2017 Denman Undergraduate Research Forum Accepted Student Abstracts
Social and Behavioral Sciences
Abstract: Stress exposure in adolescence has been shown to impair cognitive function in individuals with a genetic vulnerability. To better understand the underlying mechanisms involved, we constructed a mouse model demonstrating the effects produced by PAS gene Npas4 and adolescent stress in their effect on cell populations and myelination in the prefrontal cortex and prefrontal-dependent cognitive function. Npas4 is well established as an important protein relating to plasticity in the hippocampus and cortical areas, and Npas4 expression has been found to be suppressed by general stress and corticosterone, correlating to significant memory, cognitive, and social deficits in mice models. Recently, our lab determined that that Npas4 plays a significant role in adolescent prefrontal maturation. These findings suggest that Npas4 is a link between adolescent stress exposure and prefrontal-dependent impairments. Here, we aimed to analyze how Npas4 modulates the effects of stress on cognitive functions and brain structure. We compared Npas4 wildtype and heterozygous mice, chronically stressed in adolescence, and quantified cognitive flexibility through the attention set shift task. mRNA levels in the PFC were found through RT-PCR, and the number of neurons and oligodendrocytes, and myelination density were quantified through IHC to evaluate cell death and myelination loss in the prefrontal cortex. We observed marked cognitive impairment through the attention set shift task and a significant reduction in expression of the myelin basic protein in heterozygous Npas4 mice exposed to chronic stress. This molecular data did not correlate with a reduction in neuron or oligodendrocyte populations but data showing changes in myelination density has yet to be analyzed. Finding a correlation between Npas4 and adolescent stress, and identifying any structural changes in the prefrontal cortex, would help progress understating of how stress in adolescence affects prefrontal structures in susceptible individuals.
Category: Social and Behavioral Sciences

Title: The use of immersive technologies to improve consumer testing: the role of context in evaluating cola

Student Presenter: Michael Arato

Faculty Advisor: Simons, Christopher

Abstract: Conventional sensory consumer testing is executed in sensory booths where the influence of non-product attributes is controlled through elimination of relevant environmental cues. Prior studies suggest that environmental cues influence consumer perception, with different environmental cues leading to preference of different, but similar products. Along with elimination of relevant non-product cues, traditional methods of consumer testing are associated with increased boredom and lack of panelist engagement, which can lead to the collection of uninformative or misleading data. We developed three immersive environments with valid visual and auditory cues, modeled after environments where consumers regularly consume cola, a living room, a cafeteria, and a classroom. 50 panelists sampled cola in each immersive environment; liking scores and preference rankings were collected via survey. These scores were compared across environments to determine the effect of each specific environment on consumer liking of identical products as well as preference order of four similar products. Data collection is ongoing and results will be presented at the 2017 Denman undergraduate research forum.
Category: Social and Behavioral Sciences

Title: How stable are phytoliths? An examination of cross-contamination during phytolith extraction

Student Presenter: Drew Arbogast

Faculty Advisor: Weiland, Andrew

Abstract: Phytoliths are amorphous opal silica bodies that form in plant tissues and are used by archaeologists to determine what plants were grown and utilized in a particular region. Soil samples from archaeological sites represent plant assemblages in prehistory as stable components of a soil matrix little impacted by outside physical forces. However, there is a small chance of phytolith movement in a laboratory setting once they have been isolated from other materials such as clay, organics, and carbonates. Such movement when processing multiple samples simultaneously poses constraints to the volume of the work conducted in a phytolith laboratory due to possible cross-contamination during the extraction process. This study tests the hypothesis that there is cross-contamination between samples but that this contamination is not quantifiably significant. To detect contamination, we set out blank slides at varying intervals from the center of the two prominent work areas in the lab: the analytical balance and the fume hood. During preliminary observations of these slides under the microscope we examined all fields of the slides for any presence of phytoliths. Next, we followed the standard phytolith protocol of counting in randomized transects to determine if phytolith presence was quantifiably significant. Initial results show material other than phytoliths contaminating the slides, but little to no contamination from cross-sample movement. Further analysis will be completed before presentation of formal results. The outcome of this study supports standard phytolith protocol and allows for reliable phytolith analyses to be conducted simultaneously. As phytolith research continues to develop, studies such as this provide assurance that results are accurate and robust.
Phytoliths are amorphous opal silica bodies that form in plant tissues and are used by archaeologists to determine what plants were grown and utilized in a particular region. Soil samples from archaeological sites represent plant assemblages in prehistory as stable components of a soil matrix little impacted by outside physical forces. However, there is a small chance of phytolith movement in a laboratory setting once they have been isolated from other materials such as clay, organics, and carbonates. Such movement when processing multiple samples simultaneously poses constraints to the volume of the work conducted in a phytolith laboratory due to possible cross-contamination during the extraction process. This study tests the hypothesis that there is cross-contamination between samples but that this contamination is not quantifiably significant. To detect contamination, we set out blank slides at varying intervals from the center of the two prominent work areas in the lab: the analytical balance and the fume hood. During preliminary observations of these slides under the microscope we examined all fields of the slides for any presence of phytoliths. Next, we followed the standard phytolith protocol of counting in randomized transects to determine if phytolith presence was quantifiably significant. Initial results show material other than phytoliths contaminating the slides, but little to no contamination from cross-sample movement. Further analysis will be completed before presentation of formal results. The outcome of this study supports standard phytolith protocol and allows for reliable phytolith analyses to be conducted simultaneously. As phytolith research continues to develop, studies such as this provide assurance that results are accurate and robust.
Abstract: Visual memory plays a critical role in language learning; consider word learning, which requires the ability to retain information about the auditory and visual stimuli in order to create word-referent pairings. This research study explores the impact of visual memory on language learning in children with Autism Spectrum Disorder (ASD), previous research indicates that children with ASD perform worse than their typically developing (TD) peers on facial recognition tasks, which require strong visual memory skills (Shic, Chawarska, Bradshaw, & Scassellati, 2008 & Chawarska, Katarzyna & Shic, Frederick, 2009). However, they appear to perform as well as their peers in the area of object recognition (Dawson, G., Carver, L., Meltzoff, A. N., Panagiotides, H., McPartland, J., & Webb, S. J., 2002). The present study utilizes a Visual Paired Comparison (VPC) task to assess the attention levels and visual memory of children with and without ASD. Preliminary findings indicate differences in children with ASD from both their age and cognitively matched peers in the area of visual memory, but all three groups displayed similar levels of attention. This indicates that inattention is not related to visual memory skills, but rather children with and without ASD require varying amounts of attentional resources to extract necessary information to display visual memory. Chawarska, Katarzyna & Shic, Frederick (2009). Looking But Not Seeing: Atypical Visual Scanning and Recognition of Faces in 2 and 4-Year-Old Children with Autism Spectrum Disorder. Journal of Autism and Developmental Disorders, 2009 (39), 1663-1672. Dawson, G., Carver, L., Meltzoff, A. N., Panagiotides, H., McPartland, J., & Webb, S. J. (2002). Neural Correlates of Face and Object Recognition in Young Children with Autism Spectrum Disorder, Developmental Delay, and Typical Development. Child Development, 73(3), 700-717. Shic, Frederick, Chawarska, Katarzyna, Bradshaw, Jessica, & Scassellati, Brian (2008). Autism, Eye Tracking, Entropy. Development and Learning, 2008 (7), 73-78.
Category: Social and Behavioral Sciences

Title: Eurozone bond drivers: are bonds driven by analysis of fundamental economic variables?

Student Presenter: Mihir Baxi

Faculty Advisor: Sheldon, Ian

Abstract: The goal of this project is to evaluate the extent to which bond yields in Eurozone countries are driven by fundamental macroeconomic variables such as interest rates and debt to GDP ratios. The last two decades have been incredibly eventful for Europe, with critical junctures such as the formation of the Eurozone, the 2008 Recession, and the Euro currency crises that started in 2009. Countries such as Spain were affected adversely by spillover effects from legitimate crises in Greece, and might have seen flights to quality as a result. The increasing sovereign yield spreads are reflecting an increasing distrust in relatively risky countries such as Greece and Ireland, and the stability of countries such as Germany. This project uses macroeconomic time-series data to answer the question of how much these yield spreads are affected by underlying economic fundamentals. In this context, focus is placed on Germany, France, Netherlands, Spain, Italy, Greece, and Ireland. Empirical analysis using regression techniques will be used to identify the correlation between yields and fundamental variables, allowing conclusions to be drawn concerning the factors influencing increasing yield spreads. In addition, the same model will be applied to the United Kingdom, in order to compare how the Bank of England and the European Central Bank (ECB) reacted to the recession and the ensuing Eurozone debt crises. The effect on bonds in the UK will help us to evaluate whether their handling of the crisis led to better outcomes than the regional outcomes in our European Union sample countries as a result of the ECB's actions. This project will provide insight into the flaws in the fiscal structure of the Eurozone, and identify the level of impact on yields through fundamentals, as compared to "animal spirits" of investors in the bond market.
Title: Paleobotanical analysis of the medieval Armenian caravanserai, Arai-Bazarjugh

Student Presenter: Anna Berlekamp

Faculty Advisor: McCorriston, Joy

Abstract: This project analyzes the paleobotanical remains from the medieval Armenian site, Arai-Bazarjugh, in order to create a detailed botanical description of the environment. Arai-Bazarjugh was a medieval Armenian caravanserai, or traveler’s inn commonly used as a safe place for traders to stay, occupied during the fourteenth century and eventually abandoned in the mid-fifteenth century. The paleobotanical samples were sorted and identified to family or genus. After identification, each category was counted and recorded to compare these results across all samples to track the occurrence of different families of plants across the entire site. These results will be used to build an overall description of the paleobotanical environment, determine which plants were found more abundantly in the archaeological context and will create a picture of the agricultural environment, understand whether processing was occurring at the caravanserai or elsewhere, and describe what botanical remains were being traded. It will provide information on what crops were being produced, what environment these crops required, and what weeds or other plants not intentionally being produced were found. At this time, analysis is still in progress, but all samples have been identified and recorded and results will be completed by the 2017 Forum. Nearby the Arai-Bazarjugh caravanserai, a medieval village was excavated. Later research will allow for comparison of the paleobotanical samples from Ambroyi village, which will be influential in determining the role of processing, what crops and other botanical goods were being traded and how this changed over time when comparing to earlier strata within the Ambroyi site. There is little archaeological research analyzing the botanical remains from Armenia during the Medieval Age. Therefore, this research will contribute to the sparse amount of research and will allow future researchers to better understand the botanical environment of the time.
Category: Social and Behavioral Sciences

