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2013

Celebrate

A CELEBRATION OF
STUDENT RESEARCH AND
CREATIVE ACTIVITY

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Department of Biology



INVERTEBRATE COMMUNITIES IN CREATED WETLANDS OF SOUTHWESTERN OHIO

Benjamin Ballew (Dr. Mollie McIntosh)

Department of Biology

Wetland areas are important for providing many ecosystem services that benefit humans along with other organisms. While many studies have been conducted in regards to other taxa (e.g., amphibians, birds), little data exists on macroinvertebrate communities in created wetlands. The main objective of this study was to assess the structure and function of macroinvertebrate communities within created wetlands of variable age overtime. Macroinvertebrate samples and corresponding abiotic variables were taken once per month from 14 wetland sites located within the Hamilton County Park District of Southwest Ohio from May to September 2010. Macroinvertebrates samples were collected using a D-framed net and then sorted and identified to the family level. Invertebrate community structure and function, through taxonomic and functional feeding group designations respectively, were determined and differences overtime assessed. Variation in macroinvertebrate structure and function was observed throughout the year in all wetlands regardless of age. This research will provide important ecological information on invertebrate community dynamics and will provide the park district with valuable information on the ecology of created wetlands.



DIFFERENCES IN THE LOWER LIMB MORPHOLOGY OF XAVIER DISTANCE RUNNERS, SPRINTERS, AND NON-ATHLETES

Matt Bigliano, Annie Lennon (Dr. Jennifer Robbins)

Department of Biology

Previous research has hinted at possible correlations between certain limb proportions and running ability, though an established connection has yet to be determined. The following study was undertaken in hopes of better understanding the relationship between lower limb proportions and running ability and to determine if certain individuals may be genetically predisposed to success in competitive running events. Subjects included competitive, male short and long distance runners and height-matched non-athletes. Pictures of the subjects' lower limbs were taken and uploaded to the software program, ImageJ, in order to obtain limb measurements. Total leg elongation, Achilles' tendon moment arm, distal elongation, and toe elongation were calculated using the obtained measurements. Significant differences were found among the total leg elongations and Achilles' tendon moment arms between the sprinting, distance, and non-athlete groups. No significant differences were seen among the distal elongations and toe elongations within the three groups. We concluded that leg length and the Achilles' tendon moment arm may have an effect on running ability in young adult males, suggesting that certain individuals may have a genetically predisposed advantage when it comes to competing in short and long distance running events.



THE EFFECTS OF SOCIAL STIGMA ON THE HIV INCIDENCE RATE IN THE MSM POPULATION

Matthew Bittner (Dr. Jennifer Robbins)

Department of Biology

Men who have sex with men (MSM) are the most at-risk group for contracting the HIV virus. This is due to both biological and psychological factors. A person from the MSM population is 10 times more likely to contract HIV than someone who does not have sex with men. Much research has already focused on the biological factors, such as MSM's preference to have anal sex, and the individual psychological factors such as fatalism and disengagement; however, there has been little research that has looked at the macro-scale. I predicted that as the negative social stigma towards homosexuality increased, the HIV incidence rate of the MSM population for that given area would increase as well.



EFFECTS OF A NOVEL MUTATION IN THE ARABIDOPSIS THALIANA HY4 GENE ON THE PHOTOREDUCTION OF CRY1 PROTEIN INVOLVED IN BLUE LIGHT PHOTORECEPTION

Paige Bolcas, Marita Rivir (Dr. Margaret Ahmad, Dr. Dorothy Engle)

Department of Biology



This study reports the effects of a novel mutation found within the Arabidopsis thaliana HY4 gene that has been shown to encode for CRY1 protein; a protein involved in blue light photoreception. CRY1 is similar to photolyases (flavoprotein that fixes UV damaged DNA) except it has an additional 2000 amino acid carboxy-terminal extension. The hy4-19 point mutation results in lysine replacing glutamic acid in the resulting CRY1 protein produced. Insect cell cultures were infected with the hy4-19 mutant. The CRY1 protein was then harvested from the insect culture. The purified protein was run on a western blot to ensure the CRY1 protein was expressed. The hy4-19 mutant protein was then run on a spectrophotometer and blasted with light to observe the photoreduction of the flavin. The spectrophotometer data showed that the hy4-19 protein bound the flavin but it was unable to be photoreduced. The mutation in the C-terminal portion of CRY1 must have a critical significance on CRY1 function. It is speculated that the mutation in the C-terminus domain must affect protein-protein interaction with the substrate or on the intramolecular proton and electron transfer that takes place within the protein.

VARIABILITY OF TEETH AND SKULL SIZE IN SUB-ADULT AND ADULT HUMANS

Maria Botros (Dr. William Anyonge)

Department of Biology



Previous studies show various skull dimensions to be predictable prior to full development (Chen et al., 2004). Other studies suggest tooth and skull size are correlated throughout development (Liu et al., 2011). The purpose of this study was to further investigate if specific skull dimensions could be utilized in predicting teeth size. Digital images of human skulls from archeological sites were obtained from collections at the American Museum of Natural History, New York. Linear measurements of teeth and skulls were taken using ImageJ and statistically analyzed using SYSTAT. It was found that cranial breadth, length, and index correlated highly with the crown module (CM) of teeth 31 and 32 ($R=0.7-0.8$). In addition, palatal index correlated highly with the CM of teeth 20, 29, and 32 ($R=0.7-0.8$). The palate length correlated highly with the mesiodistal crown diameter (MCD) of teeth 1-3, 5, 14, and 16 ($R=0.6-0.9$). Lastly, mandibular length and height and minimum breadth of ascending ramus correlated highly with the CM of teeth 3, 5, 16, and 30 ($R=0.6-0.8$) and the MCD of teeth 13 and 28 ($R=0.7$). The highest correlations ($R>0.8$) were between palate length and cranial breadth and the third molars (wisdom teeth), namely teeth 16 and 32.

DETECTION OF WEST NILE VIRUS IN CINCINNATI MOSQUITO LARVAE

Kathryn Breidenstein, Rey Anthony Carandang, Gregory Kampman (Dr. Jennifer Robbins)

Department of Biology



RT-PCR was used for the detection of West Nile virus in adult and larvae mosquitoes collected from eight different Cincinnati locations. Samples were kept separate according to their location of collection in order to determine which locations tested positive for the virus. WNV was detected in seven of the eight sampled locations. These findings indicate that the virus is prevalent in Cincinnati's mosquito populations and further surveying should be done in order to determine if other animals or humans from the area are infected with the virus. Such information can be important in preventing future outbreaks of the virus.



EFFECT OF SUBSONIC AND AUDIBLE FREQUENCIES ON FLORIDA MANATEE (TRICHECHUS MANATUS LATIROSTRIS) BEHAVIOR

Susan Bright, Gabby Butts, Meaghan Clark, Nate Han, Joe O'Hara, Steve Sharp (Dr. Charles J. Grossman)

Department of Biology

The Florida manatee (*Trichechus manatus latirostris*) is an endangered marine mammal living in the coastal waters of Florida and adjacent areas. Resident populations remain between 3000 to about 5000 animals. Manatees are known to communicate using a variety of squeaks, chirps and whistles; however the purpose of these sounds as they related to the animal's behavior is generally unknown. For more than eight years we have been studying various manatees housed Manatee Springs at the Cincinnati Zoo and Botanical Gardens. Our research, which is part of a larger study that has been ongoing at Xavier, is designed to determine if the sounds generated by these animals encode information, and if any of this information can be associated with meaningful manatee behaviors. Therefore we are in the process of developing and testing acoustical equipment that can transmit sounds at various frequencies, from low subsonic to ultrasonic (10 Hz – up to 40,000Hz) and also record these sounds, as well as any calls that are produced by the animals themselves. Once the equipment passes the testing phase we will then monitor the manatee swimming behavior by placing cloth grids on the tank viewing windows and then recording the manatee movements as they swim past the grid squares. Currently the Cincinnati Zoo and Botanical Garden houses two female manatees at Manatee Springs; Betsy, a 22 year old Florida manatee weighing 2030 lb. and Woodstock, a 3 year old weighing 928 lb. The research plan is to record any observed behaviors such as surfacing, swimming, rolling and squeaking while we transmit various frequencies of sound into the manatee tank. For control studies we will observe the manatee behaviors when no sound is being transmitted in to the tank. During two preliminary tests using subsonic frequencies, we did not observe any change in the animals' behavior. However, such preliminary results mean nothing since for any research to be significant it must be repeated hundreds of times. Furthermore, we have not tested Betsy and Woodstock as of yet with audible frequencies. This is something that has to be done for comparison because our previous studies over a seven year period with a number of other manatees both at the Cincinnati Zoo and at the Columbus Zoo demonstrated that they do respond to frequencies in the audible range.



REDEFINING RISK: SOCIOECONOMIC RELATIONSHIPS BETWEEN HIV INCIDENCE, COST OF LIVING, AND PERSONAL EXPENDITURE

Jacob Burlew, Aziz Nuritdinov (Dr. Jennifer Robbins)

Department of Biology

Introduction: Individuals with HIV can experience poverty and inability to afford basic necessities as a result of increased healthcare costs. **Purpose:** To identify at-risk populations in major urban areas in the United States in order to help establish more cost effective prevention programs and maintain low incidence rates. **Materials and Methods:** The CDC Wonder®, Gale® Cengage Learning, EconoMagic and the Massachusetts Institute of Technology's Living Wage Calculator® provided economic and HIV data for 88 major urban cities across the United States. **Results:** Non-essential expenditures including food and beverages and entertainment did not indicate significant difference between low and high spending quartiles ($P_{Food\ and\ Beverage}=0.406$ and $P_{Entertainment}=0.736$). Essential expenses including healthcare and utilities showed slightly larger difference between low and high spending quartiles, but still lacked significance ($P_{Healthcare}=0.357$ and $P_{Utilities}=0.401$). In contrast, cost of living analysis yielded the strongest significance in incidence rates between the cheapest and most expensive areas ($P_{Cost\ of\ Living}=0.027$). **Conclusion:** Even though individual expenditure data did not provide any significant correlations, the general trend indicated that as expenditure costs increased, HIV incidence rates increased as well. However, cost of living analysis indicated that regions with higher average cost of living are ideal locations for HIV transmission and prime candidates for allocation of federal funds for improved prevention programs.



FACTORS AFFECTING LARVAL MOSQUITO POPULATIONS (FAMILY CULICIDAE) IN SOUTHWESTERN OHIO

Armand Cann, JJ Carr, Chris Dobbs, Kevin Perkins, Molly Sterling (Dr. Mollie McIntosh)

Department of Biology

Mosquitoes are known to vector numerous diseases, including West Nile Virus. Due to an increased number of individuals infected with this virus in 2012, concern has grown over mosquito populations throughout the country, including Southwestern Ohio. The objective of this experiment was to assess larval mosquito populations in wetlands of Southwestern Ohio over the course of one year and to identify factors which affect their populations. To do this, mosquito larvae were collected using a standardized mosquito dipper from thirteen wetlands in the Cincinnati area. Wetlands varied in size, type, hydroperiod, vegetation and surrounding land-use. Collections were taken once a month starting in February of 2012 and concluding in October 2012. In the laboratory, mosquitoes were picked and identified to the lowest possible taxonomic level. The density and diversity of larval mosquito populations were assessed monthly and compared against environmental factors. The presence of larval mosquitoes was first detected in late March and persisted through the end of October; however, this was highly variable among the studied wetlands. An increased understanding of mosquito population dynamics can be useful in both assessing the risk these insects pose to public health, and the development of effective vector control programs.



INVERTEBRATE COMMUNITY INTERACTIONS ACROSS AN URBANIZATION GRADIENT IN SOUTHWESTERN OHIO

JJ Carr, Christopher Dobbs (Dr. Mollie McIntosh)

Department of Biology

Wetlands are a type of aquatic habitat characterized by water inundation at a frequency and duration sufficient to support vegetation typically adapted to saturated soils. These characteristics allow wetland ecosystems to support high biological diversity and to provide ecosystem services, including water purification, flood control, and recreation. Recently, there has been increased concern regarding the effect of human activities on the quantity and quality of these biologically and economically valuable ecosystems. However, in order to understand these potential effects, baseline data on natural and disturbed wetlands are needed. As a result, the main objective of this study was to assess macroinvertebrate structure and function in wetlands across an urbanization gradient. This study was conducted in 13 wetlands in Southwestern Ohio that range in land-use and size. Monthly macroinvertebrate samples were collected from February to October 2012, sorted and identified in the laboratory to family level, and then structural and functional attributes of the community determined. We found that the average abundance and the average diversity measurements were higher in wetlands with a less-urbanized buffer. Future analyses will continue to assess community interactions and assess their combined effects on larval mosquito population dynamics as a potential control of vectored diseases.



ESTIMATION OF BODY MASS AND LIFESTYLE CHARACTERISTICS OF EKORUS EKAKERAN, AN EXTINCT GIANT MUSTELID

Brad Cook (Dr. William Anyonge)

Department of Biology

Ekorus ekakeran is an extinct giant mustelid, related to modern-day weasels, badgers, and otters. The data used in this research was taken from a nearly complete skeleton of *E. ekakeran* that was found in the Lower Nawata formation of Lothagam, a Miocene-Pliocene paleontological site in northwestern Kenya. The skeleton has largely intact long bones, but there is some significant damage to the zygomatic area of the skull. The purpose of this research was to use linear limb and cranial measurements to determine body mass, locomotor, and dietary patterns of *E. ekakeran*. Comparative data was gathered from digital images of several species of living mustelids using ImageJ software. Measurements included lengths of the moment arms of the temporalis, masseter, and triceps muscles. An analysis of variance and regression statistics were generated using the statistical package, Systat. Body mass was determined to be 48 kg based on a regression equation from femoral length. This suggests that *E. ekakeran* was approximately two and a half times the size of a wolverine, *Gulo gulo* (the largest living mustelid). The elongated limbs of *E. ekakeran* suggest an active, cursorial lifestyle.



CAFOS' CONTRIBUTION TO ENVIRONMENTAL ANTIBIOTIC RESISTANCE

Marcie Costello, Dan Hellmann, Nick Pease (Dr. Jennifer Robbins)

Department of Biology

The incidence of antibiotic resistance arising from the use of prophylactic antibiotics at concentrated animal feeding operations (CAFOs) can be quantified to illuminate the potential corollary effects on human and animal health. This has not been extensively investigated, especially concerning areas of rural Ohio. Methods with previous success of correlating the use of in-feed antibiotics and antibiotic resistance were employed and compared with one another to assess the reliability of each. This includes collection of water and soil samples from high density (HD) and low density locations (LD) of the concentrated animal feeding operations, measuring the frequency of specific coliforms, and the resistance found in each of these coliforms. Coliforms were identified using the differential and selective EMB and MSA agar. Serially diluted concentrations of antibiotics above and below the CLSI standard resistance points were inoculated with isolated bacterial colonies. The results revealed that coliforms from high density samples had a greater incidence of resistance. The density method was the most successful in correlating use of antibiotics to antibiotic resistance, while sample type showed a very weak correlation and colony type showed the weakest correlation. These results suggest that Ohio CAFOs are contributing to the elevated incidences of antibiotic resistance in the environment and that these antibiotic resistant genes may be selected for and distributed among non-fecal bacteria at CAFOs before disseminating into nearby environments.



