to identify the triarchic constructs with indicators that included the 4 facets of the Psychopathy Checklist-Revised, 8 content scales of the Psychopathic Personality Inventory-Revised, and the 3 scales of the Triarchic Psychopathy Measure. The model exhibited mediocre fit (CFI=.91, RMSEA=.10, SRMR=.045); the factor loadings conformed to a conceptually accepted pattern. As such, this model was accepted as a latent representation of the triarchic psychopathy model. MMPI-2-RF scales were related to the triarchic factors in a conceptually relevant fashion. Boldness was associated with markers of low negative emotionality, social dominance, and low fear. Disinhibition was associated with antisocial behavior, high levels of negative emotionality, and poor behavioral control. Although the results for meanness were not as strong as the other two factors, it was nevertheless associated to a moderate degree with high levels of aggression, anger proneness, and a lack of interpersonal attachment. Overall, our results suggest that the triarchic model of psychopathy can be captured well using the MMPI-2-RF.

Practical implications for this project includes the ability to capture an emerging and important model of psychology (the Triarchic Model) with a widely used personality instrument, the MMPI-2-RF.
Embedded Effort Scales in the Repeatable Battery for the Assessment of Neuropsychological Status: Do they Detect Neurocognitive Malingering?

Adam Crighton, Kartina Holt, Katelyn Callahan

Mentor: Dustin Wygant, Psychology

The current study examined two embedded response bias measures in the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS), the Effort Index (EI; Silverberg et al., 2007) and Effort Scale (ES; Novitski et al., 2012), in relation to the Slick et al. (1999) malingered neurocognitive dysfunction (MND) criteria. We examined 66 individuals undergoing compensation-seeking disability evaluations. The results suggest the Effort Index adequately differentiates the Probable/Definite Malingering group from the Incentive Only and Possible Malingering groups, while the Effort Scale does not.

Our study represents the first examination of the RBANS effort indices in a forensic disability setting. Our results suggest that the Effort Index is able to detect poor cognitive performance commensurate with other cognitive response bias indicators and exhibited good sensitivity (false positive rates of 10% or less at selected cutoffs).
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