Title: A comparative analysis of agricultural hashtags on Twitter

Student Presenter: Megan Besancon

Faculty Advisor: Buck, Emily

Abstract: Hashtags are used on various social media platforms, particularly Twitter, in order to make messages searchable. Individuals and organizations in agriculture use a variety of hashtags to tell the story of agriculture by sharing information in order to educate the public. However, these hashtags can be "hijacked" by non-agricultural sources to share unintended, and often negative messages about food safety, food production, and animal welfare. Hijacked hashtags can ruin the credibility of farmers and agricultural organizations trying to utilize them to educate the public. The researcher sought to understand whether the hashtags "farm365" and "harvest16" were being used by the intended audience to promote agriculture. The researcher analyzed the two hashtags using Sysomos MAP software during a one-month period. Analysis of these hashtags showed that agricultural producers primarily used "harvest16" to showcase agriculture in a positive way, while individuals not directly involved in the agricultural industry used "farm365" to demote agriculture. The results of this study show that there are several demographic differences between the two groups using these hashtags. Agricultural producers should address the concerns raised by those using "farm365" in order to inform consumers and return the hashtag to its intended purpose of showing agriculture in a positive light.
Abstract: Language is complex; it has so many intricacies in the duality of meaning, the emotional weight of words, and the intonation in which it is expressed. In urban planning, the clear expression of information from planner to community stakeholders is essential; without this mutual understanding of a project, misunderstandings may arise. This research strives to understand the relationship between the phrasing of information conveyed in a planning meeting and the community's understanding of this material. Is there a way to investigate the relationship (or lack thereof) of a planner's wording or intonation of planning information, and do either of these variables affect the connotation of the phrase at large? Does this imply a different understanding of the project when presented to a community member than the planner initially intended? These are the questions that I am working to answer through my data collection, which I am in the process of conducting. I have determined that the best way to investigate this relationship is through an online survey, where participants will be shown a short planning video with a connotation that is positive, negative, or neutral. These participants will then be asked reflection questions to gather information on their thoughts and opinions of the video. This data will be recorded and coded through sentiment and sentic analysis. These results will be compared to the baseline sentiment and sentic analysis of the video to determine if there are any "trigger" words or phrases that may favor a certain response over another. These findings will culminate into suggestions for the phrasing and conveying of information for the planning community. This study would be instrumental for planners since part of the job is effectively communicating information to others.
Abstract: In politics, representation in government is often thought of as the most salient means by which an oppressed class of people can improve themselves and raise themselves out of subjugation. The Reconstruction South featured a great influx of African-Americans into political office during the 1860s and 1870s, which allows us to question: did representation affect the material lives of black southerners after the Civil War? By wedding historical record and econometric analysis, I have found that there was largely little effect of black representation in government on black landownership and accumulation of wealth. During this period, many African-American officeholders sought to effect black landownership by increasing taxes on unused acreage within large plantations. Politicians decided against pursuing forced seizure of land to redistribute, and instead chose to incent landowners to sell their unused land. This economic incentive was meant to force a redistribution of land to poorer citizens. However, my analysis shows that this was not successful. Regression analysis shows a relationship between black officeholders in a county and a decrease in the number of large farms there, as well as the number of unused acreage per farm. Yet, there is no demonstrable relationship between these tax increases and black ownership of small, yeoman farms. Historical accounts indicate wealthy landowners as well as speculators from both the North and South purchased this land for their own means. As this policy backfired, tenant farming and sharecropping became entrenched southern institutions preventing black accumulation of wealth and increasing profits for white landowners. As modern black poverty largely stems from denial of wealth accumulation over centuries, these results help paint a broader picture of representation politics and their failure to tame systemic and market forces at play in American society.
Category: Social and Behavioral Sciences

Title: Barriers to meditation

Student Presenter: Samantha Bork

Faculty Advisor: Warren, Keith

Abstract: The purpose of this study is to determine barriers that impede participants' practice of meditation. Extensive research shows that meditation has health benefits including improving depression, generalized anxiety disorder, panic disorder, binge eating disorder, major depressive disorder, attention deficit disorder, bipolar disorder, suicidal ideation, social anxiety disorder, panic disorder, hypochondria, and severe health anxiety. For the portion of the population that is considered healthy, meditation is known to improve attention and memory. However, studies often show high levels of engagement but retention rates of less than fifty percent of participants. The data will be collected by a one-time survey that will be emailed to Ohio State students and faculty members. The questions in our survey include questions about demographics, the perceived barriers to meditation, and personality traits. To analyze the data, the demographics and personality traits will be entered as predictors of perceived barriers to meditation. Data collection is ongoing. We expect that openness to experience and conscientiousness will have a negative relationship to perceived barriers to meditation.
Trust me: a look into whether disclosure mechanisms effect vote choice

Farhad Choksy

Nelson, Thomas

Since the landmark case Citizens United v. FEC (2010), the topic of money in politics has been highly salient. While Justice Kennedy's holding in it is firmly against campaign finance regulation, he appears to leave the door open to disclosure laws. While campaign finance reform has been widely discussed from legal and policy standpoints, little research has been conducted on the impact that these disclosure laws have on voters. This study focuses on the potential impact that a disclosure system can have on how voters measure a candidate's trustworthiness. By using a random sample of potential voters in Columbus, Ohio and Irvine, CA, I conducted an experimental survey. First, respondents were asked a timed questionnaire to gauge their political knowledge. Subsequently, respondents watched an ad advocating for a fiction city council candidate. Respondents were then randomly assigned to one of three groups in which they were told that the ad was paid for by "Americans for Liberal Action", "Americans for Conservative Action", or "Americans for Action". Respondents were then asked questions about how they perceived the candidate, and the likelihood of voting for him. Finally, respondents were asked specific demographic questions. I hypothesize that potential voters can and do draw political cues when disclosed the name of an advocacy organization that supports a candidate. Specifically, when the advocacy organization gives an ideological cue that is similar to the beliefs the potential voter, he or she will be likelier to support the candidate than if they are not given that cue, or if they are given a cue that contradicts their beliefs.
Category: Social and Behavioral Sciences

Title: The prevalence and trends of infectious diseases in Europe

Student Presenter: Bronte Cunningham

Faculty Advisor: Hubbe, Mark

Abstract: There are disagreements over when and where many infectious diseases originated in Europe. Using thirty-two sources representing the scope of information on infectious disease in Europe, I aimed to provide a better idea of the evidence for three major infectious diseases -- tuberculosis, leprosy, and syphilis. After creating a timeline of the three diseases, I found that tuberculosis shows up in the skeletal record first, around 5500 BCE. The majority of evidence is found right before and during the medieval period, however, there is increasing prevalence during the Roman Empire. There are also multiple examples of syphilis dated to significantly before Columbus' expedition, providing evidence for the pre-Columbian origin hypothesis for the disease. The greater number of examples of tuberculosis, leprosy, and syphilis beginning in the Roman Empire and continuing throughout medieval times can probably be attributed to better preservation of skeletal collections and denser populations. There is some evidence of tuberculosis in the Chalcolithic and Bronze Ages, but the dates of the sites are less precise and thus cover longer spans of time than later examples. In conclusion, by looking at a sample of evidence for tuberculosis, leprosy, and syphilis in Europe, I have found that some of the diseases are possibly older than commonly thought though there is an increase of prevalence during the medieval period.
Abstract: Resistance training is known to be an effective way to strengthen a given muscle. Based on the established principles of the resistance training paradigm, the use of continuous positive airway pressure (CPAP) as a means to strengthen the velopharyngeal closure muscles, which are located in the throat region, has shown some promise. During CPAP therapy, speakers exercise velopharyngeal closure muscles by having them work against pressurized air from the device, which acts as a "weight". While there is some evidence supporting the effectiveness of the CPAP therapy for treating hypernasality secondary to cleft palate and traumatic brain injury, information regarding proper treatment dosage is largely lacking; for example, is there a pressure level that shows the most improvement without fatiguing the exercised muscles? Thus, the present study aims to examine the immediate effects of the individual CPAP therapy on the speakers' velopharyngeal function. Five normal adult speakers underwent 10 CPAP therapy sessions. Each session was 10 minutes long, during which participants were involved in speech activities while receiving randomized pressure air, ranging from 5 cmH2O to 9 cmH2O, through the nasal passages. Based on speech aerodynamic data acquired immediately before (Pre-CPAP) and after (Post-CPAP) each CPAP therapy session, velopharyngeal orifice size and velopharyngeal timing parameters were monitored. Preliminary results showed that velopharyngeal orifice size estimates at Post-CPAP were significantly smaller than those at Pre-CPAP. Although statistically significant, the difference between Pre-CPAP and Post-CPAP in the velopharyngeal orifice size estimate was minimal and all participants were able to maintain adequate velopharyngeal closure. While velopharyngeal closure timing patterns appeared to change as a function of pressure, no significant difference between Pre-CPAP and Post-CPAP was observed, suggesting limited effects of CPAP therapy on normal speakers' velopharyngeal timing. This study is still in progress and further findings and clinical implications will be presented.
Abstract: Fetal alcohol spectrum disorders (FASD) refer to a range of physical and mental deficits resulting from maternal alcohol consumption during pregnancy. Forebrain-dependent cognition is studied in FASD model rats, whereby ethanol is administered to neonate rats, during a period comparable to the human third trimester. Ethanol exposure leads to a neuroinflammatory response mediated through the activation of microglia, the brain’s resident immune cell. While microglia have been the focus of numerous neuroinflammation research studies, much less is known regarding ethanol's effects on another resident brain cell, mast cells (MCs). MCs are found throughout the brain, including the hippocampus, and exist in two phenotypical states: a stable granulated state and an active degranulated state. MCs, not microglia, are considered to be "first responders" to a toxic event, including ethanol exposure. Activation of MCs leads to rapid degranulation and the release of a number of preformed or newly synthesized pro-inflammatory cytokines, including TNFa and IL-6. Activated brain MCs can trigger microglial activation and the exacerbation of neuroinflammation. In this study, rat pups were intragastrically intubated with ethanol (5g/kg/day) or sham intubated over postnatal days (PD) 4-6. Thirty minutes prior to the intubation procedure on each day, pups were cryoanesthetized and bilaterally injected into the lateral ventricles with cromolyn, a MC degranulation inhibitor. All subjects were sacrificed on PD 6, two hours after ethanol administration, and the brains submitted to immunohistochemical processing for MCs and microglia. Data suggests that postnatal ethanol exposure induces significant MC degranulation in both the dorsal and ventral hippocampus, relative to sham-intubated and unhandled controls. Cromolyn injections attenuate MC degranulation, which, we aim to demonstrate, will diminish the morphological activation of microglia. The interaction between these two neuroimmune cells could lead to novel therapeutic treatments for those diagnosed with FASD.
Category: Social and Behavioral Sciences