EFFECTS OF LONICERA MAACKII (AMUR HONEYSUCKLE) ON DECOMPOSITION OF LEAF LITTER AND FILTER PAPER IN SOUTHWESTERN OHIO DECIDUOUS FORESTS

Rachel Courtney, Diana Fornalczyk, Nick Scott (Dr. Brent Blair)

Department of Biology

Diana Fornalczyk, Rachel Courtney, Nick Scott Methods in Biological Research- Dr. Brent Blair March 26, 2013 Abstract Section Abstract Exotic invasive species present in today's forests are of concern to local residents, ecologists, surrounding environments, and resource managers alike. Their ability to adapt well to foreign habitats, successfully reproduce, and effectively disperse to surrounding lands has created a threat to the survival of plants native to the invaded forests. It is imperative to understand the underlying mechanisms these invasive species utilize to successfully out-compete native species and take over forests in order to find ways to control their rapid expansion. Our study focuses on Amur Honeysuckle (*Lonicera mackii*) an invasive shrub. It is native to Asian forests but now is common in North American deciduous forests including those in southwestern Ohio. We examine Honeysuckle's potential to decompose surrounding leaf litter. We used a mesh bag technique to study decomposition of leaf litter in the presence of Honeysuckle, the absence of Honeysuckle, and in areas where Honeysuckle shrubs were cut but its root structure remains. Our study collected data on decomposition of both White Ash leaves and filter paper, which had been placed in several experimental forest plots by a previous group. We hypothesize that decomposition rates will be greatest for leaf litter and filter paper in the mesh bags that were removed from plots containing Honeysuckle. Mesh bags removed from plots that contained Honeysuckle roots only or from plots that were uninvaded by Honeysuckle are predicted to have a lower rate of decomposition.



**THE EFFECTS OF CAFFEINE, CARBACHOL, AND BRADYKININ ON VASOMOTION IN BOVINE
CORONARY ARTERIES**

**Chris Cowens, Lisa Daum, Lindsay Gallagher, Elizabeth Lucich, Katie McCarthy, Katie Scheidler, Nicole Walsh,
BreAnna Zilm (Dr. Lisa Close-Jacob)**

Department of Biology

Previous studies have shown vasomotion, or oscillatory force behavior, in some arteries due to alterations in intracellular Ca^{2+} levels. The goal was to determine which pathway is responsible for the oscillations in bovine coronary arteries. The left anterior descending artery was dissected, two adjacent rings were isolated and hung from force transducers. After the arteries were equilibrated in the Krebs solution for an hour, U46619, a receptor-mediated contracting agent, was added. When a steady-state contraction was achieved, the arteries were treated with an experimental agent or a vehicle control. Three potential pathways for the initiation of oscillatory force behavior were investigated: Ca^{2+} spark release via ryanodine receptors on the sarcoplasmic reticulum (SR), Ca^{2+} wave formation from the release of SR Ca^{2+} via the phospholipase C/inositol triphosphate pathway, and smooth muscle calcium responses to endothelium dependent release of nitric oxide. Caffeine releases Ca^{2+} from the SR via the ryanodine receptor channel. With the addition of caffeine, 11 (n=12) arteries did not show oscillatory behavior. Carbachol is a phospholipase C agonist and caused no oscillatory behavior in 9 (n=11) arteries, but did decrease tension in 7 arteries. Bradykinin causes the release of nitric oxide from the vascular endothelium and led to vasomotion in 4 (n=11) arteries and decreased tension in 8 arteries.



**WHEREVER THE CHIPS MAY FALL: DOES HOST MATERIAL INCREASE ATTRACTION OF CERAMBYCID BEETLES
TO TRAPS BAITED WITH GENERIC PHEROMONES?**

Alysha DeWees, Patrick Martin, Megan Montalvo (Dr. Ann Ray)

Department of Biology

Cerambycid beetles are commonly known as long horned beetles, and the family comprises over 35,000 species. Certain species of Cerambycidae play a large part in our ecosystem and economy as their larvae borrow into live trees and cause extreme damage. Cerambycids use volatile pheromones to attract other beetles, and traps baited with volatile pheromones can be used to survey or monitor for cerambycids. Recent research suggests that volatiles from the host plants may increase the attraction of beetles to traps baited with volatile pheromones. In this study, we tested the hypothesis that fresh wood chips (a source of host plant volatiles) would increase the number of cerambycid beetles captured in flight intercept traps. We tested this hypothesis at three field sites in the greater Cincinnati area. The results of our research may help to improve trapping technology for native and non-native cerambycid pests.



THE IMPACT OF VISITOR PRESENCE AND EXHIBIT SIZE ON THE BEHAVIORS OF ZOO-CAPTIVE CATS

Alexandra Goodrich, Elizabeth Polomsky, Kauser Siddiqui (Dr. Jennifer Robbins)

Department of Biology

Previous studies have found that when high numbers of visitors are present, monkeys are more active and when lions are put in an outdoor exhibit, aggression and pacing decreases (Choo et al 2011, Clarey et al, 1983). We hypothesized that larger crowd sizes would elicit more of a response from the zoo-captive cats and that the indoor cats would show more negative behaviors than the outdoor cats. A focal animal sampling technique was used in which we recorded the cat behavior, visitor behavior, and visitor number every 30 seconds for a total of fifteen minutes. We went to the Cincinnati Zoo and Botanical Gardens four times a week and each time we went, four indoor and four outdoor cats were observed. Data was analyzed using the Student's T-test and a Chi Square test. The results showed that the indoor cats were more likely to be pacing or interacting than the outdoor cats. Our results also showed that the cats were more active with fewer visitors present. In conclusion, it was determined that the environment of these zoo-captive cats may impact their behavior, but the cats are going to do whatever they please regardless of the number of visitors present.



SEED DISPERSAL OF LONICERA MAACKI, HONEYSUCKLE, BY BIRDS

Alissa Grogan, Margaret Hazlett, Joe Hetzer (Dr. George Farnsworth)

Department of Biology

Amur honeysuckle, *Lonicera maackii*, is an invasive species of tall shrub found in the local Cincinnati area. It spreads as frugivorous birds eat honeysuckle fruits in late fall and disperse the seeds. We investigated the role habitat structure plays in the deposition of seeds surrounding a local source. We placed artificial perches near a fruiting honeysuckle to examine how perch characteristics affected numbers of seeds deposited by birds during an eight week span in fall 2012. Our results showed that the presence of perches greatly increased seed deposition. We collected 688 seeds beneath perches and 137 seeds from collecting trays without a perch. Perches closer to the honeysuckle bush collected more seeds (639) than perches farther away (49). Perch characteristics also influenced seed deposition. We collected more seeds from perches 1m high (504 seeds) than from perches 2m high (184 seeds). However we did not see an increase in seeds deposited under perches baited with raisins. The amount of seeds increased in a positive trend line as the fall season progressed peaking in the last week of November. Understanding how perch characteristics and seasonality influences seed deposition may help land managers control the spread of invasive plant species.



EXAMINING THE RELATIONSHIP BETWEEN THE PARASITIC DISEASE SCHISTOSOMIASIS AND BLADDER CANCER

Stephanie Jantzen (Dr. Waltke Paulding)

Department of Biology

Schistosomiasis is a parasitic disease affecting more than 200 million people in tropical and subtropical regions around the world. This Neglected Tropical Disease is ranked by the World Health Organization (WHO) as the second most socially and economically devastating disease worldwide. Schistosomiasis is caused by blood flukes which are trematodes with a complex two-host life cycle. Schistosomiasis has been associated with an onslaught of adverse health effects, cancer being one of them. Infection by the schistosome species *S. haematobium* has been implicated in a causal relationship with bladder cancer. Correlational studies have provided evidence for a geographical relationship between *S. haematobium* infection and bladder cancer. Although the exact mechanism of schistosomal-induced carcinogenesis is unknown, cells exposed to *S. haematobium* display a resistance to apoptosis due to the upregulation of bcl-2, uncontrolled proliferation caused by the inactivation of tumor suppressor proteins p53 or p27, as well as increased migration and invasion. Another possible pathway for bladder cancer caused by *S. haematobium* infection is the nuclear localization of Cyclooxygenase-2 caused by the inflammatory response of the nervous system to the presence of schistosome eggs. Studies have found that the nuclear localization of Cyclooxygenase-2 correlates with the expression of Oct3/4 which increases cell proliferation and differentiation. Utilization of p53 and bcl-2 biomarkers or Cyclooxygenase-2 inhibitors presents possibilities for therapeutic strategies against schistosomiasis and schistosomal-associated bladder cancer.





THE MOLECULAR SIGNALS CONTRIBUTING TO VHL ANGIOGENESIS

Jonathan Kuhl (Dr. Waltke Paulding)

Department of Biology

Mutations of the von Hippel-Lindau tumor suppressor gene (VHL) causes a cancer syndrome that makes a person more predisposed to solid growth tumors usually presenting in the retina, kidneys, and central nervous system. These mutated genes encode a protein that is able to bind to a protein complex known as the elongin complex. This VBC complex that is formed is able to interact with two other proteins, Cul2 as well as Rbx1. The protein complex that is formed functions as an ubiquitin ligase targeting specific proteins for degradation, namely HIF-1' gene. Under normoxic conditions the proteins encoded from the HIF-1' gene is produced and degraded continuously. However, when exposed to conditions of hypoxia, the gene is stabilized and activates many growth factors such as vascular endothelial growth factor (VEGF). The production of this growth factor activates the nearby endothelial cells to begin the process of angiogenesis, producing new networks of blood vessels. These blood vessels are able to support nearby tumors allowing them to grow and metastasize.



NEURAL EXPRESSION OF DH31 REGULATES TEMPERATURE PREFERENCE RHYTHM IN DROSOPHILA

Christopher Lagnese (Dr. Dorothy Engle)

Department of Biology

Body temperature rhythm (BTR) in mammals is an essential circadian process for the regulation of homeostasis. Whereas mammals metabolically maintain body temperature, ectotherms regulate body temperature behaviorally. Previously, *Drosophila* was shown to display a daily temperature preference rhythm (TPR) that mirrors mammalian BTR. *Drosophila* TPR was also found to be circadian clock dependent with circadian rhythm mutants. A screen for neuropeptides involved in *Drosophila* TPR has isolated Diuretic Hormone 31 Receptor (DH31R), which is a G protein-coupled receptor similar to the human CGRP (Calcitonin Gene Related Peptide) receptor. DH31 peptide mutants demonstrated a smaller temperature drop from day to night compared to the control, and circadian clock positive neurons in the brain were subsequently screened for DH31R expression. As a result, expression of DH31R on DN2 and sLNv cells was shown to be potentially involved in regulating the day to night temperature decrease. Furthermore, the role of DH31 peptide in TPR at the LD transition constitutes a novel finding which highlights the importance of neuropeptide interaction in TPR.



MICRORNA'S EFFECT ON ONCOGENE ADDICTION IN CHRONIC MYELOID LEUKEMIA

Jennifer Ledonne (Dr. Dorothy Engle)

Department of Biology

Chronic Myeloid Leukemia is caused by the translocation of chromosomes 9 and 22, which gives rise to the BCR/ABL oncogene. These cells become addicted to the oncogene for survival and therefore respond to Tyrosine Kinase Inhibitors (TKI) such as Imatinib which blocks the oncogene and thus the survival route of the cell. However, Leukemic Stem Cells are not yet addicted to the oncogene and therefore form a resistance to TKI's. Current research is working to develop curative therapeutics. MicroRNA's are post-transcriptional regulators that bind to the 3' untranslated region of mRNA's. They regulate protein coding genes and control cellular functions such as apoptosis and cell differentiation. The present research investigated the effect of over-expression of 11 microRNAs on regulating cell proliferation in BCR/ABL containing cells that were not yet addicted to the oncogene. We found that miRNA 762 and miRNA 1187 had the greatest effect on cell death.

SCAVENGER ACTIVITY BY DECOMPOSING CARRION IN AN URBAN ENVIRONMENT

Henry Malachi, Cameron Rolle, David Sheron (Dr. Mollie McIntosh)

Department of Biology

In the field of forensic entomology, basic knowledge on the biology and ecology of insect communities from decomposing remains is often used to provide valuable evidence in criminal investigations, such as the post-mortem interval or time since death. However, more research is needed on potential factors that can influence decomposition and thus insect evidence. As a result, the main objective of our study was to assess scavenger activity during the decompositional process within an urban environment. We predicted that dominant urban scavengers in our study would be vultures and raccoons. For this study, two fresh pig carcasses (70 lbs each) were placed in experimental cages in two different locations in Cincinnati Ohio, from October 16 to December 24th, 2013. Overtime, decomposition stage, insect activity and scavenger activity (via Bushnell HD motion activated cameras) were monitored. A total of 347 animal taxa were observed during the study. The dominant visitor to the pig carcasses were birds with 244 visits, but only 23% were orientated towards the carcass, with opossums being the most orientated animal that had more than 20 visits.



INTERLEUKIN-10 AND HYALURONAN ARE ESSENTIAL TO THE FETAL FIBROBLAST FUNCTIONAL PHENOTYPE

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Cincinnati Children's Hospital Molecular Fetal Therapy Group

Department of Biology

Introduction: Mid-gestational fetuses are able to heal scarlessly. Fibroblasts are the primary effector cells involved in the wound healing process. Unlike adult fibroblasts (AFb), fetal fibroblasts (FFb) produce a hyaluronan (HA) rich extracellular matrix (ECM). We hypothesize that IL-10 mediated HA-rich ECM formation is essential to the FFb functional phenotype and that this profile can be replicated in AFb by adding IL-10.

Methods: Fetal and adult murine fibroblasts were cultured from C57B1/6 and IL-10^{-/-} mice with 1) IL-10, 2) IL-10+HA synthase 1-3 inhibitor (4-methylumbelliferone, 4-MU). Proliferation and apoptosis were evaluated by immunohistochemistry (Ki67, casp3); migration by scratch and invasion by Matrigel/Transwell assay.

Results: There was no difference in proliferation between AFb and FFb, and was unaffected by the addition of IL-10 or 4MU. FFb had lower rate of apoptosis compared to AFb. Addition of IL-10 and 4MU had no affect on the rates of apoptosis. FFb had increased migration compared to AFb. Addition of IL-10 to AFb increases migration, approaching the fetal phenotype. IL-10 mediated increase in AFb migration is nullified with HA synthase inhibition. FFb had increased invasion compared to AFb. Addition of IL-10 increased invasion in AFb. This enhanced invasion is decreased with inhibition of HA formation.

Conclusion: IL-10 mediated HA-rich ECM is essential to the FFb functional phenotype and can be recapitulated in AFb with addition of IL-10 with more fetal-like migration and invasion. Understanding the changes in fibroblast function may aid in the development of therapies to replicate fetal scarless healing in adult wounds.





FUNCTIONAL ANALYSIS OF TIFAB, A NOVEL REGULATOR OF TRAF6/NF- κ B, IN LEUKEMIA

David Miller (Dr. Dorothy Engle)

Department of Biology

Chromosomal deletions are common in myeloid malignancies, such as a deletion on chromosome 5 that is characteristic of myelodysplastic syndrome (MDS). One of the regions of deletion that has been mapped on chromosome 5 is 5q31. Deletions in region 5q31 have been linked to aggressive forms of MDS and AML accompanied by cytogenetic abnormalities and a poor prognosis. The gene coding for a protein called TIFAB, believed to be a regulator of cell differentiation and development of immune and inflammatory responses, lies in the 5q31 region. TIFAB is a TIFA related protein that binds to TIFA and blocks TIFA mediated activation of TRAF6. TIFA, a TRAF6 interacting protein with a fork-head associated (FHA) domain, is believed to link IRAK-1 and TRAF6, stimulating the activation of TRAF6. TRAF6 then activates NF- κ B, an important protein in immune response, inflammation, and tumor formation. TIFAB is a TIFA related protein that binds to TIFA and blocks TIFA mediated activation of TRAF6. By performing dual luciferase (DLR) assays on human 293T cells transfected with TIFAB, we found that TIFAB reduced NF- κ B expression in a dose-dependent manner in cells stimulated with LPS. However, TIFAB did not reduce NF- κ B expression in cells stimulated with TNF α . These results show that LPS induced NF- κ B activation is TRAF 6 dependent and TNF α induced stimulation is independent of TRAF6. Also, indicating that TIFAB solely inhibits NF- κ B activation via the TIFA mediated TRAF6 activation pathway. To determine which component of TIFAB was essential for binding to and inducing a conformational change in TIFA we ordered five mutants from IDT. These mutants contained various deletions along the gene coding for TIFAB, including the FHA domain. We hypothesize that the FHA domain is necessary for TIFAB to inhibit TRAF6.