Title: Lawless Mexico, vigilante justice and the ungoverned citizens of the autodefensa movement

Student Presenter: Macon Derleth

Faculty Advisor: Wendt, Alexander

Abstract: Mexico is ungoverned, on the verge of failing and local law enforcement cannot penetrate regions so crime ridden that lawlessness prevails. Self-policing militias known as 'autodefensas' are the exception to these claims, rising from municipalities reportedly stricken with cartel influence, which breeds corruption and erodes the authority of the state. Following the politicization of the peasant rurality preceding the Zapatista movement, can the origination of the self-policing autodefensa movement be solely explained by high levels of indigenous marginalization or high levels of crime, understanding the intrinsic need to defend and hold territory? Through the use of census data this contribution will distinguish between municipalities guarded by self-policing, explaining their rise from an original perspective, ultimately amplifying the study of this topic.
Category: Social and Behavioral Sciences

Title: Predictors of social support among bariatric surgery patients: Implications for future family-based interventions

Student Presenter: Kelsi Doerrer

Faculty Advisor: Pratt, Keeley

Abstract: The prevalence of obesity has increased to approximately 35% in the U.S. One treatment for severe obesity is bariatric surgery. Previous research has shown that social support from peers and family members positively affects patients' health behaviors and long-term weight loss post-surgery. Inquiries into bariatric patients' social support are rarely conducted and have not included measures of other social relationships, like family functioning. The goal of this project is to 1) assess differences in patients' perceived social support based on clinical demographics (gender, race/ethnicity, pre/post-surgery, relationship and parental status) and family functioning, and 2) determine predictors of patients' perceived social support for diet and exercise change. We recruited pre- and post-surgery bariatric patients (N=300) from the OSU Bariatric Clinic to complete a survey about their perceptions of peer and family support for exercise and dietary changes and family functioning. Analyses included descriptive statistics, independent t-tests to determine differences in social support, Pearson's correlations, and multiple linear regression to predict family support for exercise and dietary changes. The majority of participants were female (85%), Caucasian (75%), parents (77%), and half were partnered and post-surgery. Females (M=21.69, SD=10.76) perceived higher support for exercise from their peers than males (M=17.82, SD=9.38; t(201)=−1.95, p=.052). Racial/ethnic minority patients (M=28.04, SD=11.87) perceived higher family support for exercise than white patients (M=23.56, SD=11.28; t(219)=−2.36, p=.019). Patients with healthy family functioning also reported significantly more support from peers and family members for exercise, eating behaviors, and encouragement for both diet and exercise behavioral changes. Results were further analyzed for the strongest predictors of family support for exercise and family support for eating behavior change. The assessment of social support based on clinical demographics and family variables may inform future programming to enhance patient peer and family support for long-term behavior change and weight loss maintenance.
Abstract: As developing regions become more integrated into the market economy, diet patterns and activity levels associated with subsistence economies undergo a "nutrition transition". Latin American populations have been particularly affected by this transition as local means of food production are increasingly replaced by purchased and processed goods. This study seeks to understand nutrition and health in rural Amazonian communities currently experiencing this transition. To assess the nutritional status of the population, we collected data on height, weight, circumferences and skinfolds from 358 individuals in the rainy season and 328 individuals in the dry season considering both age and gender. Of these, 182 individuals were measured in both seasons. We compare these data to international standards, as well as to other Amazonian populations. In addition, using independent and paired sample t-tests we explore changes in nutritional status between the rainy and dry seasons. In comparison to international standards, the population showed a mild degree of stunting with an average Height-for-age Z-score (HAZ) of -1.3 ± 0.9 for all age groups over 3.0 years. Sixteen percent of sub-adults (3.0-17.9 years) and 24% of adults (18+ years) were classified as stunted. Wasting was rare in all age/gender categories. Instead, we found 43% percent of adult males and 59% of females were overweight/obese providing evidence of the nutrition transition in the population. Seasonal comparisons revealed increases in upper-arm muscle area (t= 6.47, p=.000) and decreases in body fat storage (t=-3.58, p=.001) from the rainy to the dry season, which may be related to observed changes in work patterns. This study contributes to our understanding of how rural populations are responding to the processes of globalization and considers how seasonal factors influence their market dependence and related health.
Abstract: During pregnancy, maternal dopaminergic signals to the fetus putatively synchronize biological rhythms. In addition to cholinergic signaling, nicotine alters dopaminergic signaling, and therefore has the potential to alter normal maternal-fetal communication of biological rhythms, including sleep. Indeed, epidemiological evidence shows that humans perinatally exposed to nicotine are at risk for persistent sleep problems, as well as mood and anxiety disorders. Even if the mother does not ingest nicotine directly, second-hand smoke remains a public health issue and the danger of second-hand vapor is currently unknown. Therefore, there is high potential for a fetus to receive nicotine exposure while in utero. Breeding pairs of C57BL/6J mice were administered either vehicle (VEH) or nicotine (NIC) solutions through their drinking water. This administration persisted throughout pregnancy and terminated at weaning, and all testing occurred during offspring adulthood (~6 weeks after treatment cessation). NIC males displayed less total movements than VEH males during Open Field testing, with the strongest statistical significance seen during the first two minutes of testing. Mice typically show large amounts of exploratory behavior upon exposure to a novel environment, so the reduced locomotion observed in NIC males could indicate a depressive-like phenotype. However, additional testing currently underway (Forced Swim, Elevated Plus Maze, Sucrose Preference) will further elucidate behavior changes. Following behavior testing, we will examine sleep in a subset of mice using surgically implanted EEG/EMG wireless transmitters. Nicotine acts on endogenous systems in the brain, and using this drug as a tool to explore these systems can reveal the roles they play in normal development. By better understanding any potential sleep or mood disruptions, this experiment can also help pave the way for interventions for those exposed to nicotine while in the womb.
Abstract: Dimensions of maxillary canines in anthropoid males and females are known to co-vary with those of the mandibular p3-honing cusp. Several authors have argued that species-level variation in female canine length is attributable to differences in levels of female agonistic behavior. Females in Cercopithecus spp. exhibit extensive variation in the length of the upper canine with variation in competitive regimes cited as a potential causal factor; few studies have tested whether similar variation is present in the p3. Here I investigate length variation in the p3 honing cusp within Cercopithecus and assess whether levels of variation present in maxillary canines and attributed to competition is similarly represented in the premolars. Lower p3 honing cusp lengths were measured in a sample of females (n=81) and males (n=77) in seven Cercopithecus taxa, with lengths averaged for each mandible and scaled to average second molar length. Frequency distributions displayed similar standard deviations between males and females for premolar hone cusp length variation, with males having a larger interquartile range as compared to females. One-way ANOVAs showed non-statistically significant differences among male and female species; additionally, paired t-tests showed statistically significant and consistent mean differences were present for six of seven species only in comparisons between male and female p3 honing cusp lengths. Results support the conclusion that premolar hone cusp length is a less reliable indicator of competition among female guenons, with low intra-sex variation within species. Additionally, results suggest that the honing complex cannot be classified as strictly modular; rather, it is a flexible system that allows individual changes to its separate components.
Abstract: The framing and presentation of news stories has been shown to influence audience attitudes and perceptions. With this in mind, this experiment analyzed whether the different terms used to describe the terrorist group ISIS may influence audience attitudes about the religion of Islam. It was thought that terrorism labels could impact Americans' attitudes toward religious groups, presidential approval, and national security policies. In this experiment, students (N = 450) were exposed to one of three news releases. Two news releases were written to recognize the anniversary of a fictional terrorist attack, whereas the third served as a control and recognized an environmental issue. The terrorism news releases were the same except for the name of the alleged perpetrators as ISIS or Daesh. Students reported their attitudes toward the religion of Islam. Given that the term ISIS directly references the religion of Islam, unlike Daesh, use of this term was hypothesized to more negatively influence audiences' attitudes toward Islam. These differences were also studied through Terror Management Theory (TMT), which posits that peoples' attitudes are affected by thoughts of their own death. Depictions of violence in news about terrorism make TMT a useful theory for this experiment. It was hypothesized that participants made to think about their own death would report more negative opinions toward Islam than participants that were not. Data analysis is in progress and will be completed before the Forum. The outcomes of this experiment contribute to existing research on media effects. Additionally, these results carry implications for politicians trying to talk about terrorism without further contributing to Islamophobia.
Category: Social and Behavioral Sciences
Title: A gender lens in political discussion: the political socialization of adolescent girls
Student Presenter: Shannon Fillingim
Faculty Advisor: Brooks, Sarah

Abstract: Women’s participation in government matters tremendously to the well-being of a nation, yet women still face multiple societal and cultural obstacles as they strive to achieve the goal of full participation in the political arena. The most troubling of these barriers is the perception that women have of themselves as being less qualified than men to engage in political life. In this study, researchers evaluated the effect of a gender lens in a seminar discussion program on the political self-esteem of middle school students. Participants were randomly sorted into two groups. Before each discussion session, participants read a short news article about the day’s topic of discussion. At each discussion session, the researcher guided students in answering critical reading questions. While the structure of both the control and the experimental group discussions were the same, the articles chosen for the experimental group featured a gender lens by focusing specifically on the involvement of women in the issues at hand, while the control group read articles with a more general bent. The effect of the discussion groups was measured by pre-program and post-program surveys, consisting of open ended and multiple choice questions. Ultimately, the gender lens did have a statistically significant effect on the experimental group’s political self-esteem: the change in means between pre-treatment and post-treatment responses to questions about political self-esteem was significant at a 95% confidence level for four out of six survey questions. Although this study is limited by its small sample size from being truly representative of the population, the results of this study are encouraging for researchers focusing on the factors preventing women from achieving political parity. This study shows that including a gender lens in discussion of current events helps girls see themselves as future political actors.
Title: The 'traitor' in the white hat: the protection and prosecution of government whistleblowers in a post-9/11 America

Student Presenter: Kaitlyn Funk

Faculty Advisor: Mitzen, Jennifer

Abstract: The whistleblower has acted as a voice- of and for the people- to expose covert wrongdoing within the government since the formation of the United States. Government whistleblowers therefore play a particularly honorable role in upholding government transparency and accountability. Efforts such as the Whistleblower Protection Act of 1989 and the Whistleblower Protection Enhancement Act of 2012 have been set in place to protect the essential watchdog role that whistleblowers fulfill. However, there seems to be a reversal. The Espionage Act of 1917, originally intended to prevent acts of foreign espionage during wartime, now serves as the basis for the increased prosecution and silencing of government whistleblowers themselves. This is a result of the expansion of the national security state and heightened sensitivity towards anti-terrorism efforts post-9/11. In this research project I question whether, given the circumstances, the Espionage Act and whistleblower protections are equipped to account for evolved motivations and methods for whistleblowing in a post 9/11 America. This study examines the effects of technology, a vast system of intelligence over-classification, and the expanded national security state on the characterization and prosecution of individuals as whistleblowers, leakers, and spies. I draw upon pro-social behavioral and rational loyalty theory to establish the function of government whistleblowers in democracy, and I employ a critical textual analysis of the Espionage Act and government whistleblower protection legislation to conclude that anti-espionage and whistleblower protection initiatives need major reforms to accommodate the advanced climate of technology and increased national security under which government whistleblowers now operate. My research contributes to the critical literature on the role of transparency and accountability in democracy.
Abstract: Transportation has been repeatedly identified as a barrier to social and health resources in the U.S. In 2005, it was estimated that 3.6 million individuals were unable to access non-emergency medical care due to transportation barriers. Existing transportation services through Medicaid and Medicare have proven to be suboptimal, and while new solutions are beginning to surface, many Americans are still subjected to poorer health outcomes due to transportation. The objective of this descriptive cohort study was to evaluate the transportation barriers present among low-income residents in Columbus, and their effect on both medical and social resource accessibility. ENCompass is an undergraduate student organization dedicated to bridging the gap between medical and social care. Through routine consultations at clinics and food pantries, Columbus residents were interviewed and assessed to determine relevant demographic information and social/health related concerns. A transportation survey was also administered, in which participants were asked to identify their main form of transportation, then report whether they considered transportation a barrier to accessing the aforementioned resources. Additional questions inquired about related factors such as weekly transportation expenses, COTA use, and smartphone access. From our data, it appears that lack of access to transportation is concentrated in Columbus’ north and east sides. Analyses indicate a correlation between transportation issues and lacking access to eye and dental care. Additionally, data shows that many in the Columbus community who rely on COTA and identify cost of transportation as an issue are unaware of the service's discount programs for the poor and elderly. These results helped us characterize the transportation issues in Columbus, as well as the affected population. In late 2017, a future ENCompass research study will administer transportation credit to nine participants and explore the effects on ability to reach social and health resources, and associated impacts on perceived stress levels.
Abstract: The United States Department of Defense is the largest employer in the world, employing 3.2 million people, most of whom are military service members. With spouses and children included, the number of Americans considered part of a military family reaches five million, with about two million military children. Over 50% of service members are married and more than 40% have children. Sixty percent of military service members are deployed at least once, with nearly half of this population experiencing between two and four deployments throughout their military careers. This qualitative study examines the effects of deployment on family member roles through the different stages of deployment (pre-deployment, deployment, and post-deployment-reintegration). The use of structured interviews and the framework of Role Exit Theory provide an opportunity to understand the changes in roles that military families experience. Families discuss the changes faced as well as the opportunities to try out different roles over a deployment period. Though the family members experienced differences in their ways of adjusting to the different periods of deployment, many showed great resilience and adaptability in the face of major life changes. The responses of participants in regards to roles they wished to maintain or relinquish varied greatly and gave a clear picture of the diversity of these families. This study examines a new element of military family life in considering personal perceptions of self and roles changed because of time apart due to military involvement. The findings will contribute to the knowledge base of military families and to the development of military family supports.
Category: Social and Behavioral Sciences  
Title: River futures  
Student Presenter: Ryan Hillyer  
Faculty Advisor: Boswell, Jacob  

Abstract: American cities have traditionally used urban rivers for four primary functions, principally these have been: access to fresh water for drinking and irrigation, the transportation goods, the disposal of industrial and sanitary wastes, and finally human sanitation and recreation. These uses explain the settlement of many American cities along waterways, and result in a variety of strategies for their development. The initial research took the form of a discursive core sampling of river cities in Ohio, investigating what differences existed in narrative histories of each urban river and what differences in development resulted. The analysis focused specifically on the physical development and utilization of rivers and was restricted to portions passing through the downtown regions of Cincinnati, Columbus, and Cleveland. Discursive information describing these developments was gathered by sampling articles from a single major newspaper from each city, limiting the search to articles that mentioned the respective river for the city. This process uncovered a pattern of development that is defined by a responsive cycle where river morphology and social perceptions influence the physical developments impacting the river. In order to test the way in which city planning and river development will change following this pattern given inclement climate change and water security, I have developed a board game that pulls together a team to plan for the future of a hypothetical midwestern city responding to pressures of climate change. The game is an abstraction of a planning committee, becoming an experiment in which to test not only the challenges to be expected, but also to highlighting the opportunities for collaboration amongst diverse disciplines. As such, the game may be a social activation tool which brings awareness to the pressures of climate change and water security, and offers a productive ground in which to hypothesize management strategies for the future.
Abstract: Postpartum Depression (PPD) is a common mental illness accompanying childbirth that afflicts approximately 20% of new mothers. Stress during pregnancy is a well-known risk factor for developing PPD, and previous research in our lab has shown that rat mothers subjected to chronic stress throughout gestation display behavioral symptoms commonly seen in PPD, including impaired maternal care. An important factor that plays a role in regulating maternal care is the neuropeptide oxytocin (OT). Thus, we hypothesized that impaired maternal care following exposure to gestational stress would be associated with alterations in central OT signaling. To test this hypothesis, we examined: 1) the number of OT cells in the hypothalamus, the main site of OT synthesis, 2) the density of OT fibers in the ventral tegmental area (VTA), a major target of OT projections, and 3) oxytocin receptor (OTR) expression in the VTA. Our results show no differences in the number of OT cells in the hypothalamus of unstressed and stressed mothers. However, gestational stress did reduce OT fiber density as well as OTR expression within the postpartum VTA. Together these data indicate that OT signaling within the VTA may be compromised by gestational stress. Since OT in the VTA plays a critical role in regulating maternal care, these data provide preliminary evidence that disruptions in the OT system may contribute to the impaired maternal functioning that is characteristic of PPD.
Abstract: Estimates of the prevalence of campus sexual violence suggest that 1 in 5 females and 1 in 16 males will be sexually assaulted during college. However, only about 20 percent of campus sexual assaults are reported to authorities and only 27 percent of women who said they experienced sexual assault believed the assault met the legal definition of rape. In response to high rates of sexual violence on Ohio's campuses and inconsistent response procedures, the Ohio Department of Higher Education (ODHE) released the 2015 "Changing Campus Culture" Report (the Report), which included recommendations for preventing and responding to sexual violence. Institutions could opt-in to participate in this initiative. The purpose of this research is to determine the extent to which Ohio's colleges and universities complied with the recommendations outlined in the Report. Policies are a method for ensuring accountability at the institutional level and serve as an institution's official strategy for addressing an issue. In light of this, each institution's Title IX and Sexual Misconduct policies were analyzed to measure compliance with the Report's recommendations. A policy scan of 14 public and 14 private institutions in Ohio was conducted in Spring 2016, before ODHE's compliance deadline, and again in Fall 2016, after the compliance deadline. The results show that while most institutions had policies that met the Report's recommendations that focused on response to sexual violence after it has occurred, only a small number of institutions included information in their policies about preventive and educational actions, such as utilizing a campus climate survey, comprehensive training programs, or campus awareness campaigns. Many policies contained negligent errors, lacked concrete information for action, or were not conveniently accessible. Given these results, it's clear there is a need for substantial improvement in the incorporation of ODHE's recommendations into policies of Ohio's higher education institutions.
Abstract: The aim of the present study is to examine the relationship among household composition, mothers' stress, and children's receptive and expressive language skills. Based on the extant literature, living in high poverty tends to be one of the strongest predictors of children's language development. Research also has shown that the more adults in the home is related to an increase in children's language development. For families living in high poverty, other constructs may also be related to children's language development such as mothers' stress, which causes mothers to become withdrawn from their child. The present study includes a sample of 173 low-income mother-child dyads with a variety of household compositions. Background information (including household composition) was collected at the time of enrollment in the study (i.e., when the child was birth- to three-months-old), mothers' stress was collected when the child was four- to seven-months-old, and language was assessed using the Bayley Infant Scales of Development when the child was nine- to 12-months-old. The findings of this study will provide more information on how children's language development is related to the speech around them and the influence the mother's stress may have on a child's development. Data is currently being analyzed however, the finalized results will be presented at the 2017 Forum.
Abstract: Many scholars, and even former President Obama, voice concerns about "echo chamber" news consumption and subsequent polarization, where people only expose themselves to sources with which they agree, avoiding contact with opposing viewpoints. While previous related research has limited itself to online information, this study placed equal emphasis on online and print media in order to analyze an "echo chamber" effect amongst conservatives and liberals across both platforms. The study design tested if participants would read more attitude consistent or attitude dissonant information online versus in print. Four different versions of a print magazine and news website were created out of 32 pre-tested articles, with each containing different selections of articles in different orders. During the 2016 election campaign, data were collected from 115 participants, who each browsed the online and print magazine for six minutes. Their behavior was tracked using software or taped video cameras. A repeated measured ANOVA yielded no significant differences in consumption of attitude consistent articles among conservatives. Among liberals, however, the reading of attitude consistent articles was dependent on the medium $F(1,114)=4.83$, $p=.03$, $\eta^2=.38$, so while liberals showed no "echo chamber" effect in the print condition, they consumed more attitude consistent material ($M=185s$, $SD=106$) than attitude dissonant material ($M=107s$, $SD=106$) in the web condition. Hence the "echo chamber" was evident with liberals in the online condition, which we explain by the fact that at the time of data collection (February, 2016), the liberals were expected to win the upcoming election. This is the first selective exposure study of its kind to show that exposure to attitude consistent news is dependent on the medium by which the news is viewed, suggesting huge ramifications as more people are consuming news online.
Category: Social and Behavioral Sciences