THE POSSIBLE ASSOCIATION BETWEEN CANCER AND VITAMIN D THROUGH ITS ROLE AS A REGULAR OF CELL GROWTH

Alexandra Ryan (Dr. Waltke Paulding)

Department of Biology

There is an increasing interest in the health effects of UVB exposure and its association with the production of vitamin D. This association includes the relationship between vitamin D and cancer incidence and mortality. Vitamin D regulates many genes that control cell growth, inhibit angiogenesis, and control cell differentiation. It has been hypothesized that vitamin D is associated with a decreased risk for cancer due to its relationship with the production and absorption of vitamin D. In this review, vitamin D will be looked at for its anti-cancerous abilities as well as vitamin D receptors being used for potential anti-cancer drugs. The metabolism of vitamin D in the body and its association with tumors and cancerous cells will be explored. Three different types of cancer will be looked at which include breast cancer, colorectal cancer, and hepatocellular carcinoma. These cancers will be broken down and examined by looking at how vitamin D can be beneficial to each of these cancers, what it means for future experiments, the potential for anti-cancer abilities, as well as looking at how we need to reconsider our ideas about the causes of Melanoma.



REFLECTION ON TERT TRANSDUCED T CELLS AND THEIR USE IN IMMUNOTHERAPY

Muhammad Sheikh (Dr. Waltke Paulding)

Department of Biology

Telomeres are a region of nucleotide sequences at the ends of chromosomes that are produced by the enzyme telomerase. Telomerase is a re-verse transcriptase (TERT) found in stem cells and cells that consistently need to divide (e.g. in the immune system) and at a lower level during cell cycle in somatic cells. It is also found in most cancer cells, because its presence and subsequent production of telomeres stops replicative senescence. The processes with which TERT expression in T cells are regulated have been observed and recorded and are used to overexpress TERT in T cells. Overexpression of TERT in T cells increases their lifespan while still retaining T cell effector functions making them an ideal tool for immunotherapy.



BIOMARKERS: DIAGNOSTIC TOOLS FOR DETECTING PANCREATIC CANCER

Anna Walsworth (Dr. Waltke Paulding)

Department of Biology

Pancreatic cancer is an aggressive, deadly cancer with characteristics of early metastasis, delayed presentation of symptoms, and therefore, a low survival rate. The diagnosis of pancreatic cancer most commonly happens after the cancer has metastasized, at which point tumors are generally unresectable. Identifying tools to diagnose pancreatic cancer at an earlier stage is vital to the mission to elongate survival rate of patients affected by this malignancy. Biomarkers are genes, molecules, or characteristics that can serve as indicators of a disease or disorder, and the identification of biomarkers for pancreatic cancer is an important part of cancer research. Serum, genetic, and epigenetic biomarkers are presented in this review. Serum biomarkers are analyzed through blood testing; examples of overexpressed serum biomarkers in pancreatic cancer include CA 19-9, MIC-1, and OPN. Genes mutated in pancreatic cancer are Kras2, DPC4/Smad4, CDK2NA/p16, and TP53/p53. The mutation of these genes leads to tumorigenesis. Epigenetic mechanisms resulting in gene silencing include DNA methylation, histone modification, and deregulation of micro-RNA.



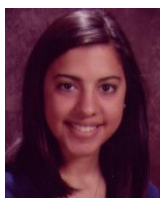
VOCAL IDENTIFICATION OF FLORIDA MANATEES (TRICHECHUS MANATUS LATIROSTRIS)

Grace Williams (Dr. Charles J. Grossman)

Department of Biology

The Florida manatee (*Trichechus manatus latirostris*) is a species of endangered marine mammals living in the coastal waters of Florida and adjacent areas. Comparatively little is known about these animals and accurate tracking of individual animals is nearly impossible because of the difficulty of observation in murky water. Through research, information can be discovered that could potentially help to save this species. Our study in particular could aid in tracking and identifying Florida manatees in a noninvasive way. The purpose of this study is to be able to identify individual animals using their vocalizations. Through the use of a submerged hydrophone in the manatee tank of the Cincinnati Zoo and Botanical Gardens, reference vocalizations were recorded in conjunction with direct visual observation of the subject animals. Future work of this study involves analysis of these vocalizations through use of computer software to aid in determining specific characteristics that could separate a particular manatee's vocalization from others. These characteristics include, but are not limited to duration, frequency contour, fundamental frequency, and harmonic structure. We hypothesize that by analyzing the reference vocalizations and comparing the characteristics between animals, we will be able to isolate and identify individual manatees in the wild.

Department of Chemistry



DEVELOPMENT OF AN ANALYTICAL METHOD FOR THE DETERMINATION OF CAPSAICINOIDS

Sarah Abu-Rashed (Dr. Barbara Hopkins)

Department of Chemistry

Two capsaicinoids found in hot chili peppers are capsaicin and dihydrocapsaicin. Due to the toxicity of these compounds, methods are needed to determine their concentrations in the air when factory workers are exposed to them. The National Institute for Occupational Safety and Health (NIOSH) has developed a sampling and analytical method for their determination. This method did not include a complete recovery study for filters spiked with these compounds. Using High Performance Liquid Chromatography, capsaicin is detected at a retention time of 4.5 minutes when using a C-18 column and mobile phase of 48% acetonitrile and 52% water. Capsaicin can be detected at wavelengths of 228 nm and 281 nm. Using standard solutions, calibration curves were prepared for a range of concentrations corresponding to the range of the NIOSH method. Three possible filters were analyzed PVC, Teflon, and glass fiber. Based upon percent recovery the 13-mm glass fiber filter was chosen for use. Filters were spiked with a concentration of 0.05 mg/mL of capsaicin and stored for 7, 14, 21, and 28 days. Recoveries were consistent with the NIOSH criteria for an analytical method.

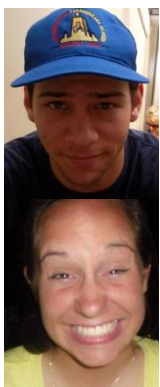


USING V-51 NMR TO PROBE THE FORMATION OF ETHYL ESTERS OF THE VANADATE ANION

Stephen Buchanan, Justin Gotherman (Dr. Craig M. Davis)

Department of Chemistry

The two isotopes of vanadium that exist in nature are ^{50}V and ^{51}V ; the abundances are 0.25% and 99.75%, respectively. The ^{51}V nucleus is NMR active, with a nuclear spin of $7/2$. ^{51}V NMR spectroscopy is of particular interest to bio-inorganic chemists because it can be used to examine enzymes containing vanadium centers. The goal of our research was to produce a feasible three-hour laboratory exercise for undergraduates that features ^{51}V NMR spectroscopy. In the primary literature it has been demonstrated that the vanadate anion activates glucose 6-phosphate dehydrogenase, presumably due to the formation of glucose 6-vanadate. ^{51}V -NMR spectra of these systems were complicated, due to the many hydroxyl groups. Consequently, the researches employed primary-alcohol/vanadate model systems to investigate vanadate ester formation, which will be the focus of our laboratory exercise. Specifically, the vanadate anion is mixed with various concentrations of ethanol in D_2O , which will allow the formation of mono- and di-ethyl esters. The equilibrium constant K_1 is calculated from the formation of the mono-ethyl ester from the vanadate anion and ethanol, while the equilibrium constant K_2 likewise is calculated from the formation of the di-ethyl ester from the mono-ethyl ester.



GLYCOCONJUGATES AS DETECTING AGENTS: IMPORTANCE OF HYDROXYL GROUPS TO MANNOSE/E. COLI BINDING

Alexandre Dixon, Kaylin Earnest (Dr. Richard Mullins)

Department of Chemistry

Glycans constitute the majority of the mammalian outer cell surfaces. While they possess many functions, most important to our research is the fact that they act as receptors for bacteria, viruses and other toxins. Based on these principles, synthetic glycoconjugates can be used for detecting pathogens and toxins. A recent example from the Iyer lab involves the detection of E. coli, using (-mannose derived glycoconjugates. In this case, the (-mannose binds with a high degree of specificity. To better understand the origin of this specific binding, our group has undertaken the synthesis of deoxymannose derivatives. Via deletion of a hydroxyl group, we should be able to better understand its importance to the binding between the glycoconjugate and E. coli. Our efforts toward the synthesis of 4- and 6-deoxymannose derivatives will be presented.



GRAPHENE OXIDE QUENCHING OF A PYRENE-BOUND GLYCOCONJUGATE AS A METHOD FOR DETECTING E. COLI

Brian Hanley (Dr. Richard Mullins)

Department of Chemistry

Glycans constitute the majority of the mammalian outer cell surfaces. While they possess many functions, most important to our research is the fact that they act as receptors for bacteria, viruses and other toxins. Based on these principles, synthetic glycoconjugates can be used for detecting pathogens and toxins. A recent example from the Iyer lab involves the detection of E. coli, using α -mannose derived glycoconjugates. Our group is expanding upon a recently developed method for detecting E. coli which relies on the fluorescence quenching of pyrene-bound glycans by graphene oxide. The synthesis of the glycoconjugates as well as their use in model studies will be presented.

EXTRACTION OF ZINC IONS WITH DITHIZONE

Caitlin Husar (Dr. Adam Bange)

Department of Chemistry

Extractions are a very common technique for the separation of things, in this case, using an organic phase to withdraw metal ions. This project utilizes chloroform with dithizone in basic conditions to pull out zinc ions from a sample. The dithizone travels from the chloroform into the aqueous layer, grabs the zinc ions, and brings them down into the organic chloroform layer. Sulfuric acid is then added to the dithizone in order to release the zinc ions where they become a part of the aqueous layer. Once the acid has been added and the solution mixed, the aqueous layer is analyzed by Flame Atomic Absorption Spectroscopy and an absorbance reading is determined and compared to a set of calibrated standards, from there the percent recovery is calculated. The goal is to maximize the extraction efficiency by changing some of the variables such as changing the molar equivalence of dithizone in chloroform to see if an increase in dithizone concentration will in turn create an increase in zinc ions extracted successfully. Adding double the amount of chloroform with dithizone is also being tested but no conclusive results have been obtained yet. It is predicted that increasing the concentration of the dithizone in the organic phase will yield the best extraction results.



EXPLORING LIQUID SEQUENTIAL INJECTION CHROMATOGRAPHY

Alison Kehling (Supaporn Kradtap Hartwell)

Department of Chemistry

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DETECTION OF MANGANESE USING CATHODIC STRIPPING VOLTAMMETRY ON PLATINUM AND GLASSY CARBON ELECTRODES

Morgan Martin (Dr. Adam Bange)

Department of Chemistry

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EFFORTS TOWARDS THE SYNTHESIS OF PILOSININE AND PILOCARPINE

Bradley Nakamura (Dr. Richard Mullins)

Department of Chemistry

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SYNTHESIS AND OXIDATION STUDIES OF A COPPER COMPLEX WITH A TRIS-OXIME LIGAND

Ryan O'Connor (Dr. Craig M. Davis)

Department of Chemistry

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DEVELOPMENT OF AN ANALYTICAL METHOD FOR THE DETECTION OF PHENYLARSONIC ACID IN AIR

Nicholas Posey (Dr. Barbara Hopkins)

Department of Chemistry

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EXAMINATION OF HPLC METHODS PERTAINING TO THE ANALYSIS OF PARA-ARSANILIC ACID

Austin Wilson (Dr. Barbara Hopkins)

Department of Chemistry

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Department of Classics & Modern Languages



OVID'S INSIGHT INTO THE MINDS OF ABANDONED WOMEN

Rachel Bier (Dr. Rebecca Muich)

Department of Classics & Modern Languages

Heroines such as Penelope of the *Odyssey* and Dido of the *Aeneid* often took minor roles in ancient literature, ones in which their characters' emotions, fears, and thoughts were not addressed. Ovid revived the heroines of tradition and gave them voices which expressed realistic feelings and thoughts in his *Heroides*, a set of letters written by popular women of mythology to their husbands and lovers. In his *Heroides*, by examining well-known myths from an alternative viewpoint, Ovid creates honest, realistic characters who react to their abandonment with an insightful feminine voice. By using a realistic feminine voice, the credibility of which is strengthened by the format of the letter and Ovid's experience as a poet and outsider, Ovid became an innovator in the genre of love elegy. The question of how a male author affects the readers' interpretations and understandings of the women's voices of the *Heroides* has been answered in different ways. Some believe that the women's voices of the letters are shallow and unrealistic, while others believe that Ovid, even though he is a man, creates accurate, meaningful depictions of abandoned women. Through a thorough examination of a few of the most popular letters of the *Heroides*, including analyses of the heroines' voices and the ways in which they differ from the literary tradition, I argue that Ovid managed to create realistic feminine voices which have the ability to speak freely through the letter.



HOW NOVEL IS THE NOVEL? THE CONTINUITY OF THE NOVEL GENRE

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The novel is a genre that has stood the test of time and has come to represent a significant aspect of literary culture over the years. To the modern reader, the novel begins in the Renaissance era. To the modern scholar, Cervantes' *Don Quixote* represents the first work of that genre. I, however, argue that the same aspects, which characterize the novel for both scholars and the everyday reader, can be found in the five ancient, canonical Greek novels. In highlighting features of the novel including a long, prose, narrative, fiction work with a journey, character development, and social commentary, it is evident that the novel began in antiquity and has persisted with same, basic characteristics throughout history, up to modern times. In support of this claim, the study undertakes an analysis of these characteristics in novels from over the centuries, starting with the five canonical novels. In looking at *Don Quixote*, Jane Austen's *Northanger Abbey*, and J.K. Rowling's *Harry Potter and the Order of the Phoenix* connections are drawn across time barriers that may not be so obvious. Ultimately, the paper supports the claim that the modern novel finds its origins in the canonical Greek novel on the basis of the possession of the same basic elements. In light of this correlation, the implications of such a connection will be assessed, specifically the fact that ancient literature is not so inaccessible to the modern reader as commonly thought.



AUGUSTINE AND JOHN PAUL II ON THE GOODS OF MARRIAGE: PROLES, FIDES, ET SACRAMENTUM

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As an example of the way in which the Church steadfastly presents her teachings on marriage, this paper intends to demonstrate the consistency between the writings of St. Augustine and John Paul II. Though they write in very different times socially and philosophically, their presentations on the good of marriage remain consistent in their conclusions. The framework for this presentation will be the three goods of marriage as defined by Augustine: procreation, fidelity, and the sacrament. Procreation is a good because it fulfills God's command to be fruitful and multiply, fidelity is good in that the union which God blessed cannot be separated as a witness of God's unending love, and finally, the sacrament is good as a way of making the partners holy and leading each other to their final end, heaven. These positions which were defined by Augustine in his "*De bono coniugali*," were expanded through the writings of John Paul II, including "*Familiaris Consortio*," "*Mulieris Dignitatem*," and "*Love and Responsibility*." Through this examination of Augustine's and John Paul II's presentations, it will be shown that there has been a consistent position regarding marriage between these two teachers. This consistency suggests the importance of these teachings in the life of the Church, and the improbability of future alteration of Church teaching.