Title: The role of gut microbiota in chemotherapy-induced behavioral comorbidities

Student Presenter: Jass Kaur

Faculty Advisor: Pyter, Leah

Abstract: Cancer patients suffer more than just the effects of their primary disease, they also suffer from copious behavioral comorbidities including cognitive impairments and mood disorders. The tumor itself, stress and chemotherapy are likely the causes of these comorbidities. In this study, we focus on chemotherapy as the cause of these cognitive impairments, however, the underlying mechanistic pathways have not been well delineated. Here we apply, to this chemotherapy issue, the recent discovery that natural gut bacteria (microbiota) influence brain and behavior. Specifically, we hypothesize that chemotherapy causes changes in the gut microbiota which impair cognitive function in mice. How the gut influences the brain is still undetermined, but in the context of chemotherapy, we hypothesize that inflammation is the most likely potential mechanism. Non-metastatic mammary tumors were induced in all immunocompetent female mice. Starting one week after tumor induction, half of the mice (n=12) received paclitaxel chemotherapy (20 mg/kg; i.p.) every other day for a total of 6 cycles; controls received vehicle (n=12). Cognitive behavior was assessed using novel object recognition. Brain, blood, and colon contents were collected. The gut microbiota was assessed using agar culturing; neuroinflammation was analyzed using qPCR. Results suggest that while chemotherapy did not significantly alter novel object recognition, it reduced tumor size, increased spleen mass, and increased total gut bacteria. By determining the mechanisms of cognitive impairments in cancer patients, their quality of life can be improved through non-invasive treatment options.
Category: Social and Behavioral Sciences

Title: Understanding cross-regional variation in the effect of remittances on development outcomes

Student Presenter: Hayley Kick

Faculty Advisor: Flatnes, Jon Einar

Abstract: It is well-established in the literature that money being sent home by family members and relatives living away from home, i.e. remittances, can help combat poverty and contribute to economic development across the developing world. There is also consensus that remittances to households in low-income countries are growing rapidly and have even outpaced official aid. However, there is still much to be said about why remittances play a larger role in development for certain countries or regions than others. This project explores why there appears to be large cross-regional variation in the impacts of remittances on development outcomes. I begin by providing a comprehensive review of the existing literature to better understand the motivating factors behind remittances. I continue with a discussion of how characteristics of specific countries and regions influence these motivating factors and contribute to any observed variation in the development outcomes of remittances. From this discussion, I identify key factors affecting the apparent variation in development outcomes of remittances, including differences in labor migration patterns, transaction costs, strength of formal financial institutions, and under-reporting of remittances. Finally, I present recommendations for future research and development policy implications of my findings.
Abstract: Negative advertisements about political candidates are more memorable than positive advertisements (Brians & Wattenberg, 1996; Garramone et al., 1990; Lau, 1985). While there are many theories why this might be, the underlying mechanisms of individual information processing of negative messages remain unclear. This experiment tests whether individuals with a high need to evaluate, that is, individuals who have a tendency to form evaluative responses consistently and spontaneously, might be particularly attuned to negative messages. This could be due to the interaction of chronic opinion formation and the fact that negative characteristics are weighed more heavily than favorable ones when forming first impressions (Hamilton & Zanna, 1972). An experiment with 192 undergraduate student participants was used to test if the need to evaluate might influence the likelihood of negative message recall. Sixteen questions developed by Jarvis and Petty (1994) were used to place each participant on the need to evaluate continuum. Next, statements about three fictitious political candidates were flashed on the computer screen one at a time for about eight seconds each. Statements about these three candidates were presented and chosen such that one candidate had mostly positive attributes, one candidate had mostly negative attributes, and the third candidate had an even mix of positive and negative attributes. Consistent with prior research, individuals with a high need to evaluate were found to be more confident and certain of their opinions of all three candidates ($r = .240$, $p=.001$). While analysis and coding of open ended response questions are ongoing, I predict that individuals high on the need to evaluate will be particularly influenced by the negative messaging condition. There are implications for both political strategy and communication theory if the study reveals that individuals high on the need to evaluate are uniquely attuned to negative campaign messages.
Abstract: Many students have financed educational aspirations through burdening themselves with debt—a result of interplaying dynamics of finance, education, and the labor market, a financing strategy for higher education especially prevalent during and following the American Great Recession. By the time students graduated and entered a ravished employment landscape, many had educational experiences that were other than traditional. In order to attain a bachelor’s degree, some began at community colleges or for-profit institutions, others had transferred, and many had taken longer than expected. This interaction between the financial crisis and higher education had considerable consequences for students as the rise in student debt was accompanied by a rising trend of repayment distress. In the slow recovery following the recession, have some students been able to manage their educational debt better than others? In my thesis, I examine debt repayment patterns in a post-recession era persistently marked with uncertainty. I draw from the nationally representative Baccalaureate & Beyond 2007-08 survey conducted by the U.S. National Center for Education Statistics. Corroborating past research, this sample suggests that some students are more successful in loan repayment: those who come from an economically privileged class and those who began college at public and private not-for-profit four-year institutions. I find that many students who began at two-year institutions and for-profit school had taken on more debt to finance what was supposed to be cheaper education and graduated with substantially higher debt loads and weaker labor outcomes than their peers. This suggests that institution type first enrolled plays a role on student outcomes and ultimately loan repayment. The interplay of where a student begins college and post-baccalaureate labor market outcomes have become increasingly important in understanding social stratification: college has been regarded as an equalizer among demographic and economic groups; however, it may instead further replicate disadvantages.
Title: Breaking down the barriers to academic success: middle school students' perceptions of barriers to academic achievement

Student Presenter: Laine Kolesar

Faculty Advisor: Kolesar, Laine

Abstract: Middle school students, especially those of racial minorities and low socioeconomic status, face a multitude of barriers when striving for academic success. Possible barriers range from the individual level to the family, school, community, and even national laws and policies regarding education. This wide range of possible barriers is what led me to ask the question of how middle school students themselves perceive their own barriers to academic achievement. What do they think is the most influential factor in their academic success? What do they see as a problem in their classrooms and communities? My research is inspired by both the importance of the middle school years on future academic success, and the achievement gap as an example of social injustice in the United States. The specific aims of my study are to identify how middle school students perceive barriers to academic success and to explore how these perceptions are affected by self-efficacy and race. This will be achieved through a survey administered to a sample of middle school students. The survey asks about basic demographic information (age, race, and gender), as well as questions designed to assess self-efficacy and perceived barriers to academic success. I am in the process of analyzing the data from the survey, so I do not have any findings at this time. My study will add to existing knowledge of what causes the achievement gap. It will also provide direction for future school social work practice, both within the school at which my research was conducted, and in schools that are struggling with similar issues.
Category: Social and Behavioral Sciences
Title: Student perceptions on campus safety and physical/sexual assault at The Ohio State University
Student Presenter: Courtney Kren
Faculty Advisor: Karandikarr, Sharvari

Abstract: According to the National Sexual Violence Resource Center, one in 5 women and one in 16 men are sexually assaulted while in college. The Clery Act (1990) requires colleges and universities to disclose campus safety information, and provide requirements for handling sexual violence and emergency situations. However, there isn't enough literature available on student perceptions during such sexual violence encounters or dangerous circumstances. The purpose of this research is to understand perceptions of students on physical/sexual assault at The Ohio State University and their attitudes towards administration in regards to campus safety, prevention, and response to violent occurrences. To examine these objectives, an online survey with Likert type items was administered to 75 students living on or near Ohio State's campus through social media and email. Of these students, 13 identified as male, 56 identified as female, 1 identified as non-binary, and 5 did not indicate. Preliminary results indicate that 75% of participants feel safe on Ohio State's campus, 28% feel that administration does a good job informing students on how to handle a potentially dangerous situation, and 69% feel that administration properly handles dangerous situations after they have occurred. In addition to these results, 83% of participants personally know someone who has been a victim of sexual assault, 56% personally know someone who has been victim of a physically violent crime, 38% have been personal victims of sexual assault, and 8% have been personal victims of a physically violent crime. The results of this research indicate a need for administration at Ohio State to focus on prevention mechanisms so students feel better prepared when unexpected dangerous situations occur. This study provides a recommendation for further research on student perceptions on campus safety and physical/sexual assault across a larger sample population on various campuses across the United States.
Abstract: The prevalence of obesity has increased to approximately 35% in the U.S. One treatment for severe obesity is bariatric surgery. Previous research has shown that social support from peers and family members positively affects patients' health behaviors and long-term weight loss post-surgery. Inquiries into bariatric patients' social support are rarely conducted and have not included measures of other social relationships, like family functioning. The goal of this project is to 1) assess differences in patients' perceived social support based on clinical demographics (gender, race/ethnicity, pre/post-surgery, relationship and parental status) and family functioning, and 2) determine predictors of patients' perceived social support for diet and exercise change. We recruited pre- and post-surgery bariatric patients (N=300) from the OSU Bariatric Clinic to complete a survey about their perceptions of peer and family support for exercise and dietary changes and family functioning. Analyses included descriptive statistics, independent t-tests to determine differences in social support, Pearson's correlations, and multiple linear regression to predict family support for exercise and dietary changes. The majority of participants were female (85%), Caucasian (75%), parents (77%), and half were partnered and post-surgery. Females (M=21.69, SD=10.76) perceived higher support for exercise from their peers than males (M=17.82, SD=9.38; t(201)=−1.95, p=.052). Racial/ethnic minority patients (M=28.04, SD=11.87) perceived higher family support for exercise than white patients (M=23.56, SD=11.28; t(219)=−2.36, p=.019). Patients with healthy family functioning also reported significantly more support from peers and family members for exercise, eating behaviors, and encouragement for both diet and exercise behavioral changes. Results were further analyzed for the strongest predictors of family support for exercise and family support for eating behavior change. The assessment of social support based on clinical demographics and family variables may inform future programming to enhance patient peer and family support for long-term behavior change and weight loss maintenance.
Title: Comparative perceptions between former prisoners and community members

Student Presenter: Samantha Larason

Faculty Advisor: Yoder, Jamie

Abstract: Those recently released from incarceration face many challenges while trying to integrate back into their communities. There is a lack of knowledge from the general population about the transitioning process in which ex-offenders go through. Societal stigma has hindered these individuals (ex-offender population) from acquiring occupation, housing and has labeled them as lesser within the community at large. On top of these hardships, societal perceptions can marginalize these individuals. Few research studies have examined social perceptions of ex-offenders, this study is a comparative piece between ex-offenders and the general public. How do perceptions held in our society affect self-image and self-worth among men and women reentering the community following release from prison? Perceptions of adult males who were recently released from prison (n=4) were compared to perceptions of community members (n=4). Participants were recruited from local transitioning houses and through snowball sampling respectively. Through a grounded theory approach, semi-structured interviews were then conducted to guide conversation with each participant group being asked a different set of questions. After interview completion, coding was done to analyze and interpret the interview answers within the confines of the research study. Several themes emerged around a new understanding of ex-offender stigma from a general community focus. Social support, communal ties and lack of knowledge have been a few themes discovered through this study. As a society, we need to change our outlook on the ex-offender population in order to help these individuals fully integrate back into their communities. A new understanding of the transitioning process and what it means to be an ex-offender in society could be the first steps to alleviating some of the hardships faced by those returning from incarceration. Researching the perceptions between these groups can lead to a better understanding of social stigma in regards to incarceration and post-release.
Abstract: Diverging population profiles have diverse consequences for societal outcomes. Much research has considered the effects of the presence of large youth populations in given areas on conflict in the region. The existing literature lacks a clear verdict, although some (Urdal et al., 2014) have suggested the existence of a significant link between youth bulges and political violence. This research seeks to examine the connection between the presence of large populations of people between the ages of 15 and 24 and protest activity. Unlike previous studies, the scope of this project is limited to the experience of Sub-Saharan Africa, the youngest region of the world, and the youth bulge is calculated as a percentage of the adult, not the total, population. The data for this research was collected from online databases of social conflict, population dynamics, and national economic and political indicators. I utilize a fixed-effects regression model that allows for an examination of the change of the relationship between age and protests in most countries in Sub-Saharan Africa over a 25-year period. Controlling for a number of variables, I find a small, but significant effect of the youth bulge on localized protests. The study also posits that certain societal conditions, such as the prevalence of polygamous marriages, tends to strengthen the relationship by offering young men few alternatives to conflict. I look at two countries, Nigeria and Tanzania, which have large, but geographically distinct, populations of Muslims and non-Muslims. State-level data from these countries also support the notion that the practice of polygamy, and to a lesser extent unemployment, fortify the observed relationship. Policymakers should not make ill-fated attempts to change population profiles, but rather to offer young men in their societies opportunities to form families and find jobs. Future research should examine the political psychology of the protesters.
Abstract: The party identification model, using the heuristic of party identification to explain an individual's political decisions, has been the dominant way to determine how people make political judgments and decisions. But this approach fails to recognize that as society begins to interact more digitally through social media, acquisition of information has become a social activity. This study focuses on the impact of social influence on political judgment and decision making. A experiment was conducted, in which, participants interacted digitally, and demonstrate the biases created through digital interactions and how those biases can suppress our views and effect our decisions. This study’s primary goal was to demonstrate that decisions compelled by psychological discomfort brought on by social influence motives can cause an individual to compromise politically to ease their cognitive burden. Social networking sites provide a particular setting of interest for this experiment, in that, individuals are more likely to talk about politics through an online format than through face-to-face interactions. The experimental design simulated an online social media environment, placing participants under a psychological strain between belonging and being distinct. This is intended to replicate the complex social reality that social media users experience on such platforms as Facebook. The results of this experiment suggest that individuals are significantly likely to conform to digital peer groups when discussing some political topics, while many moderate views disappeared, leading to a more polarized political environment.
Abstract: First year students attending university typically experience several lifestyle changes during their first semester of college. These changes often impact the eating behaviors and autonomy of students. Specifically, as new dining facilities and meal plans were added for Ohio State students, it is important to look at how these changes are impacting the well-being and health of first year students during their transition period. In order to better understand the eating behaviors and patterns of first year students living on campus, two anonymous online surveys were administered. One survey was administered the first four weeks of fall semester 2016 and one was administered in the last two weeks of fall semester 2016. Students were asked to respond to a variety of questions to give insight into their daily eating habits and factors that influence their eating behaviors. Of those participants who completed both surveys, 30% reported that, in high school, they never ate breakfast with the intention of eating with another individual. The same question yielded 42% of respondents at the beginning of the semester and 52% of respondents at the end of fall semester 2016. There is an abundance of information on the transition between high school and college and on the considerable weight gain that many first-year students experience, ("freshman fifteen"). However, there is a lack of information on how this transition is related to the first-year student experience and how autonomy plays a role in this relationship. Information collected from these surveys can be used to inform research and departments in the university to ensure that Ohio State procedures match with the needs of the students.
Abstract: Since the summer of 2015, Europe has struggled to deal with the influx of refugees and migrants from Syria, Iraq, and other Middle Eastern and North African nations. Germany's Chancellor, Angela Merkel, declared an "open-door" asylum policy which would accept all migrants seeking asylum. In 2015, Germany accepted over 1.1 million immigrants. The reactions of German citizens and politicians varied widely from the start of the refugee crisis ranging from welcome marches to xenophobic fear-mongering. As the influx of migrants continued, discourse changed noticeably in German news sources and political rhetoric. However, it is unknown why the opinions of German citizens changed or which groups changed their attitudes. This research aimed to better understand the opinions of Berlin residents about refugees and migrants in Berlin specifically and Germany as a whole. It was hypothesized that younger Berliners and those who identify as having immigrant ancestry would be more sympathetic to refugees, while Berliners who perceive their economic situation to be worsening would be less likely to support the asylum policy. The data collected via a survey supported these hypotheses. This survey (active from May-July 13, 2016) obtained Berlin residents' opinions as well as background information of the participants (104 total responses). These findings are topical in the current political climate of the Global North, and parallels can be made to the U.S. due to the present suspension of the refugee program. The outcome of this project sheds light on the personal perspectives of Berliners' on the asylum policy, those perspectives connection to xenophobia in a German context, and the rise of right-wing extremism. This information can be useful in better informing public bodies about refugees and provide insight into immigrant integration.
Category: Social and Behavioral Sciences

Title: Oxytocin interacts with GABA in the medial prefrontal cortex to reduce anxiety-like behavior

Student Presenter: Skyler Maurer

Faculty Advisor: Leuner, Benedetta

Abstract: Numerous studies in animals and humans have established that the neuropeptide oxytocin (OT) reduces anxiety. In rodents, the prelimbic (PL) subregion of the medial prefrontal cortex (mPFC) is among the brain regions implicated in the anxiolytic actions of OT. However, the mechanisms underlying the anxiolytic effect of OT in the mPFC are unknown. Recent work has shown that oxytocin receptors are located on mPFC GABAergic interneurons and that OT increases GABA levels in the mPFC. Thus, we hypothesize that OT in the mPFC attenuates anxiety by enhancing local GABA activity which in turn inhibits glutamatergic projections from the mPFC to limbic areas implicated in anxiety-like behavior. This hypothesis was tested in two experiments. In experiment one, OT was co-administered with the GABAA receptor blocker bicuculline methiodide into the PL mPFC of adult male rats prior to testing for anxiety-like behavior in the elevated plus maze and social interaction tests. In experiment two, the extent to which OT in the mPFC affected neuronal activation in the amygdala, a target of the mPFC that is involved in anxiety-like behavior, was assessed using c-Fos immunohistochemistry. Our results show OT in the PL mPFC reduced anxiety-like behavior and this effect was blocked by the GABAA receptor antagonist which by itself, at the dose administered, had no effect on anxiety-like behavior. Furthermore, administration of OT into the PL mPFC resulted in decreased c-Fos expression in the basolateral amygdala. Together, these results demonstrate that OT in the PL mPFC may attenuate anxiety-related behavior by engaging GABAergic neurons which ultimately suppress downstream brain regions implicated in anxiety-like behavior. In doing so, our results provide novel mechanistic insights into OT’s anxiolytic actions for which little is currently known despite its potential therapeutic uses.
Abstract: On July 1, 2017, the Department of Agricultural Communication, Education, and Leadership (ACEL) at The Ohio State University will celebrate its 100th anniversary. The Smith-Hughes Act of 1917, which marked the beginning of the increased growth in agricultural education across the country, is simultaneously celebrating its 100th anniversary. Before the act was passed, Ohio had 50 public schools offering agricultural courses, so the demand for agriculture teachers was growing tremendously. Thus, the Smith-Hughes Act provided the funding needed to educate more individuals to teach agriculture in public schools. Consequently, the Department of Agricultural Education was established at The Ohio State University. The purpose of this study is to gather and organize historical data of the ACEL Department by time periods. The specific objectives guiding the study are: to organize 100 years of memories, milestones, and developments of the department and to organize photographs of students, faculty, and events. Historical research methodology will be used to analyze primary and secondary sources. Data have been gathered from a booklet published by the department on its 75th anniversary. Interviews will be conducted with current faculty. To date, the 100-year period has been divided into four segments. Within each segment, the data are organized by department chairs, faculty, graduate students, majors, department titles, and department organizations. Analysis is documenting the influences of the department to agriculture in Ohio for the past 100 years. For example, it was found that prior to the establishment of the department, students in the Agricultural Education Society undergraduate student organization educated their communities about the most up-to-date science and technology in agriculture. Data collection will continue in an effort to contribute to the recorded history that was preserved from the first 75 years of the existence of the department.
Category: Social and Behavioral Sciences