LIFT, EAT, COMPETE: ATHLETICS IN ANCIENT GREECE AND MODERN AMERICA

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Athletics was an integral part in the education, mentality, and values of the ancient Greeks. In the United States today, athletics likewise holds an important role in our society. Similarities can be seen in the preparation of ancient and modern athletes as well as the attitudes and motivations surrounding athletics. These similarities illustrate that athletics serves an underlying function in ancient Greece as it does today: to both provide a stage to show self-excellence and a release to dispel pent up human emotions.



FRESH, FREE, STRONG AND TRUE: THE TURNER MOVEMENT IN CINCINNATI AND NORWOOD

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In the wake of a failed revolution in Germany in 1848/9, a massive wave of German immigration to the United States occurred. This led to the foundation of many organizations, called vereins, in the cities where these Germans, known as "Forty-Eighters" settled. It was in Cincinnati that the first of the American Turnvereins was founded. The members of this verein were dedicated to maintaining a "sound mind in a sound body" through gymnastics and physical activity and debates and civic involvement. After detailing the foundation and social dealings of the Turnvereins in Cincinnati, the focus of the work shifts to the Turnverein in Norwood, Ohio, which showcases the changing landscape of second and third generation immigrant communities in the United States in the first half of the Twentieth Century. Finally, the efforts of modern-day vereins are examined, showing the continuing presence of German culture in Cincinnati.



DESCENDANTS WITH DADDY ISSUES: FATHERLESSNESS IN GREEK EPIC AND TRAGEDY

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Department of Classics & Modern Languages

The Trojan War saga contains many stories of young men on the cusp of adulthood who are hindered by the absence of their fathers. Through a comparative study of their myths as they appear in Greek epic and tragic poetry, a pattern emerges as early as Homer's Iliad, continues through the plays of the three great tragedians of Classical Athens, and extends as late as the 3rd century CE in Quintus of Smyrna's Posthomerica. Without the guiding example of their fathers, each son struggles to integrate into society, emulate his father, and defend his father or avenge his death. However, different poets and genres also manipulate from this pattern, portraying the son's nature against the influence of society as what drives him to follow in his father's footsteps. The poetry surrounding Telemachus, Neoptolemus, and Orestes offer a better understanding of father-son relationships and the maturation of these young heroes.



TURNING THE WHEELS OF EMPIRE: THE STANDING ARMY AND IMPERIAL SUCCESS IN ROME AND BRITAIN

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Department of Classics & Modern Languages

While there are many factors that ultimately determine the longevity of an empire, there is one aspect that may be the most crucial for what can be called imperial success: the creation of a strong standing army. It would seem that, for an empire to be considered successful, it must be able to both effectively expand and maintain its territory. To accomplish this, sufficient manpower is needed to conquer new lands and subsequently keep control of these lands for the betterment of the whole empire. A standing army, if created and managed effectively, would provide this necessary manpower. In history, both the Roman Empire and the British Empire have successfully created and utilized permanent militaries in order to gain control of and defend vast areas of land. Many scholars have written on the importance of the army in the success of these historical empires respectively, but few have examined them together as evidence of an effective imperial practice. It is the intent of this paper to draw attention to that aspect of the scholarly discussion. Looking at the needs for change in these respective empires, the reforms made to the military, and the resulting success, this paper hopes to show how standing armies are an essential tool of empire.



A MOVEMENT TOWARD MULTICULTURALISM: A CASE STUDY OF TURKISH MIGRANTS IN GERMANY

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On October 16, 2010, the German Chancellor, Angela Merkel, expressed that multiculturalism has failed in Germany. This statement was in reaction to meetings with the Turkish Prime Minister discussing integration of the Turkish populace into Germany. But how did Chancellor Merkel come to this conclusion? This study explores the nationalist concept of Volk developed during the formation of the nation-state and in opposition to economic industrialization in the late nineteenth century, the growth of the guest worker programs during the 1950s and 1960s in West Germany, the evolution of German immigration and asylum laws, and the views of multiculturalism post-World War II within Germany. Through the biographies of Turkish guest workers, children of guest workers, and permanent residents after the end of the guest worker program in 1973, the difficulties and successes of these Turkish migrants are considered. As a result of these biographies, it can be concluded that the integration of the Turkish residents and the ideas of multiculturalism have been slowly accepted in Germany. The political debates between the Christian Democratic Union and the Social Democratic Party during the 1970s through today have both caused problems and a greater acceptance for these migrants. Such findings show there are still roadblocks for Germany to fully accept the idea of multiculturalism; but Germany has made great strides throughout its complicated history to achieve their own sense of multiculturalism today.



PRIVACY IN THE ILIAD

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The Iliad is filled with compelling public scenes, such as assemblies, battles and funerals. While these scenes contribute to the epic's overall progression and drama, private scenes provide a more intimate glimpse into the lives and emotions of characters. Private scenes reveal much about cultural practices, attitudes, and traditions of the time. This study organizes these intimate settings into two categories. The first of the two centers on domestic scenes of Troy which expose the interior lives of women, providing more information about family dynamics, women's roles, and female domesticity. The second grouping focuses on the Achaean tents within which private interactions occur mainly among men, allowing for frank discussion, persuasion, and negotiation. The study concludes that private spaces offer insight into the inner lives of the epic's characters, pointing out important values and customs. They also indicate that the society depicted in the Iliad valued the good of the community over individualism. Finally, private scenes are often the most poignant of the epic, in which are found men moved to tears, women worrying for their families, and all characters at times expressing a love, or respect, for another that surpasses self-absorption.



CHARACTERISTICS OF EASTERN-EUROPEAN JEWS: THEIR CULTURE, LANGUAGE, SOCIETY, AND HISTORY AND THE PROBLEMS WITH CULTURAL ASSIMILATION IN THE 19TH AND EARLY 20TH CENTURIES

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The assimilation process of Eastern European Jews in German-speaking areas, which began in the 19th century, and continued on into the early 20th century, encountered many problems. During the Middle Ages, Eastern European Jewish culture, language, and society developed in an entirely different manner than those of Western Europe. The Anti-Semitic elements present in European societies reinforced the cultural divides that were developing, giving the Eastern European Jewish culture a connotation of being "separate". The development, use, and prevalence of Yiddish in Eastern-European Jewish life, as well as the Shtetl culture, accented these divisions. These cultural differences posed a problem for modern-day Germany and Austria, which were both focused on creating a national identity. Germany received large numbers of Eastern European Jews in the second half of the 19th century; Austria-Hungary also acquired areas with large Jewish minorities. Germany and Austria-Hungary attempted to enact a process of assimilation for the new Eastern European Jewish populations. However, these attempts to assimilate the Eastern European Jews were only marginally successful. The emergence of Zionism and the differences in philosophies and new religious movements of the Eastern and Western Jewish Enlightenment only served to augment the differences between Eastern European Jews, Western European Jews, and German and Austrian culture.



ASCLEPIOS, M.D.? THE ANCIENT GREEKS AND INTEGRATIVE MEDICINE

Anna Wiley (Dr. Rebecca Muich)

Department of Classics & Modern Languages

Integrative medicine is the latest movement in modern medicine which combines Allopathic medical practices with complementary therapies to focus on the “least invasive, least toxic, and least costly methods to help facilitate health.” It is the goal of Integrative medicine to focus on healing, or lasting change in health, rather than curing, or fixing the immediate issues, by using the best-known healing practices. In this paper, I will explore how some ancient Greeks utilized the mechanisms of Integrative medicine at the sanctuaries of the god Asclepius towards the same goal of healing over curing. A central tenet to Integrative medicine is mind-body medicine, which utilizes mental, emotional, social, and spiritual factors influencing the mind to help heal the body. This is accomplished through hypnosis and meditation, which leads to stress reduction and promoted healing. The ancient practice of incubation provides the ancient correlate for this practice. The goal of reducing stress in patients is also accomplished in modernity through creating an optimal healing environment, seen in the archaeological evidence of the ancient sanctuaries of healing. A final way in which the mind-body connection is utilized in promoting healing is the use of movement to act out thoughts and emotions. This paper also explores how theaters were utilized in antiquity as part of the healing process. It is the goal of this paper to explain how ancient healers utilized the mind-body connection, but how this practice was lost with the promotion of reductionism and Cartesian duality of the mind and body. Modern medicine is just now catching up with the ancient healers in their understanding of the mind-body connection, but this knowledge reveals the medical legitimacy of the practices surrounding Asclepius’ worship.



BRITONS AND EMPIRE IN TACITUS AND CASSIUS DIO

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Britain as an idea and as a province held special significance to the Romans. Due to its remoteness and (initially) unknown character, it was seen, and remains, as a symbol of the extent of Roman rule. Impressive though the Romans’ accomplishments in Britain may be, a more interesting, and lesser known, story may lie with the people whom the Romans encountered when they arrived on the British Isles. This paper will examine the *Annals* and *Agricola* of Tacitus and the *Roman History* of Cassius Dio as texts which illustrate the Romans’ impressions of their new subjects, and the importance of Britain in the context of Roman imperialism. Rather than a general survey of events in Roman and Pre-Roman Britain as chronicled by these authors, I will discuss specifically how they portray the native British peoples. A striking characteristic of these descriptions is that they are varied to the point of contradiction, not only within the whole body of material on the Britons, but within individual texts. At times the Britons are cruel, disorganized, or generally barbaric, at other times they demonstrate the best of Roman virtue along with noble indifference for the trappings of civilization. My aim in this paper is to make sense of these apparently confused accounts, particularly in regard to the authors’ intended message about imperialism. My argument will be organized according to four topics. General or introductory observations about the Britons and the land they inhabit portray both negative and positive qualities of the natives to begin to set up comparisons between the Britons and the Romans. These serve to present Britain as a logical and natural yet challenging object of Roman conquest. Military narratives, which show the natives’ bravado overcome by Roman discipline, are a powerful justification of Roman conquest and superiority. Accounts of British leaders, particularly the speeches of Calgacus and Boudicca, give the Roman “heroes” worthy opponents, point to the degradation of traditional values at Rome, and concede the inherent, though necessary, injustice of Roman occupation and subjugation. Lastly, these accounts show Britons after conquest or cooperation with Romans, succumbing to the same decline in character which the Romans have already experienced under the empire. In each of these areas, this paper considers the ancient authors’ motivations, the historical value of the accounts, and draws conclusions as to how descriptions of Britons relate to Roman Imperialism in general. I conclude that the view of Britons expressed by both Tacitus and Cassius Dio validates Rome’s conquest of the island while pointing out the moral hazards of empire for Romans as well as Britons and other subject peoples.

Department of Communication Arts



CHANGES IN VIOLENCE DEPICTED IN PSYCHOLOGICAL HORROR FILMS

Katelynn Barnett, Aileen Maki, Alexandra Nese, Mallory Pie (Dr. Wendy Maxian)

Department of Communication Arts

Violence in movies is no new concept, and the way it is depicted has changed in surprising ways over the last fifty years. Concepts such as habituation, or the desensitization of psychological arousal that occurs after repeated exposure to a stimulus, can explain increased amounts of graphic violence that producers bring to the screen. The current study analyzed changes in violence, both direct and indirect, in psychological horror films produced from 1960 to 2009. To investigate changes in depictions of violence, a top-grossing, psychological horror film from each of the five decades was content analyzed. Results were compared to determine if there was a trend present. Researchers predicted that the amount of direct violence would increase steadily over time, while the amount of indirect violence would decrease steadily over that same amount of time. Contrary to the researchers' hypothesis, the focus of violence shifted from physical, or direct, forms of violence to referential, or indirect, forms of violence over the past fifty years. The results also showed that the victims of violence also changed over the fifty-year period. Habituation can explain, the change in victims from young females to animals and children. It appears that changes in types of violence towards different victims can help movie producers avoid habituation in their audiences. Findings about the increase in indirect violence suggest that psychological horror film producers tailor their works to creating suspense and stirring the imagination of viewers in hopes of a more compelling movie-viewing experience.

Department of English



PERSISTENT URBAN POVERTY IS COMPLEX

Zach Aliberti (Dr. Tyrone Williams)

Department of English

I pose the apparently simple but terribly complex question, why is poverty persistent? The complexity of this question is due to two primary conflicts. The first problem is one of creating effective social policy and/or programming. Both are hampered by the overly simplified and polarized public debate on poverty's causal mechanism between characterizations of a lazy, self-entitled cultural on the one hand, and helplessly oppressed victims of inadequate social institutions on the other. The second polarizing conflict is between positive empiricism and sociological theory. Each has limitations in its methodology and these limits influence the projected results. These results often conform to the same political charged ideologies mentioned. Ethnographic methodology and complex social systems analysis are both proposed as complementary alternatives to the limitations inherent within traditional research ideology and methodology.



A REALISTIC DEPICTION OF SLAVERY IN "UNCLE TOM'S CABIN"

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Modern literary critics have often labeled Harriet Stowe's Uncle Tom's Cabin as an unrealistic novel. She has been criticized for idealistic depiction of slavery, her overt sentimentality, and racist characterization. This paper compares the portrayal of slavery in Uncle Tom's Cabin to interviews with ex-slaves from the Slave Narratives Project, specifically focusing on six interviews. It also brings into discussion articles that discuss the realism of Stowe's novel. I found many instances where the events in Uncle Tom's Cabin parallel those narrated in the interviews. Even the relationships shown in the novel that appear overly idealistic are occasionally mirrored in the ex-slave interviews. Passages from Stowe's work written with extreme sentimentality, such as the breakdown of the family, are frequently discussed in the ex-slave narratives. While Uncle Tom's Cabin should not be read as a totally accurate novel, my paper concludes that it is a more realistic rendering of slavery than has sometimes been assumed. The sentimentality and prejudices apparent in the novel can overshadow its realism. However, it was written for abolitionist purposes. Stowe attempts to appeal to readers by emotionally writing about the factual atrocities of slavery.



ME TALK PRETTY AT THE CARNIVAL: AMERICAN HUMORISTS DAVID SEDARIS AND JAMES THURBER

Rachael Harris (Dr. John Getz)

Department of English

This research paper explored the similarities between American humorists David Sedaris and James Thurber and how both authors contributed to the development of humor in American literature. Both authors wrote for The New Yorker, expanded American humor through self-deprecation and mocking American society, and highlighted the misunderstandings between men and women. Both authors use largely autobiographical writing and Sedaris even won the Thurber Prize for American Humor in 2001, a prize made to award authors for their work in humorous American literature and named after Thurber himself. Sedaris and Thurber's greatest contribution to American humor stems from their use of self-deprecation to bring laughter; while Sedaris does this strictly through writing, Thurber uses both writing and cartoons. Finally, by writing about personal family experiences, highlighting the eccentricities of everyday life, and using a conversational yet self-deprecating tone in their writing, both Thurber and Sedaris bring a level of comfort, ease, and simplicity to humor in American literature.