Title: An evaluation of Tukey foddering and management via carbon and nitrogen isotopes in the Chuska Valley, Tohatchi Flats, New Mexico

Student Presenter: Catherine Mendel

Faculty Advisor: Grimstead, Deanna

Abstract: Recent research has demonstrated an independent domestication event of Turkey (Meleagris gallopavo) occurred in the Southwestern United States between 200 BC-AD 500. This event was separate from the domestication of turkey within the Mesoamerican world approximately 2000 years ago. While aDNA analysis reveals this as a separate and distinct event, we still know little about how turkey husbandry was practiced in the daily lives of prehistoric agricultural groups from the Southwest, USA. My research applies carbon and nitrogen isotope analyses to a sample of archaeological turkey bones from the Tohatchi Flats region on the eastern slopes of the Chuska Mountains, New Mexico. These results are contextualized by comparison with results from a small sample of modern Gunnison's Prairie Dog (Cynomys gunnisonii) taken from the same region. Results demonstrate that prehistoric turkey were being heavily foddered with maize and do not appear to have had access to insects as a portion of their diet. The latter conclusion suggests they were not allowed to free range within the confines of the Great House walls. No evidence for turkey pens has been discovered at the site suggesting the turkeys were likely tethered.
Category: Social and Behavioral Sciences

Title: Developing an eye movement measure of memory for political knowledge

Student Presenter: Ryan Moore

Faculty Advisor: Coronel, Jason

Abstract: One of the primary and overarching findings from the past several decades of political science research is that the average American citizen is generally uninformed about politics. Researchers have typically measured what people know and remember about politics via self-report measures. However, self-report measures may not necessarily provide an accurate index of what people remember. In the research reported here, we develop a novel eye movement measure of memory for political information. Eye movements measures possess two unique advantages: (1) they can measure memory without the need for self-report and (2) studies in cognitive psychology has shown that eye movements can accurately represent memory for information despite inaccuracies in self-report responses. We report here that eye movements can accurately detect memory for political information even when self-report responses fail to do so. Our results suggest that self-report measures may underestimate the amount of political information citizens learn from the information environment and highlight the utility of eye movement measures in accurately assessing what people remember.
Crosslinguistically, children who are otherwise linguistically mature tend to assign a collective interpretation to quantifiers that are typically construed as distributive (each/cada) by adults; similarly, in distributive contexts, children accept quantifiers that adults interpret as collective (some/unos, the/los). In this study, we affirmed the categorical nature of adult English interpretations of these quantifiers in distributive and collective contexts. Then, we tested the degree to which general lexical development, inhibition, working memory, and attention are responsible for children's interpretations. The Pragmatic Scale Hypothesis proposes that collective and distributive meanings sit on a pragmatic scale, anchored by each/cada, which represents the distributive extreme of the scale with meaning derived through entailment. In contrast, some/unos and the/los derive meaning through a conversational, scalar implicature that is generated by virtue of the weaker informativeness of these quantifiers, relative to the stronger informativeness of cada/each. From this hypothesis come the following predictions: 1) General lexical development should predict children's abilities to reject distributive each/cada in collective contexts, as we expect such entailments to develop in tandem with denotative content in the lexicon. 2) Lexical development may also be predictive of children's abilities to reject collective some/unos and the/los in distributive contexts, as their meaning is indirectly inferred from the pragmatic scale, anchored by cada/each. 3) If scalar implicatures result from inferences drawn using non-linguistic cognitive performance abilities, including inhibition, then such abilities should be predictive of the collectives, but not the distributives. We recruited 60 typically-developing 7 and 8 year-olds in Ohio and Puerto Rico. 31 were monolingual Spanish-speakers (mean age=95.25 months, SD=7.43) and 29 were monolingual English-speakers (mean age=95.38 months, SD=7.65). Children were given a video-recorded Truth-Value Judgment Task to measure their interpretations, as well as standardized tests of vocabulary, inhibition, working memory, and attention. Results confirmed predictions and support the Pragmatic Scale Hypothesis.
Abstract: Stress-related mood disorders are more frequently observed in women. Females have been shown to have a more sensitive prefrontal GABAergic signaling system (e.g. increased parvalbumin - PV expression) following exposure to Unpredictable Chronic Mild Stress (UCMS), than males. NMDA receptor (NMDA-r) antagonist, ketamine, is known to induce sex-dependent antidepressant like effects in stressed mice, possibly through NMDA-r expressed onto PV-expressing neurons. These findings suggest that vulnerability to stress might be associated with differential activation of NMDA-r on PV cells. To test this hypothesis, ketamine was given prophylactically in mice exposed to UCMS. Male and female C57bl/6 mice were assigned to a Control group, or UCMS group. Subjects within each treatment group received a dose of ketamine (10mg/kg) or vehicle (0.9% saline intraperitoneally (n=8/group)) a week before the experimental period. Mice were then tested in the Open Field (OF) and Forced Swim tests (FST) to measure anxiety- and depressive-like behavior, and in the Object Recognition Test (ORT) to analyze cognitive functions. To evaluate ketamine's short term effects, a second group of 10 males and 10 females received an equal dose of ketamine, and their brains were collected and analyzed 7 days later. Brains were assessed for mRNA expression of NMDA-r glutamate receptor subunit proteins Grin 1 and Grin 2-a, and PV. RT-PCR analysis reveals sex-specific effects of ketamine on mRNA expression of Grin1, 2A and PV in the PFC that suggest a better drug response in males, than in females. Similarly, behavioral data show that ketamine prevents the depressive-like phenotype in UCMS-exposed males, but not females. Ketamine did not prevent UCMS-induced anxiety-like phenotype and induced cognitive deficits in males or females. Altogether, our data demonstrate that inactivation of NMDA receptors prior to stress might provide resilience to stress-induced depression in males, but not in females, suggesting sex-specific molecular mechanisms to stress vulnerability.
Abstract: The 2016 Presidential Election was one of the most polarizing elections in US history. In the past, polarization was largely suspected to stem from differences in ideology. However, affective polarization, or division based on emotional feelings towards opposition, has begun to take hold as a possible reason. Throughout the election, Twitter became a new medium in which presidential candidates communicated with voters. Using content analysis, I am measuring the impacts of Donald Trump's tweets from July 1 to November 8, 2016 to see if there is any impact on candidate favorability or opinion of people belonging to opposite parties. I am measuring to see if there is any correlation between favorability and tweet sentiment, insults, stereotypes, reference of political parties, and references of certain issues. I predict that Trump's tendency to project negative words towards the opposite group (in this case, Democrats) may cause higher polarization. I also suspect that news media covering Donald Trump's tweets may increase the levels of polarization. If Trump's tweets prove to have an impact on candidate favorability and other measurements of affective polarization, that may imply that voters are making decisions much differently than anticipated. It is possible that individuals are foregoing the cost of finding scholarly information and holding on opinions that appeal to their emotions instead. My project is still in the coding stages. However, results will be available by the Denman. I appreciate your consideration.
Abstract: Acidosis is a major contributor to neuronal injury in various neurological disorders including cerebral ischemia, multiple sclerosis, and traumatic injury. Acid induced toxicity in the central nervous system is dependent on Acid Sensing Ion Channels (ASICs) which sense extracellular pH reductions and induce neuronal depolarization. Although ASICs are necessary for normal synaptic transmission, chronic or traumatic ASIC activation also has acidotoxic effects that lead to neuronal degeneration. Receptor Interacting Protein Kinase 1 (RIP1) signaling has been shown to mediate cell death and pharmacological studies have suggested that ASIC-mediated RIP1 activation is a key step in ischemic brain injury. We have found that activation of the Delta Opioid Receptor (DOR) induces a neuroprotective mechanism that counters ASIC-mediated acidotoxicity. This observation presents a potential therapeutic target to limit neuronal injury, but the neuroprotective mechanism is not understood. In this study, we are testing the hypothesis that DOR activation attenuates acidotoxicity by disrupting the interactions between ASIC and RIP1. To test this hypothesis, the association between DOR activation and ASIC/RIP1 dependent neuronal death were studied in both transfected cell lines and neurons endogenously expressing ASICs. Whole cell patch clamping was utilized to study the effect of RIP1 and DOR on ASIC current directly. Additionally, Western Blot techniques were used to examine RIP1 activation as well as the association between ASIC and RIP1. By understanding the mechanism of DOR-induced neuroprotection, we may uncover a new means of pharmacological treatment in which the toxic effects of ASICs are inhibited by interactions between existing DOR agonists and the RIP1 pathway. This could provide a potential basis for new treatment to limit neuronal damage following stroke, traumatic injury, and multiple sclerosis.
Abstract: Transportation has been repeatedly identified as a barrier to social and health resources in the U.S. In 2005, it was estimated that 3.6 million individuals were unable to access non-emergency medical care due to transportation barriers. Existing transportation services through Medicaid and Medicare have proven to be suboptimal, and while new solutions are beginning to surface, many Americans are still subjected to poorer health outcomes due to transportation. The objective of this descriptive cohort study was to evaluate the transportation barriers present among low-income residents in Columbus, and their effect on both medical and social resource accessibility. ENCompass is an undergraduate student organization dedicated to bridging the gap between medical and social care. Through routine consultations at clinics and food pantries, Columbus residents were interviewed and assessed to determine relevant demographic information and social/health related concerns. A transportation survey was also administered, in which participants were asked to identify their main form of transportation, then report whether they considered transportation a barrier to accessing the aforementioned resources. Additional questions inquired about related factors such as weekly transportation expenses, COTA use, and smartphone access. From our data, it appears that lack of access to transportation is concentrated in Columbus' north and east sides. Analyses indicate a correlation between transportation issues and lacking access to eye and dental care. Additionally, data shows that many in the Columbus community who rely on COTA and identify cost of transportation as an issue are unaware of the service's discount programs for the poor and elderly. These results helped us characterize the transportation issues in Columbus, as well as the affected population. In late 2017, a future ENCompass research study will administer transportation credit to nine participants and explore the effects on ability to reach social and health resources, and associated impacts on perceived stress levels.
Category: Social and Behavioral Sciences