FANNY FERN: ONE WOMAN'S PROGRESSIVE NEWSPAPER COLUMN REDEFINES WOMEN'S ISSUES AND CHALLENGES GENDER ROLES IN 19TH CENTURY AMERICA

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Department of English

From the 1850s through the 1870s, Sara Willis Parton, under the pen name "Fanny Fern," was an extremely influential writer for the New York Ledger. Writing a weekly newspaper column, Fern earned one hundred dollars a week, the highest salary of any columnist of the time. By challenging public opinion on topics such as the treatment of working women, women's dress, and the poverty and abuse of women, Fanny Fern had a great impact on the emerging women's rights movement in America. The enduring quality about Fern's writing is her humorous and spirited style, which simultaneously challenges readers to defend social gender norms and entertains them with a witty voice. This anecdotal manner demonstrated the prevailing spirit of American values and enabled her to discuss controversial topics of the time without disengaging her audience. Connecting Fern's work to the greater women's issues of the time allows a better understanding of how Fern reflects and challenges popular attitudes of the American Renaissance. Using specific newspaper articles from The New-York Daily Tribune in the 1840s-1850s and comparing them to how Fern addresses women's issues culminates in a more complete understanding of how social issues influence literature. Such articles demonstrate the women's issues at the nation's forefront and can be compared to how Fanny Fern presented such topics in her writing. Thus, Fanny Fern effectively challenged the status quo of the time period regarding women's issues and gender roles in her popular newspaper column.

Department of History



"THE DEVIL IN THE SHAPE OF A PLAINTIFF": WITCHES, SLANDER, AND INTERPERSONAL POLITICS IN SEVENTEENTH-CENTURY MASSACHUSETTS

Tim Holliday (Dr. Christine Anderson)

Department of History

The Salem Witch Trials of 1692, with their perfect balance of tragedy and intrigue, have long captivated both popular and academic imaginations. However, the anomalous nature of the Salem Witch Trials threatens to present an incomplete picture of gendered social dynamics in seventeenth-century Essex County, Massachusetts. An examination of pre-1692 witchcraft allegations within the records of the Essex County Quarterly Court reveals that accused witches, both women and men, often took their accusers to court for slander—and won. Although the court records are mere summaries rather than transcripts, the language of these court cases—as well as the specific accusations brought by each party against the other—reveals Puritan concerns regarding body, property, and power. Historians have primarily discussed defamation and slander in communal rather than interpersonal terms, which risks blurring the distinctions between individual litigants. Participants in witchcraft slander cases engaged in gendered contests of power that established personal, as well as communal, behavioral boundaries. An analysis of the personal dramas within these trials suggests an alternative understanding of Puritan women—as individuals, rather than archetypes.

Department of Math & Computer Science



EVOLUTIONARY ALGORITHM IMPLEMENTATION AND COMPARISON

Frank Bertsch (Dr. Elizabeth Johnson)

Department of Computer Science

Evolutionary algorithms are a type of artificial intelligence that act on successive generations in such a way that later generations are closer to the desired result. They are based on natural evolution and can incorporate the standard mechanisms of reproduction, selection, mutation, and crossover. Here we studied evolutionary algorithms for the specific problem of agents traversing a terrain filled with fruit and poison, where the agent should eat fruit and avoid poison as much as possible. Different mechanisms for propagation were compared, along with more specific (and thus larger) genetic sequences. Early results showed that maximum average fitness can be reached within fifteen generations.



THE ROAD COLORING PROBLEM

Zachary Joyce (Dr. Michael Goldweber, Dr. Esmerelda Nastase)

Department of Math & Computer Science

The Road Coloring Problem is a newly solved problem in the areas of Graph Theory and Finite Automaton Theory. This problem, solved by Avraham Trahtman in 2007, involves providing a coloring to the edges of an AGW graph such that the graph is then transformed into a deterministic finite automaton (DFA) with a synchronizing word. An AGW graph is a directed, finite, strongly connected graph with constant outdegree of all vertices, as well as having the property that the greatest common divisor of all cycle lengths is 1. A synchronizing word, based on the edge coloring as the transition function of the DFA, is a fixed length list of transitions that will map every state (i.e. vertex) in the automaton to a single final state. In other words, the synchronizing word is a set of directions leading to the synchronizing state that is valid regardless of starting position, or knowledge of current location. My work in this area involves researching the theory of the positive solution presented by Trahtman, the algorithm to find an edge coloring for an AGW graph, and a successful implementation of the coloring algorithm in JAVA. Extensions and applications of the road coloring problem are also discussed.

HOW SOCIAL SEGREGATION AFFECTS UNDERGRADUATE ECONOMIC OUTCOMES: AN APPLICATION OF THE PERRON-FROBENIUS THEORY OF NONNEGATIVE MATRICES

Maeve Maloney (Dr. Minerva Catral, Dr. Bree Lang)

Department of Mathematics, Department of Economics

This research project examines the effect of social segregation on the educational outcomes of undergraduates. This research has two main parts. The first uses the Perron-Frobenius Theory of Nonnegative Matrices to fully understand the mechanism through which the Segregation Index designed by Echenique and Fryer [Fryer R, Echenique F. A Measure of Segregation Based on Social Interactions. Quarterly Journal of Economics, 2007] guarantees the axioms of monotonicity, homogeneity, and linearity. The second applies the Index to a set of original data. The Index provides the relative level of segregation of each sample member. These results will be regressed against the students' GPA, as a measurement of educational outcomes. The results of the regression are still in the process of being analyzed. If conclusive the project will demonstrate empirical evidence of the effect of social segregation on educational outcomes.

Department of Philosophy



MECHANISM, INTENTION, AND A BLADE OF GRASS: KANT AND DARWIN ON TELEOLOGY IN NATURE

Michael Petraný (Dr. Timothy Quinn)

Department of Philosophy

In the Critique of Judgment, Immanuel Kant employs the notion of teleology in order to explain the self-organization of biological systems in nature. Kant argues that in order for living beings to be intelligible, we must judge them as if they came into being for a purpose. In this paper, I explore Kant's understanding of teleology in light of Charles Darwin's theory of selective forces acting upon the inherent randomness and contingency of nature. The juxtaposition of these two thinkers raises fruitful questions about the integrity of Kant's account of teleology, the central concerns he was addressing, and whether his conclusions hinge on a naively limited view of the possibilities of biological inquiry. Through this comparison, I show that where Darwin is satisfied to remain with a mechanical understanding of nature, driven by a sort of unintentional functionalism, Kant is not content with this view. Kant's account of teleological judgment is based more fundamentally on principles of the subject's understanding than on the objective order of nature, and as such describes a way of viewing nature that is uniquely and essentially human. Kant respects the necessity of inquiry into mechanical processes but holds that an exclusively mechanistic account of living beings can never be comprehensive with respect to the human understanding.



HANNAH ARENDT: THE POLITICS OF JUDGMENT

Donna Szostak (Dr. Timothy Quinn)

Department of Philosophy

The question of "how we judge" became a crucial concern for Hannah Arendt as she grappled with the political tragedies of the twentieth century, namely Nazism and Stalinism. Arendt claims that the previous categories of moral and political judgment were destroyed by these tragic events. Therefore, Arendt argues that the challenge we now face is to explain these events without the help of tradition, or as Arendt puts it, "without a bannister" (RPW, 336). Although we can no longer use traditional concepts and values to judge present events, Arendt argues that this situation offers a unique opportunity. Since we can no longer use familiar precedents to explain the unprecedented, we now have a chance to look upon the past "with eyes undistorted by any tradition" (BPF, 28-9). The advantage of her theory of judgment is that it allows us to examine events on a new ground, that is, we are not restricted to finding meaning from previous events. However, Arendt's main concern is whether we have the authorization to presuppose "an independent human faculty, unsupported by law and public opinion that judges anew in full spontaneity every deed and intent whenever the occasion arises." Do we even have such a faculty of judgment, if so, does every single person possess this ability equally? Her theory of judgment comes to a head when she begins her work titled *The Life of the Mind*. This work would have consisted of three volumes that examined the faculties of thinking, willing and judgment. Unfortunately, due to an untimely death, Arendt was unable to finish the third volume of *The Life of the Mind*. What is left, is scattered passages indicating how she intended to write the final volume on judgment. However, in my thesis, I did not speculate about what her theory could be, instead, I examined Arendt's theory of judgment using her major works in order to see more clearly how she understands its nature and scope.

Department of Philosophy, Politics, & the Public



COMMUNITY ORGANIZING: A PATH TOWARDS DEMOCRATIC ENHANCEMENT IN POST-COMMUNIST EUROPE

Grace Badik (Dr. Timothy Brownlee, Dr. James P. Buchanan)

Department of Philosophy, Politics, & the Public

Democracy is both a top-down and bottom-up process insofar as constitutions and the State can institute democratic processes, but without democratic sentiments among the citizens, democracy means very little. The question then becomes on how to create democratic sentiments among people, who historically had been denied certain rights and responsibilities that constitute democratic life. What is clear is the connection between the development of civil society and associations with democratic sentiments and the overall enhancement of democracy. In what follows I want to explore the role that community organizing plays in the development of civil society and what Alexis de Tocqueville calls “self-interest properly understood” working through associations. Civil society is one of the key pillars of a liberal democracy. To play its role, civil society must organize, especially around self-interest. Community organizing adds an important dimension to the functioning of civil society, and, consequently, to the enhancement of democracy, serving as both an important element of and tool for democracy. The question is what role has community organizing played in emerging democracies, particularly in post-communist Europe, and what role should it play?



THE SHORTCOMINGS OF NEGATIVE LIBERTY: CONTEMPORARY CONSERVATISM IN FEDERALIST AMERICA

Sean Cahill (Dr. Timothy Brownlee)

Department of Philosophy, Politics, & the Public

This paper begins as an analysis of the historical relationship between American conservatism and government. The conservative movement has traditionally had a fairly antagonistic association with government, even going so far as to demonize the state for political purposes. Those on the right argue that government activism infringes on personal freedoms, limiting individual autonomy. The view of government as a violator of rights stems from the conservative dedication to the idea of negative liberty, beginning with the theories of Thomas Jefferson. I argue that conservatives ought to moderate their championing of negative liberty. Instead, I urge the right realize that smart, transparent government activism may, in certain cases, provide more liberty for a greater number of Americans, and that conservatives ought to adjust their policy pursuits accordingly.



ON PRODUCING GREAT PERSONS: DEMOCRATIC EDUCATION IN THE UNITED STATES

Olivia Earls (Dr. Timothy Quinn)

Department of Philosophy, Politics, & the Public

The state of public discourse has long been lamented by scholars and general observers. Many scholars blame this state on the lack of participation from citizens. The way to combat this lack of participation is through the formal education creating active citizens. The history of civic education in the United States is long and dynamic. Despite this fact, the idea that children should be prepared for citizenship has always been present, beginning with Thomas Jefferson and the Founders. The idea continued into the 19th and 20th century and included such thinkers as Horace Mann, Alexis de Tocqueville, and John Dewey. Although the importance of civic education has always been at the forefront of educational thought, it has not succeeded in creating active citizens capable of participating effectively in a democracy. An examination of the current civic education program of Ohio demonstrates why this is the case. This report suggests that if states, like Ohio, taught the virtues of public-mindedness, tolerance, argument skills, imagination, and adaptability instead of merely teaching facts about the government, children would learn the skills necessary to participate in a democracy.



THE RELATIONSHIP BETWEEN THE ENVIRONMENT AND THE AMERICAN DREAM IN THE SHAPING OF THE NATION

Amanda Fisher (Dr. Roger A. Fortin)

Department of Philosophy, Politics, & the Public

The purpose of this research was to study the relationship between the American Dream and how Americans view the environment in our nation's history. Different generations of Americans had different ideas about what they wanted to achieve on an individual and national level when it came to the Dream. How each generation envisioned their Dream was influenced in part by how they saw their environment. Those who saw the environment and its resources as something to be exploited tended to desire a dream that was based more on wealth and status. However, those who saw the rich natural beauty of the landscape and were in awe of it dreamed of working with nature to create a great nation. Other influences, for example religious and philosophical beliefs, helped shape how Americans saw the environment and in turn shaped the American Dream. As the nation's values and ideologies changed over time so did Americans' views of the environment and the American Dream.



THE NEW RIGHT AND PERSPECTIVES OF THE AMERICAN WORKING CLASS

Andrew Fuller (Dr. Stephen Paul O'Hara)

Department of Philosophy, Politics, & the Public

Throughout the 1980s, the American white working class went through a profound change in ideology. The changing aspects of business management, economic recession, and revision of fiscal policies not only altered the age-old association between workers and the Democratic Party, but also created an entirely new paradigm in American culture. Deviating from class unity and labor unions, the New Right refined by Reagan in the 1980s crafted a new American narrative; one in which values, nationalism, and authenticity rose above economic interests. By analyzing the sentiments of the working class and the political tactics of the Republican Party, we can come to understand this demographic shift. The implications of this new paradigm are discussed, as it still affects American politics today.



"I JUST WANNA BE SUCCESSFUL": THE AMERICAN DREAM AND ITS INNATE AMBIGUITY

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Department of Philosophy, Politics, & the Public

This paper is an interdisciplinary exploration of the modern conception of the American Dream. Throughout the paper I address the versatility of the American Dream and its ability to cross boundaries and embody a variety of interpretations, in addition to discussing the development of our self-image, which Jean Jacques Rousseau argues is a social construction. Additionally, I argue that as a result of our modern conception of the American dream, which almost exclusively promotes a materialistic interpretation, in lieu of accepting its inherent ambiguity, we experience numerous consequences, none more evident than the rampant growth of obesity within the United States. By incorporating historical and philosophical components with economic research and subsequent empirical analysis, I further emphasize the importance of adequately utilizing and interpreting one of our most revered founding principles.



A JUSTIFICATION FOR ADOPTING EDUCATIVE PUNISHMENT AND ITS IMPLICATIONS FOR THE UNITED STATES' PENAL SYSTEM

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Department of Philosophy, Politics, & the Public

Twenty two percent of the world's incarcerated population lives in U.S. prisons; the United States currently incarcerates the highest proportion of citizens compared to any modern nation, demanding inquiry into its justification for punishment. This paper explores the traditional justifications for legal punishment and concludes they contain flaws that discourage a state adopting them. While a state is justified in punishing because citizens who commit crimes forfeit their right not to receive punishment, I argue an educative justification for punishment should be adopted by liberal regimes because it promotes a good for the offender, respects individual rights, and incorporates all the three primary stakeholders in punishment. The second half of the paper explains how educative punishment may be adopted by the United States' justice system effectively.



THE TRIALS AND TRIBULATIONS OF FREE MARKET MEDIA

Dan Graziano (Dr. Mack D. Mariani)

Department of Philosophy, Politics, & the Public

American citizens have been shown to be largely less informed on political affairs and global current events than citizens of other industrialized, first world nations; this can, in part, be attributed to the deplorable state of American news media, which often produces news stories that are generally light on critical analyses and in-depth reporting as well as a focus on “soft” and entertaining news rather than the most pertinent and newsworthy issues. A main contributor to the current state of news media in the United States is the capitalist, free market system in which it exists and operates. Studies comparing the U.S. to other nations, particularly those in Europe, which provide substantial public funding towards non-profit news agencies, find that those citizens are often more well-informed and knowledgeable regarding world affairs.



TESTING AND ITS DISCONTENTS: THE BENEFITS OF INDIVIDUAL STUDENT ASSESSMENT IN THE POST-‘NO CHILD LEFT BEHIND’ ERA IN FEDERAL EDUCATION

Michael Hills (Dr. Mack D. Mariani)

Department of Philosophy, Politics, & the Public

Five key constituency groups benefit from public school individual student assessment. Students, parents, educators, legislators and the public simply need to know more about what students are learning and at what time. Today more than ever the conversation is changing over what American students can learn. Parents in both public and private schools have enjoyed options and assurance under the data publication from NCLB assessments. Even despite increased media coverage, the education community is not shirking away from a more accountable public school system. Those who are drafting reforms, the policymakers, need more effective student achievement readouts more now than ever before. And the public, the critical space of debate and deliberation, requires a high level of civic knowledge. Individual student assessment must be addressed in a federal education policy moving forward.



AN ANALYSIS OF THE BRITISH BOMBINGS ON GERMANY DURING THE SECOND WORLD WAR

Jonathan Keillor (Dr. Amy Whipple)

Department of Philosophy, Politics, & the Public

Technological advances often prevent mankind from knowing what to fear. Before the outbreak of the Second World War, the world was unaware of the power of the bomber or the destruction it could bring. The devastation caused by this technology would haunt the citizens who experienced it for years after the war. However, these nightmare experiences brought forth questions regarding the bombing of cities - particularly the British bombing campaign against Germany. Were the bombings needed to win the war? Was the destruction from the bombers necessary even with Germany retreating as the war seemed to draw to an end? Throughout the decades following the Second World War the answers to these questions from historians, the media, and members of the war effort provide both justifications and critiques for the bombings. This project considers the arguments from all perspectives and shows that while the role of the bombings in winning the war may be debatable, the power of the bombers is undeniable.



CONSISTENCY IN CHANGE: THE LEGACY OF THE CHARTER MOVEMENT IN MODERN CINCINNATI POLITICS

Matthew Keyes (Dr. Gene Beaupre)

Department of Philosophy, Politics, & the Public

This project investigates the Progressive Era Charter Movement in Cincinnati that sought good government reforms in municipal government and the legacy of that movement in the modern Charter Committee in Cincinnati. On the surface, the Charter Committee seems to embrace government reforms that contradict the original reforms of the Charter Movement. However, when one understands the philosophical arguments that underlie the issues, it becomes clear that the legacy of the Charter Movement is still well intact.



SCIENCE FICTION AND THE MODERN READER IN WALTER MILLER'S A CANTICLE FOR LEIBOWITZ AND MARGARET ATWOOD'S ORYX AND CRAKE

Emily McLaughlin (Dr. John Getz)

Department of Philosophy, Politics, & the Public

This paper studies Walter Miller's *A Canticle for Leibowitz* and Margaret Atwood's *Oryx and Crake*, examining how each of these authors use modern scientific advancements to address what they perceive to as necessary cultural and political changes. Unlike what so many believe to be positive scientific progress, the advancements in these novels of medical treatments and technology prove detrimental to their societies, becoming the face of the apocalypse. No alien-invasion or natural disaster occurs; instead it is humanity itself that holds the keys to its own destruction. This paper highlights how two dystopian writers address the growing divide between science and the humanities through their creation of worlds eerily similar to reality. To do this I will show how both Miller and Atwood extrapolate from their Cold War and post 9/11 societies respectively. In the case of Cold War society, I have chosen to focus on Miller's depiction of impending nuclear apocalypse, in Atwood I look at the correlation between genetic manipulations and today's technology-dependant society. These modern challenges, evident in both *A Canticle for Leibowitz* and *Oryx and Crake* suggest that the same things that bring us together are slowly tearing us apart. By looking at the different aspects of the setting, characterization, and social structures in the novels I hope to show how these novels contribute to public discourse.



A POLICY OF TORTURE

Kelsey Reed (Dr. David Mengel)

Department of Philosophy, Politics, & the Public

Post 9/11 American torture policy shifted to include torture tactics formerly considered abuses of humanitarian principles and basic rights. In this thesis I argue the Bush administration legally altered American definition of torture by prescribing enhanced interrogation techniques in violation with the Geneva Convention and international definition of torture. Subsequent, the torture debate entered the public sphere and forced the American public and government to reflect on the slippery slope of torture doctrine. Through the analysis of surveys, treaties and memos (written by government officials during the Bush administration), my thesis concludes there was a before 9/11, an immediately post 9/11 and even now is a current frame of mind regarding torture policy, one that has become (like the before 9/11 position) less focused on torture tactic and more on protecting American rights.



THE OFF-COLOR HISTORY OF IMMIGRATION: RACIAL DISCRIMINATION, IMMIGRATION, AND THE JOHNSON-REED ACT OF 1924

Matthew Schreiber (Dr. Stephen Paul O'Hara)

Department of Philosophy, Politics, & the Public

The basis of the Johnson-Reed Act is a complex series of attitudes developed during the Gilded Age. A shift and increase in immigration, from Northern and Western European (the "old" immigrants) to Asian, and Southern and Eastern European (the "new" immigrant groups), made many Americans question the place of the immigrant in America. The emergence of Anarchism, Nihilism, and Communism, as well as the prevalence of violence in the American labor conflict caused many Americans to associate negative traits with immigrants. Immigration reforms, such as the Page Act and Chinese Exclusion Act, showed the willingness of Americans to exclude certain immigrant groups that they deemed "inferior." The emerging "social sciences," a set of racist beliefs, hidden behind the guise of pseudo-scientific language, allowed Americans to create the Johnson-Reed Act, an immigration policy that was meant to control American immigration, but was also meant to discourage immigration of the "new" immigrant groups.

Department of Physics



INVESTIGATION OF LYAPUNOV STABILITY OF CHAOTIC SYSTEMS

Frank Bertsch (Dr. Marco Fatuzzo)

Department of Physics

The magnetic pendulum is known to be a chaotic system, and as such, its motion is sensitive to the initial condition with which it is put into motion. This sensitivity can be characterized through a measure known as the Lyapunov exponent, which allows one to quantify the length of time that the motion of the pendulum can be accurately predicted. Using a numerical technique known as the implicit Runge-Kutta method, solutions for the motion of a magnetic pendulum were obtained. In turn, these solutions were used to calculate the values of the Lyapunov exponents of the magnetic pendulum.



WOMEN IN PHYSICS

Alexis DeBell (Dr. Heidrun Schmitzer)

Department of Physics

The ultimate goal of any good physicist is to find either a solution to the problem at hand, or to find a relationship between the problem and the cause of the problem. In this work the problem discussed is the dramatically low number of women in physics in relation to the number of men in physics and also in relation to the ever increasing number of women in other sciences. To find the cause for this discrepancy, surveys were sent out to 117 universities requesting information regarding women seeking an undergraduate physics degree. Previous surveys such as "Women in Physics: A Tale of Limits" written by Ivie and Tesfaye and published in Physics Today in 2011 were also studied along with interviews with undergraduate and graduate level women in physics were performed. Based on these studies we suggest that two main factors play a role. First, the religious and cultural background of the family can emphasize or downplay the value of education for women and thus influence a child at an early age. Second, depending on societal values, the status of physics itself might attract more men than women or vice versa.



COSMIC RAYS AND STELLAR DISKS

Hameer Deo (Dr. Marco Fatuzzo)

Department of Physics

We explore the influence of magnetic turbulence on the interaction of cosmic rays with the stellar disks that surround newly forming stars. Specifically, the hour-glass magnetic field geometries expected in these environments are known to act as magnetic mirrors, and will reflect many of the cosmic rays away from the disks. Since cosmic rays ionize these disks, and the ionization fraction of the gas in turn controls the rate at which material from the disk accretes onto the forming star, mirroring can strongly influence the mass with which stars are born. In order to better understand these processes, we numerically investigate how a turbulent component to the magnetic field alters the mirroring condition, and in turn, affects the number of cosmic rays that can reach the stellar disk.



SOLVING STIFF DIFFERENTIAL EQUATIONS: AN EXAMINATION OF MODERN APPLICATIONS FOR ANALOG COMPUTERS

Brendan Gausvik, Jake Heath (Dr. Gregory A. Braun)

Department of Physics

This thesis investigates the application of modern uses of analog computers particularly in the field of modeling problems with stiff differential equations. The majority of this investigation looks at the speed at which solutions for a non-stiff and stiff ordinary differential equation can be calculated by two different methods. The first method is by using the analog computer and the second method is by using a digital computer. In particular, the analog computer solved the equations by means of a continuous voltage, while the digital computer used a numerical approximation, namely Euler, on Matlab software. Then, I compared these solution speeds to each other. A comparison of these two methods reveals that in the specific case of stiff differential equations, the analog computer is ideally designed to solve these problems with a consistent speed. These results also reveal that for stiff differential equations without explicit solutions, the accuracy of the digital approximation has a direct relationship to the speed of its calculation. In the case of nonstiff differential equations, the digital approximation is faster and more accurate than the solutions calculated by the analog computer.



QUANTIFYING SPIROGRAPHIC ORBITS

Stephen Lamb (Dr. Marco Fatuzzo)

Department of Physics

How celestial objects move represents one of the most fundamental questions about our Universe. The Greeks held that all celestial bodies moved in perfect circular orbits about an unmoving Earth. But this view was inconsistent with observations, and ultimately replaced by the Copernican sun-centered Universe and Kepler's elliptical orbits. But in truth, celestial bodies can move in a rich variety of ways. We study here one such case – the orbits of objects that pass through a spherically symmetric extended mass distribution. Specifically, we adopt the well-known Hernquist density profile that is used to describe elliptical galaxies and dark matter halos of galaxies. Using Mathematica, a mathematical computation program, we solve the equations of motion for an object moving through our adopted density profile to obtain numerical solutions for a given initial position and velocity. The resulting orbits are spirographic, with the farthest point in the orbit traveling at regular interval. The travel angle of the orbits apogee was measured in order to characterize how the orbit properties depend on the initial conditions.



KAMMTAIL VIRTUAL AIRFOIL

Cory St. Clair (Dr. Justin Link)

Department of Physics

The goal of this research was to gain a stronger understanding of airflow around objects and to measure the effectiveness of a Kammtail Virtual Airfoil (KVF). In order to do this a wind tunnel was built that would provide a controlled environment needed to test the force of drag on different objects. Since the force of air resistance is proportional to the area of an object, objects of different frontal areas and different shapes needed to be tested to see how the air travelled around the objects differently. During this testing a force gauge was used to measure the drag, and a fog machine was used to visually see how the air flowed around the objects. The experiment performed tested the force as a function of variable wind speed in an effort to calculate the coefficients of drag for a sphere, a pyramid, a bullet and an airfoil. This method gave supporting data to rank the different shapes to see that the teardrop airfoil was the most aerodynamic in this test set. In the final stage of the research on the Kammtail Virtual Airfoil, I investigated the flow of fog around 3 different airfoils, and was able see how the air traveled over the shorter KVF in the same way that it would flow over a traditional Teardrop Airfoil. Through this method, it was confirmed that the aerodynamic performance of the KVF is equal to the 8:1 Airfoil, and that the KVF performs better than the 3:1 Airfoil in most wind conditions.

Department of Psychology



I FEEL YA...MAYBE: DOES TEXT MESSAGING HINDER THE ABILITY TO INTERPRET EMOTION?

Carla Antenucci (Dr. Cynthia Dulaney)

Department of Psychology

The current study examines the differences in emotional interpretation between three forms of communication: texting, calling and face-to-face conversation. Previous research indicates that miscommunications often occur during text message conversations due to the lack of nonverbal cues that are present during face-to-face conversations (Kato, Kato, & Akahori, 2007). In the current study, participants were randomly assigned to receive one of three communication formats (audio, video and text) and were asked to interpret the speaker's message on an emotion scale. Preliminary data collection of 50 participants indicates a main effect of communication format, $F(2,47) = 3.84$, $p = 0.03$. This effect was due to the participants who viewed the video giving a more favorable emotional interpretation than those participants who read the texts. Results indicate that text messaging, now the dominant form of communication for many American adults, may be reducing the ability to interpret another person's emotions.



MEN, WOMEN, AND THE SEXUAL DOUBLE STANDARD

Brianna Bonner (Dr. Dalia Diab)

Department of Psychology

There has been a great deal of research conducted on the presence of sexual double standards, but there has been conflicting findings. It is widely popularized in the media that it is acceptable for men to have multiple partners, but it is unacceptable for women to participate in the same behavior. Men seem to be rewarded for their behavior whereas women are penalized. The purpose of this study was to determine if there is still a presence of sexual double standards by examining the effect of gender on perceptions of these standards. Ninety-two undergraduate males and females were given a vignette that described either a male or female undergraduate's relationship behaviors. Then, participants were asked about their perceptions of that student. Data analysis is still pending, but results have implications for research on double standards.



JUSTIFICATION FOR STIMULANT DRUG USES AND LIKEABILITY OF COLLEGE STUDENTS

Eileen Borczon (Dr. Cynthia Dulaney)

Department of Psychology

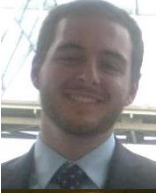
Attention deficit hyperactivity disorder (ADHD) has become more widely recognized and diagnosed by clinicians over recent years. With the increased prescribing of stimulant medications, however, has come abuse and misuse of these drugs, particularly on college campuses. The purpose of this study was to examine the relationship between the context of the use of a prescribed and non-prescribed ADHD stimulant (Adderall) on justification of the stimulant use and likeability of the stimulant user. Participants read a short vignette about a college student who uses a stimulant either as prescribed by a doctor, to study for big exams, or to party longer. Participants then rated the justification of the stimulant use and the likeability of the stimulant user. Consistent with the hypotheses, the prescribed stimulant use was rated significantly more justified and the user significantly more likeable than both non-prescribed conditions ($p < .001$ and $p < .05$, respectfully). There was no significant difference between the non-prescribed conditions. Although non-prescribed stimulant use is a growing problem among college students, this study suggests students might not view non-prescribed stimulant use as positively among their peers as this trend suggests.

GENDER DIFFERENCES IN REGARDS TO SCORE'S IMPACT ON SPECTATORS' EMOTIONAL EXPRESSIONS

Eileen Borczon, Anthony Cirillo, Sadie Olson, Brenda Miller (Dr. Christian End)

Department of Psychology

Few attempts have been made to understand spectators' emotional responses during a sporting event. This study sought to explore spectators' emotional responses during the course of a sporting event, as well as the impact of specific game events (win or loss) and gender on facial expressions. We hypothesized that males would exhibit stronger emotional reactions than females as men tend to report higher levels of fan identification than women (Wann et al., 1994). Also, higher positive responses would be observed when the team was winning, while higher negative responses would be observed when the team was losing. Utilizing a 2x2 within-subjects design, participants (N = 59) viewed 40 video clips and rated facial expressions for 16 emotions using a Likert scale. A MANOVA demonstrated men exhibited less positive affect than female fans. Additionally, fans exhibited greater negative affect when the team was losing in comparison to instances when the team was winning. There was a significant interaction between game outcome and gender in positive and negative affect. Spectators' faces seem to reflect that females are actually enjoying games to a greater extent than males, who may be concerned about the potential of their fan identity being threatened by a defeat.



THE IMPACT OF OUTCOME AND MOOD ON GROUP PERFORMANCE OF FANS

Eileen Borczon, Thomas Hizer, Paul Kuhn, Sadie Olson, David Schappler, Leslie Twehues (Dr. Christian End)

Department of Psychology

Past research has demonstrated that cities with winning NFL teams experience an economic boon. The objective of this study was to isolate and identify the true 'causes' of this correlation by examining outcome of a game and mood on group performance of fans. Participants (N = 267) completed a measure which assessed their levels of identification with the Xavier University men's basketball team. Participants then randomly watched a clip of Xavier either winning or losing against Saint Louis University's basketball team, after which they read an article detailing the final result of the game and completed a mood scale. Participants were then randomly assigned to groups of three to complete two group tasks: a pick-up sticks task measuring social loafing and a murder mystery task measuring group information sharing. Finally, participants completed surveys measuring group attraction and integration. Hypotheses were partially supported in that participants in the win condition reported higher levels of positive affect and lower levels of negative affect in comparison to participants in the loss condition, but there was no significant difference on group cohesiveness or information sharing between conditions.



COLLEGE STUDENTS' PERCEPTIONS OF RESIDENT ASSISTANTS AND FRESHMAN ORIENTATION LEADERS

Megan Bowling (Dr. Dalia Diab)

Department of Psychology

The primary purpose of this study is to determine if leadership roles, such as the Resident Assistant (RA) or Manresa positions, are affected by the halo effect. Bechger, Maris, and Hsiao (2010) defined the halo effect as something that occurs when a judgment of one attribute causes other characteristics to be judged in a different light because of the specific trait. It is hypothesized that a halo effect will be present for RAs and Manresa leaders, such that RAs will be viewed in a more negative light than Manresa leaders. Undergraduate students received one of three vignettes describing a student who differed on leadership position (RA vs. Manresa leader vs. no position) and were asked to rate their perceptions of that student using six facets of the Abridged Big 5 Circumplex (Hofstee, de Raad, & Goldberg, 1992). Data analysis is still pending; however, results have implications for enhancing training for both student leadership groups, making an effort to alleviate typecasts, as well as working on ways to improve each group's public image.



THE INFLUENCE OF SUSPENSE ON SPECTATORS' EMOTIONAL EXPRESSIONS

Megan E. Bowling, Claire F. Milleli, Brenda R. Miller, Sadie M. Olson, Emily Shultz (Dr. Christian End)

Department of Psychology

One of the major reasons that spectators are attracted to sporting events is because of the experience of the suspense. While several studies have advanced researchers' understanding of fans' emotional experiences after a game has occurred, there is limited research about the spectators' emotional experience *during* a game (Kerr, Wilson, Nakamura, & Sudo, 2005). Knobloch-Westerwick, David, Tamborini and Greenwood (2009) conducted a study that examined the emotional experience during a game. Using a self-report measure, they found that lower certainty of game outcome and a closer point margin intensified the spectators' experiences of suspense. The purpose of the current exploratory study was to examine how suspense influences spectators' emotional expressions throughout the course of a basketball game and how these responses might be impacted by whether the home team is winning or losing. It was hypothesized that emotions would be most intense when there was a point margin of three points or less (the operational definition of high suspense) and that reports of negative affect would be highest when the home team was losing by a low score margin, while positive affect would be highest when the home team was winning by a low score margin. Thus, this study utilized a 2 (Suspense: High or Low) x 2 (Score: Winning or Losing) within-subjects design, utilizing 10 video clip stimuli for each condition. The video clips, each 5 seconds in length, were randomly selected from footage of spectators in attendance at four Xavier University men's home basketball games. The clips were displayed to participants in a randomized order and featured a spectator responding to a specific game event. Participants ($N=34$) blind to the context of the study, viewed each video clip and using the 16-item Multiple Affect Adjective Checklist (Sloan, 1979), rated each facial expression on various emotional descriptors (i.e. "anger") using a Likert scale from 1 (*extremely inaccurate*) to 8 (*extremely accurate*). A MANOVA revealed that there were significant differences for negative affect across the four conditions, $F(31) = 14.28, p < .001$. Paired sample t -tests indicated that, consistent with the hypothesis, there was more negative affect when the home team was losing by a small point margin ($M = 25.14, SD = 9.20$) than when they were losing by a large point margin ($M = 20.75, SD = 7.10; t = 5.11(33), p < .001$). Unexpectedly, when the team was winning by a large point margin the observed negative affect ($M = 26.42, SD = 9.67$) did not differ from when the team was losing by a small margin. Consistent with the suspense hypothesis, the greatest positive affect was observed when the home team led the game by a low score margin ($M = 24.17, SD = 6.30$) with the least positive affect observed either when the visiting team led by a low score margin ($M = 21.46, SD = 6.18$) or surprisingly, when the home team held large leads ($M = 21.79, SD = 6.27$). Consistent with the suspense hypothesis, during instances when the home team held close leads, it was perceived the spectators exhibited the highest levels of positive affect and the least amount of negative affect. Unexpectedly, large leads elicited emotions consistent with small deficits. Since observed emotions do not necessarily equate experienced emotions, future research could pair spectators' self-report data with perceptual data. Another limitation is that it is unclear to what stimuli spectators are responding to throughout a basketball game (e.g.; conversation with surrounding spectators). Additional efforts could be made to identify confounding factors that contribute to the wave of emotions spectators experience during a game.

A COMPARISON OF UNDER AND UPPER CLASSMEN'S MOTIVATIONS TO VOLUNTEER

Megan DeRosier (Dr. Christian End)

Department of Psychology

The current study examined motivational factors that affect volunteerism among college students at a private University and how those motivations differ between freshman and senior year. Previous research demonstrates that motivations to volunteer change over time, with age and stage of life associated with specific needs (Gillespie & King, 1985). Volunteering allows students to fulfill needs of gaining career experience or fostering personal relationships with others, as well as personal satisfaction and self-improvement (Serow, 1991; Wiehe & Isenhour, 1977). It was hypothesized that freshman and senior students would report social factors as motivation to volunteer but that freshmen would score higher than seniors. Additionally, it was hypothesized that seniors would report higher scores than freshmen for motivation in areas of values, career, and civic-duty. Participants ($N=59$) completed the Volunteer Functions Inventory (Clary et al., 1998), the Public Service Motivation Inventory (PSM; Perry, 1996) and a demographic survey. Hypotheses were not supported as results indicated no significant differences between freshmen and senior students regarding subscales as a whole. Six specific items demonstrated significant differences between freshmen and seniors within the career, values, and compassion subscales, all with $p < .05$.



THE EFFECTS OF EXTRAVERTED PERSONALITY AND ANONYMITY ON CONFORMITY

Gabrielle Falco (Dr. Dalia Diab)

Department of Psychology

Several factors have been studied for their possible influences on conformity (e.g. Stowell, Oldham, & Bennett, 2010). This study used a 2 x 2 x 2 between-subjects factorial design to investigate the effects of extraversion (high vs. low), anonymity (anonymous vs. non-anonymous), and perceived percentages of norm peer behavior (high vs. low) on conformity in a group setting. It was hypothesized that extraverted individuals would have a lower tendency to conform than those who are not extraverted. It was also hypothesized that increased anonymity of responses would decrease conformity and increase response variability. In this study, conformity was regarded as agreement with the perceived normative behaviors of participants' peer group, regardless of whether the behaviors are depicted as common or uncommon among peers. All participants viewed either a high percentage or a low percentage scenario regarding average college student behavior. Participants responded to the associated question either anonymously or non-anonymously, so that participants were able to view each others' responses. Results have implications for conformity research.



CROSS-CULTURAL DIFFERENCES IN THE EFFECT OF OUTCOME ON RELATIONSHIPS

Gabrielle Falco, Rebecca Heilman, Shelby Mytyk, Avelina Padin, Kate Sherman (Dr. Christian End)

Department of Psychology

Sport fans' moods and behaviors are often tied to the outcome of sporting events. Research has demonstrated that game outcomes affect romantic relationships (End, Worthman, Foster, & Vandemark, 2009). Following a loss, participants report their romantic partners exhibit significantly greater negative affect than following a victory, but this did not manifest in negative interactional behaviors (e.g. arguments, etc.). While these findings focus on sports fans in the United States, the purpose of the current study is to determine if the effects on romantic relationships following a loss are more pronounced in a country where "machismo," or hyper-masculinity, is more prevalent. One major component of "machismo" is enhanced focus on maintaining honor. According to Social Identity Theory, members of a group experience a threatened identity when the group they belong to compares unfavorably to an outgroup (Tajfel & Turner, 1979), which may lead to violence against a romantic partner in an effort to regain male honor (Vandello & Cohen, 2003;). Participants were students attending Xavier University in Cincinnati and Veritas University in Costa Rica. They completed the Post-Game Mood Scale which assessed their perceptions of their romantic partner's mood and behaviors following a game win or loss. A 2 x 2 MANOVA revealed a significant main effect for nationality and a significant interaction. Americans reported more negative moods following losses, and Costa Ricans indicated these states more following wins. Researchers should examine whether differences in celebrating victories may account for cultural differences.





GENDER, MEDIA, AND PERCEPTIONS OF DEPRESSIVE ACTIONS

Gregory Hartman (Dr. Dalia Diab)

Department of Psychology

Previous analyses of naturally-occurring trends reveal significant increases in suicide rates following heavily media-covered celebrity suicides (Chen et al., 2012). Moreover, studies provide evidence for the “contagion effect” of nonsuicidal self-injury (NSSI) – its prevalence increases due to increased media portrayal (Trewavas, Hasking, & McAllister, 2010). Additionally, research has provided evidence that media’s gender portrayals can affect social behavior of men and women (Mackey & Hess, 1982). The purpose of this study, therefore, was to investigate the effects of gender and media consumption on perceptions of suicide and NSSI. Participants were randomly assigned to view a vignette of a hypothetical depressed college student, either male or female, and then reported their perceived risk of the student for depressive actions. Participants also reported their perceptions of the frequency of NSSI and suicide in the media and in the United States, along with their individual level of media consumption. Results have implications for the guidelines regarding reporting of suicide in the media and could ultimately lessen the societal factors contributing to suicide and NSSI.

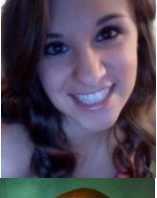


HOW AN ATHLETE LEAVING A TEAM AFFECTS FANS

Gregory Hartman, Sadie Olson, Jessica Petri, David Schappler, Emily Shultz, Steve Webb (Dr. Christian End)

Department of Psychology

Past research indicates that an athlete’s departure from a team affects sports fans, and that the manner in which the athlete departs the team can potentially affect fans’ responses (Petitpas, 2009). The current study examines how athlete departure mode affects athlete and team loyalty, positive and negative affect, and likelihood for forgiveness. Participants (N = 224) read an article in which an athlete departed or remained with the team. Participants completed the sports loyalty scale (Funk, Mahoney, & Ridinger, 2002; Madrigal & Mahony, 2000), a mood scale (Sloan, 1989), and a forgiveness measure (Eaton & Struthers, 2006; Philpot & Hornsey, 2008). The effects of mode of departure on player loyalty ($F(5, 224) = .43, p = .83$), team loyalty ($F(5, 224) = .16, p = .98$), and forgiveness (all $ps > .05$) were not significant. Participants reported significantly less positive affect ($p < .001$) and more negative affect ($ps < .05$) in all conditions compared to the control. The data revealed significant differences between high and low team responsibility in positive affect ($t(174) = 2.02, p < .05$) and negative affect ($t(174) = 2.56, p < .05$). Future studies can further examine how amount of time after departure, attribution of responsibility, and emotional investment affect forgiveness and emotional affect.





EFFECTS OF PERSONAL JUST WORLD BELIEFS ON RESPONDING TO BULLYING, BEING A VICTIM, AND DEFENDING

Rebecca Heilman (Dr. Kathleen Hart)

Department of Psychology

Bullying is prevalent throughout all aspects of life, and the way people respond to bullying can be determined by their view of the world as a just place. Research has shown that those who have high personal just world beliefs, that is, people who believe the world is mostly fair to them, will be less likely to bully and less likely to be victims of bullying (Correia & Dalbert, 2008). This study examined the effects of a personal just world belief in responding to bullying, being a victim, and defending victims of bullying. Manipulating just world beliefs, this study sought to determine if participants with high personal just world beliefs are less likely to be bullied and to bully. While the level of just world beliefs did not significantly affect bullying behaviors and responses to bullying in this study, the level of just world beliefs did have a small nonsignificant positive effect on the likelihood of participants to respond to bullying. This research is important because the possible effects of personal just world beliefs on bullying give support for anti-bullying programs that incorporate promoting high personal just world beliefs to help prevent bullying.

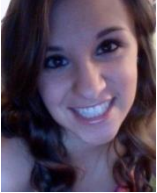


CYBER-BULLYING: EMPATHY AND NARCISSISM AS FACTORS TO PREDICT ONLINE PROSOCIAL BEHAVIOR

Rebecca Heilman, Emily Shultz (Dr. Kathleen Hart)

Department of Psychology

The popularity of social networking sites (SNSs) such as Facebook have provided a unique venue for aggressive social behaviors and bullying. When an incident of cyber-bullying is observed on Facebook, bystanders have the option to intervene. Previous studies have determined that high extraversion and high empathy characteristics increase the likelihood to engage in online prosocial behavior, such as posting a comment defending a victim against cyberbullying (Fries and Gurung, 2012). A related personality trait, narcissism, has not been explored in the context of online behavior. However, narcissism has been associated with self-promoting behaviors online and has been correlated with high extraversion, low agreeableness and high self-esteem (Buffardi & Campbell, 2008). In contrast, callousness has been associated with lack of concern for the feelings and experiences of others. The purpose of the current study is to explore how the personality traits of narcissism and empathy may contribute to online behaviors. Consistent with previous research, it was hypothesized that individuals high in empathy will be more likely to positively intervene, that is, stand up for the victim, during a cyber-bullying scenario, whereas individuals high in callousness will be more likely to engage in negative commenting or ignore the bullying. Based on the premise that narcissistic individuals are extraverted, it was also hypothesized that narcissistic individuals will choose to intervene in a cyber-bullying scenario for attention-seeking purposes. Participants will view a fictitious Facebook conversation in two parts, in which they will view the negative comments toward a third student. Participants will be given an open opportunity to comment throughout the conversation. The comments will be qualitatively categorized by the researchers into categories such as: say "stop/bully", foster discussion, try and change topic, comfort victim, attack bully, no response and other. Measures of general personality traits (BFI-10; Rammstedt & John, 2006), narcissism (NPI-16; Ames, Rose, & Anderson, 2006), self-esteem (Rosenberg, 1965), empathy (Interpersonal Reactivity Index, IRI; Davis, 1980), and callousness (Inventory of Callousness and Unemotionality, ICU; Essau, Sasagawa, & Frick, 2006) will be obtained. Chi square analyses will examine whether high narcissism and high empathy are factors in likelihood to intervene in a cyber-bullying scenario. Additional chi squares will analyze whether or not narcissism and empathy contribute to the type of intervening comment. Analyses will also examine differences in frequency of Facebook use across the various personality constructs of narcissism, self-esteem, empathy and callousness. A limitation is that participants' likelihood to intervene in the fictitious scenario may not be consistent with their actual online behaviors. In order to eliminate this effect, future research could attempt a naturalistic observation of cyber-bullying behaviors.





PERCEPTIONS OF ATTACHMENT IN RELATION TO BIRTHING METHOD

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Meyers and Gleicher (1988) estimate that one in four mothers in the United States give birth through cesarean sections. However, there has not been much research to determine whether or not cesarean sections could have possible detriments to the mother-infant relationship. The present study investigated whether mother-infant relationships are judged more positively based on birth method. Eighty undergraduate participants read one of two birthing stories about a mother who had a cesarean section or a mother who had a natural birth. Participants then completed a 20-question mother-infant attachment survey in which they rated the quality of the relationship they thought the mother would have with her infant. Results showed that the participants rated the mother who had the natural birth as having better attachment with her infant than the mother who had the cesarean section $t(78) = 1.70, p = .046$. This outcome suggests that further research needs to be done examining the perceptions of mother-infant attachment if the mother delivered by cesarean section.



CO-WITNESSES, FALSE INFORMATION, AND EYEWITNESS MEMORY

Molly Johnson (Dr. Kathleen Hart)

Department of Psychology

This study examined the presence of co-witnesses and misinformation, in the form of misleading questions and false answers, and their combined effect on a witness's memory of a criminal event. Thirty-five Xavier students were shown a video clip depicting a bank robbery and completed a free recall task and a survey regarding the events of the video. Participants either received a transcript about the robbery from a supposed true co-witness, a supposed false co-witness, or no additional information. Within each of the co-witness conditions, half of the participants received surveys containing some false answers and misleading questions while the other half received non-manipulated surveys. As predicted, the presence of a co-witness report was significantly associated with the amount of correct information remembered about the video. In addition, the presence of surveys containing false answers and misleading questions was also associated with the amount of correct information remembered about the video. As demonstrated by the results, the accuracy of eyewitness memory is affected by co-witness reports and misinformation.



EFFECTIVENESS OF YOUTUBE VIDEOS TOWARD THE "R-WORD" STIGMA ON A COLLEGE CAMPUS

Sarah Lusby (Dr. Cynthia Dulaney)

Department of Psychology

The purpose of this study was to investigate a method intended to reduce the stigma surrounding the use of "retard" (i.e., "r-word"). Previous research has explored the prevalence of the r-word and other slang invectives in society, as well as attitudes toward those with intellectual and developmental disabilities (I/DD) (Krajewski & Flaherty, 2000; Siperstein, Budoff, & Bak, 1980; Siperstein, Pociask, & Collins, 2010). Previous research has also suggested that education may reduce the stigma surrounding the use of homophobic language (Burn, 2000). This study extended past research by determining whether a YouTube video consisting of advocates that have siblings with Down Syndrome (TVDSAweb, 2012) or a YouTube video consisting of several individuals with Down Syndrome (Jones, 2009) is the best educational method to create positive attitudes toward individuals with intellectual and developmental disabilities, as compared to a YouTube video intended to be a neutral stimulus (Xavieruniversity). Participants completed the Mental Retardation Attitude Inventory-Revised (Krajewski & Flaherty, 2000) after watching their designated YouTube video. Analysis of data collected thus far indicates there is no difference between video type in creating more positive attitudes toward individuals with I/DD.

FACEBOOK ONLINE PRIVACY ATTITUDES AND BEHAVIORS OF UNIVERSITY COLLEGE STUDENTS

Mercy Mabalot (Dr. Kathleen Hart)

Department of Psychology

Facebook is a social networking site that allows users to create a personal profile of information that can be viewed by others. Social network sites like Facebook allow users to limit who can access their profiles by utilizing privacy settings, however it is not clear that users understand how Facebook uses information they provide. This study investigated the attitudes and behaviors of University students in regard to their personal information on Facebook. A primary finding of this study was that although college students expressed concern about how their Facebook information is used, they neither read nor demonstrated knowledge about Facebook's data usage policy. However, when prompted to read the policy, students' scores on a measure of privacy concern increased, suggesting that they are aware that they should monitor their privacy on Facebook. The vast majority of students (94.4%), by virtue of having a Facebook account, have accepted the Data Usage Policy. Our findings suggest that most students agreed to the terms of service without reading the Facebook Usage Data Policy. Greater understanding of how personal information is being used, and exerting control and management of personal information disclosure on Facebook is necessary in the ever-increasing digital world.

SHORT-TERM EFFECTS OF STRESS ON EXERCISE INTENTIONS AND ATTITUDES

Aileen Maki (Dr. Cynthia Dulaney)

Department of Psychology

The present study examines how stress affects individuals' intentions to exercise, as well as individuals' attitudes towards exercise. Participants were randomly assigned to a high pressure condition (i.e., they were told that their scores on this test reflect their intelligence and future success) or a low pressure condition (i.e., they were not told this information). Participants then completed a logic-problems test, followed by a questionnaire about exercise intentions and attitudes. Preliminary data analysis suggests that participants in the high pressure condition intend to exercise more than those in the low pressure condition. Implications of this research will help authorities in public health to better understand the effect stress has on an individual's desire to or attitudes toward exercise.

THE EFFECTS OF PRETEST ACTIVITIES ON STANDARDIZED TEST PERFORMANCE

Andrew Matsushita (Dr. Cynthia Dulaney)

Department of Psychology

The present study examined the effects of meditation on standardized test performance. Previous research found that individuals who meditated displayed more self-awareness resulting in higher test scores (Kindlon, 1983). Participants (N = 21) took part in guided meditation, or participants (N = 27) viewed a stress-inducing video. Participants then completed the Alpert and Haber Achievement Anxiety Test (Alpert & Haber, 1960). Surprisingly, meditation did not lower paralyzing anxiety and did not increase motivational anxiety. After completing the anxiety test, the participants completed an abbreviated form of the Graduate Record Exam. The meditation group did not have higher scores than participants who watched a stress-inducing video. Previous research showed that repeated meditation lowered anxiety and increased test scores. However, the results of the present study indicated that a single instance of meditation prior to taking an exam did not result in higher standardized test scores than not meditating.





IS HOUSE THE NEXT CSI? MEDICAL SHOWS, NEED FOR COGNITION, AND PERCEPTIONS OF PHYSICIANS

Shelby Mytyk (Dr. Dalia Diab)

Department of Psychology

The purpose of the study was to examine the possible effect of medical show content on perceptions of physicians based on individual need for cognition levels. Need for cognition is a personality trait demonstrating an interest pertaining to effortful thought (Mancini, 2011). Previous research has investigated whether people use medical television shows as a source of medical information due to the amount of perceived realism associated with the shows. Similar research has been conducted using people who watch crime shows and the possible influence on jury verdicts. This study involved participants watching one of three short video clips, either in a medical situation where a patient lived or died, or a non-medical situation where no patient was involved. After the clip ended, all participants completed the shortened form of the need for cognition scale and a scale of perceptions of physicians. They also answered questions about their television viewing habits and their most recent visit to a physician. Data analysis of is still pending; however, the findings have implications regarding future research. Future studies can investigate the potential influence of medical information from television shows and physician portrayal in real life.



AN EXAMINATION OF STIGMATIZING ATTITUDES SURROUNDING MENTAL ILLNESS AND PSYCHOLOGICAL TREATMENT

Jess Petri (Dr. Dalia Diab)

Department of Psychology

Prior research has examined how stigma concerning mental illness is formed and perpetuated through our society (Vogel, Wade, & Ascherman, 2009; Corrigan, 2004; Link, Struening, Neese-Todd, Asmussen, and Phelan, 2004). The purpose of this study was to investigate the effects of general mental illness, Posttraumatic Stress Disorder, and psychological treatment on undergraduate students' stigma of mental illness. Participants were assigned to one of six scenarios in which the characteristics of the man described in the scenario varied in regards to psychological treatment (no treatment vs. sought treatment) and mental illness (no mental illness vs. general mental illness vs. Posttraumatic Stress Disorder). It was hypothesized that participants would report the highest levels of public stigma, perceptions of public stigma, and self-stigma in conditions with both treatment and illness, followed by conditions of only treatment, only mental illness, and only PTSD, and that participants would report the least amount of stigma in the control condition with no treatment or illness. Participants read a scenario and then completed surveys assessing public stigma, perceptions of public stigma, and self-stigma. Data analysis is still pending; however, results have implications for the reduction of stigmatization of mental health fields and persons with mental illness on college campuses.

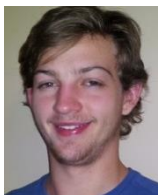


VIEWS ON HOMOSEXUALITY OF DIFFERENT RELIGIONS AND RELIGIOSITIES

Alison Price (Dr. Kathleen Hart)

Department of Psychology

A series of three surveys were administered to 124 college students to examine possible differences in homosexual attitudes as a function of religiosity (high vs low) and religious affiliation. A 3x2 ANOVA revealed no significant difference in positive or negative views of homosexuality for Catholics and Christians versus Atheistic/ Agnostic or by high versus low religiosity. There was a small negative correlation between a positive view of homosexuality and low religiosity. The largely positive views of homosexuality contrasts previous older studies. Future research might examine if the lack of significance was due to the age group studied by using similar measures on older and younger age groups. Future research may also explore a wider view of religions by using similar measures at multiple places of worship.

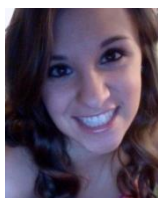


THE EFFECT OF A CORRESPONDING VS. NON-CORRESPONDING AUDIO-VISUAL STIMULUS ON SEMANTIC RECALL

Elliot Rhodes (Dr. Cynthia Dulaney)

Department of Psychology

Grimes (1990) investigated audio-visual memory and found that semantic recall of an audio-visual stimulus is best when the audio and visual stimuli are corresponding. Furthermore, he found that recall gets progressively worse for both semantic audio and semantic video information as the correspondence between the audio and visual stimuli decreases. The current study investigated the effect of corresponding and non-corresponding audio on the semantic recall of the video portion of an audio-visual stimulus. Participants were randomly assigned to view a video with corresponding or non-corresponding audio. Following a brief distractor task, recall from long-term memory was evaluated. Preliminary analysis indicates that the semantic recall scores for video information were significantly higher for the corresponding group ($M = 11.87$, $SD = 1.19$) than the non-corresponding group ($M = 10.33$, $SD = 1.40$), $t(30) = 3.24$, $p < .05$. The results suggest that the conflict between the audio and video in the non-corresponding group served as a distractor and presumably decreased encoding ability.



SOCIAL COMPARISON ON FACEBOOK: THE EFFECTS ON STATE SELF-ESTEEM AND MOOD

Emily Shultz (Dr. Kathleen Hart)

Department of Psychology

Social Networking Sites (SNSs) such as Facebook present a virtual venue for social comparison, which is the evaluation of one's own behavior, abilities, expertise and opinions by comparing them to others (Feldman, 2011). Upward comparisons tend to threaten self-esteem whereas downward comparisons protect it (Feldman, 2011). Previous studies have found that when there is an unfavorable social comparison, individuals with high trait self-esteem (High SEs) are able to effectively maintain their state self-esteem, whereas individuals with low trait self-esteem (Low SEs) cannot (Isobe & Ura, 2006). Several studies have discovered that frequent Facebook use is correlated with low self-esteem (Ellison, Steinfield, & Lampe, 2007, 2008; Mehdizah, 2010), although the correlational nature of previous research has left it unclear whether Low SEs utilize Facebook more frequently because of the social interactions it provides or whether Facebook use influences state self-esteem because of social comparison. The present study experimentally manipulated Facebook profiles to provide upward or downward social comparisons as a way to measure the effects on participants' state self-esteem and mood. It was hypothesized that after viewing the upward comparison profile, Low SEs would have low state-self-esteem and experience negative affect while High SEs would not be influenced by the comparisons. The Rosenberg Self-Esteem Scale (1965) was used to categorize participants ($n = 130$) into high ($n = 23$) or low ($n = 23$) trait self-esteem categories. Participants were randomly assigned to view one of two possible Facebook profiles, created by the researcher, which differed only by the content of photographs on the profile pages to create downward (individual pictured alone) and upward comparisons (individual pictured with others). The PANAS-X (Watson & Clarke, 1994) was used to measure participants' mood after viewing the profile and the Current Thoughts Scale (CTS; Heatherton & Polivy, 1991) was completed to assess state self-esteem. The Facebook Intensity scale (FBI; Ellison, Steinfield, & Lampe, 2007) was used to measure the frequency of Facebook use. A 2 (High vs. Low SE) x 2 (Upward vs. Downward social comparison) ANOVA indicated that there were significant differences in CTS scores between high and low SE groups ($F(2) = 38.82$, $p = .001$), but there were no significant differences by profile type, ($F(1) = 2.99$, $p = .09$). Another 2 x 2 ANOVA revealed that there were significant differences in negative affect between high and low SEs ($F(2) = 4.89$, $p = .01$) with Low SEs experiencing more negative affect than High SEs. Another relevant finding of the study was a small but significant correlation between the FBI and the social subscale of the CTS ($r = -.19$, $p = .034$). Consistent with previous studies, higher social self-esteem was related to less intense use of Facebook. One limitation of this study is a fairly small sample size and the effectiveness of the Facebook profile to create a meaningful social comparison. Although respondents rated the upward vs. downward profiles as reflecting statistically significantly different levels of sociability ($F(2) = 22.7$, $p = .001$), future research might aim to more realistically replicate the experience of Facebook browsing by incorporating a social connection between the Facebook user and the individual in the profile, which may be necessary for a relevant social comparison. The rapid evolution of social media and its influence on features such as SE remains an important but complex area of study.



COMMUNITY: SOCIAL SUPPORT SYSTEM AND MEANS OF COPING WITH STRESS

Laura Wallace, Lauren Yadlosky (Dr. Christian End)

Department of Psychology

This study examined the impact of living in an intentional community while engaging in community service as a part of Xavier University's Summer Service Internship (SSI) on participants' perceived social support and stress. Researchers hypothesized that due to the intentional creation of community and the mediating effect social support can have on stress, participants in the SSI would report increased levels of social support and reduced levels of stress. Through this 10-week program, interns (n = 13) lived in community with each other and worked for 35 hours a week at a service agency. A control group (n = 15) was obtained from Xavier University's Alternative Breaks volunteers. Participants completed online measures of perceived social support (Sherbourne & Stewart, 1991) and perceived stress (Cohen, Kamarck, & Mermelstein, 1983) in the penultimate week of spring semester classes, and after the SSI concluded. Contrary to the hypothesis, no change was observed over time in the SSI group. High pre-program levels of social support may have prevented the interns from increasing much more. This may suggest that the community was able to fill the void of already strong social support systems established during the school year with the new SSI community to cope with the stress of the program.



IMPACT OF COMMUNITY ENGAGEMENT AND DISCUSSION ON PREJUDICE

Laura Wallace, Lauren Yadlosky (Dr. Christian End)

Department of Psychology

When people interact with populations that are different than themselves, as is common in community service, they are less likely to harbor negative stereotypes (Putnam, 2007). In the current study, it was hypothesized that community engagement paired with discussion in the form of the Summer Service Internship (SSI) would result in less prejudice toward minority groups. Prior to and immediately following the 10-week internship at Xavier University, throughout which participants worked 35 hours a week at an assigned service agency, students completed online surveys that measured racism (Henry & Sears, 2002), ableism (Yuker, Block, & Campbell, 1960), and heterosexism (Kite & Deaux, 1986). Students in Xavier University's Alternative Breaks club served as a control group. Data were limited by the small number of interns (n = 12) and control participants (n = 13) who completed the measures at both times. Despite a small sample size and initial low means on the racism and heterosexism scales, students in the SSI reported reduced levels of prejudice, specifically, a significant decrease in racism, a marginally significant reduction in heterosexism, and a non-significant reduction in ableism. The variance in prejudice reduction may be explained by differences in depth of interaction and reflection that the SSI group had with each population, as there was variance in how much interns witnessed and discussed these topics.

Department of Social Work



NO LONGER INVISIBLE: THE CHALLENGES AND RESILIENCE OF LGBTQ OLDER ADULTS TODAY AND ITS LINK TO SOCIAL WORK PRACTICE

Rachel Drotar (Ms. Shelagh J. Larkin)

Department of Social Work

The Gay Rights Movement has propelled acceptance of the LGBTQ community and started a change in perception of this group to what it is today. A focus on the cohort of this population who are 65 and older, LGBTQ Elders, puts an emphasis on their experience during the start of the Gay Rights Movement, and their place in history. It is understood that the history of the Gay Rights Movement effects perceptions today, especially because they grew up in a world very different from our own. Although this movement began as this cohort was growing up, the effects were not felt for years after its conception. Growing up after the Gay Rights Movement, a stall in the delivery of services, and being "twice hit" as LGBTQ Older Adults are challenges that are discussed as a way to visualize this special population within the context of the modern day with respect to the 1960's. The purpose of this research is to illuminate the challenges of older adults that belong to the LGBTQ community, highlight the resilience that is unique to this population, and make recommendations to those working with this population in Social Work practice.