Title: Effects of neonatal microglial depletion on neonatal and adolescent neurogenesis

Student Presenter: Pavan Peketi

Faculty Advisor: Lenz, Kathryn

Abstract: Microglia, the brain's primary immune cells, regulate normal brain development by supporting birth of new neurons and the removal of excess neural progenitor cells when cell genesis is complete. There are sex differences in microglia throughout the developing brain, which suggests that microglia may regulate brain development differently in males and females. We have previously shown that microglia support the birth of new neurons in the neonatal hippocampus of male rats, and in the amygdala of both sexes. We first sought to determine if microglia support cell proliferation in the cortex by depleting microglia from the developing rat brain using the microglia-specific toxin liposomal clodronate on postnatal day (P)1. Following microglia depletion, BrdU was injected on postnatal day (P)2 to label actively dividing cells and animals were sacrificed on P3 to analyze BrdU immunostaining in the cortex. Microglial depletion led to decreased numbers of newly-born cells in the cortex of both males and females, thus microglia only contribute to a sex difference in cell proliferation in the hippocampus. We next sought to determine if early life microglial loss impacts later life neurogenesis in the hippocampus, since it is one of the few places where adult neurogenesis occurs. In adolescent rats that had previously experienced microglial depletion, we used Ki-67 to label actively proliferating cells, and results showed increased cell proliferation in males, but not females. Through doublecortin staining, neonatal microglial depletion showed decreased numbers of cells differentiated into immature neurons at P30. Changes in adolescent hippocampal cell proliferation and new immature neurons could be explained by the lack of microglia removing cell progenitors or a change in microglial support of progenitor turnover. These studies further our understanding of the role microglia play in normal brain development, as well as explain potential routes for producing sex differences in the brain.
Abstract: In his article, "The Future of US-China Relations," Aaron Friedberg asserts that if the "United States remains engage and that China's power continues to grow at least to some degree, the basic trend toward bipolarity should become even more pronounced over the next several decades."[1] Under this assumption that the international system is undergoing a structural transformation, the two following questions arise: 1) How will the emerging bipolar system, with the US and China as the two leading hegemons, behave? 2) How do rising third party, non-state actors (ex. violent extremist groups, advances in technology, etc...) influence this rising structural bipolarity? In my study, I will seek to answer the above questions by examining three prominent historical interpretations of the Cold War, which include traditionalism, revisionism, and post-revisionism. Concepts of traditional historiography run parallel to the international theories of the US deterring against Soviet aggression; revisionist teachings exemplify ideas of the USSR balancing against American threats; and finally post-revisionism is an overall representation of a deep security dilemma between Moscow and Washington. Overall, these histories illustrate how a state's perception (or misperception) of an opponent's intentions influences the dynamics of the global system. As a second point, the bearing that non-state actors have on the behavior of the global system is analogous to the effects that the creation of nuclear weapons had on Cold War bipolarity. Therefore, it becomes useful to analyze at a more in depth level the revolutionary influence of the emergence of the atomic age, as a way to understand the level of impact that non-state actors have on the atmosphere of the system. [1] Aaron L. Friedberg, "The Future of US-China Relations: Is Conflict Inevitable?" International Security 30, no. 2 (Fall 2005): 28.
Abstract: The postpartum period is commonly accompanied by emotional changes, which for many new mothers includes a reduction in anxiety. Previous research on the postpartum reduction in anxiety in rodents has shown that it is dependent on offspring contact and further has implicated enhanced GABAergic neurotransmission as an underlying mechanism. However, the specific brain regions where GABA acts to regulate the offspring-induced reduction in postpartum anxiety requires further investigation. Of particular interest is the medial prefrontal cortex (mPFC), which has been shown to play a role in the modulation of anxiety-related behavior. Here, we test the hypothesis that offspring interactions reduce anxiety-like behavior in postpartum females (dams) via GABA signaling in the mPFC in three experiments. In experiment one, we confirmed that dams display reduced anxiety compared to virgin females when tested on the elevated plus maze (EPM) and following an infusion of the GABAA receptor antagonist bicuculline in the mPFC this effect was abolished. In experiment two, we found that dams that had been separated from their pups for 4h displayed increased anxiety as compared to dams that were not separated. Furthermore, activation of GABAA receptors in the PL mPFC by the agonist muscimol restored the reduced levels of anxiety-like behavior. In a final experiment, we found that mothers that were separated from their pups not only show increased levels of anxiety but also had a lower number and percentage of activated GABAergic neurons within the mPFC. Together, these results suggest that mother-pup interactions reduce anxiety in postpartum females via GABAA neurotransmission in the mPFC and provide insight into mechanisms that may become dysfunctional in high postpartum anxiety.
Category: Social and Behavioral Sciences

Title: Patterns, predictors, and effects of father-child interactions in sports and outdoor activities

Student Presenter: Theo Randolph

Faculty Advisor: Knoester, Chris

Abstract: Using Fragile Families data (N = 2,652), this study analyzes father's engagement in sports and outdoor activities with their nine year-old child. First, the results indicate patterns of relatively high levels of father engagement. Among fathers who had seen their child more than once in the past month, nearly 2/3 reported playing sports or outdoor activities with their child once per week or more. Second, the results reveal discrepancies in which fathers are most likely to play sports or outdoor activities with their child. Finally, the results reveal that father-child interactions in sports and outdoor activities are positively associated with increased closeness between father and child, and improved health for both father and child. The present study is relevant to publicly engaged sociology of sport because it presents research evidence that can be used to better understand, and enhance, opportunities and potential positive effects of father-child interactions in sports in all communities, among all family structures, and for father-child dyads with different background characteristics.
Category: Social and Behavioral Sciences

Title: Suffering in silence: examining attitudes on intimate partner violence

Student Presenter: Andrew Rielinger

Faculty Advisor: Begun, Audrey

Abstract: The focal research question of this honors thesis project was, "What are the societal attitudes regarding male victims of intimate partner violence?" Little is known about this population. The 2010 CDC national survey about intimate partner and sexual violence stated that, "more than 1 in 4 men (28.5%) in the United States have experienced rape, physical violence, and/or stalking by an intimate partner in their lifetime" (p.12). The purpose of this project was to explore the societal attitudes that these men might encounter. The current project utilized a cross-sectional survey design administered using an anonymous, web-based response system (Qualtrics). Given a set of narrative vignettes describing different examples of relationship violence, participants were asked to determine on a 5-point scale how "appropriate" the character's behavior was in each of 11 interactions. Half of the vignettes described a man's (Michael) actions toward a woman (Denice) and half were framed the opposite way. Half of the survey participants completed this form of the survey and half completed a version which reversed the roles of Michael and Denice. Preliminary results (n=12) indicated that male participants viewed physical grabbing (M=2.83, SD=0.7528) as a less serious concern than did female participants (M=3.67, SD=0.51640), t(10)=-2.236, p≤.05. The respondent's gender did not show significant differences on any other items, and the characters' gender showed no significant differences in any item comparisons. Preliminary results also indicate that health services professionals (M=5.00, SD=0.000) viewed slapping an intimate partner after being insulted as more serious than did others outside the health services (M=3.80, SD=1.3038), t(10)=2.485, p=.03. These results may change when the anticipated full sample (up to 100) is achieved. Understanding and studying societal biases that exist about these men will help social workers address barriers which may prevent them from seeking help and develop interventions to meet their needs.
Category: Social and Behavioral Sciences
Title: Comprehension of a feature length film
Student Presenter: Elizabeth Riggs
Faculty Advisor: Anderegg, Courtney

Abstract: Visual narratives permeate our popular culture through media such as television and movies. These narratives serve not only as vehicles of entertainment, but also as diffusers of information. Although we know what makes these narratives entertaining, not much research has been done on the cognitive processes audience members use to comprehend the information disseminated in them. The Landscape Model can serve as a predictor for which elements of a narrative are recalled, however it does not predict the order in which a viewer recalls the events of the narrative. The purpose of this study is to determine whether a viewer will recall the narrative events in the same order they were presented in a feature-length film. First, the film (Bringing Down the House, 2003) was divided into three sections, corresponding to the Three Act Structure for Film, as a basis for "story-order." After watching the film, participants wrote a summary of what they watched. Then, sections of participant summaries were coded by their corresponding acts. The results showed that participants did not recall the events in the same order they were presented. This means that viewers do not recall structural elements of the narrative in the order intended by television and film producers. This results have implications for what narrative elements viewers deem most important. Since media producers intentionally convey their narratives in a certain structural order, further research should seek to understand if out-of-order recall persists across a variety of media and what consequences are a result of this cognitive process.
Abstract: Research has reported that the receipt of health care at free clinics is associated with improvements in the unmet health needs of impoverished or uninsured individuals (Shi, Starfield, Kennedy, & Kawachi, 1999; Shi & Starfield, 2000). It also has been reported that community based interventions can lead to higher quality of care and healthcare outcomes in families (Ryskina, Meah, & Thomas, 2009). This study aims to describe the geographic distribution of the patient population of the Columbus Free Clinic (CFC). Zip code data of patients seen at the clinic will be collected from medical records as well as information on hypertension, diabetes, hyperlipidemia, contact with social work services in clinic, and whether or not a patient is enrolled in the clinic's longitudinal group. Physical distance has been shown to be a barrier to accessing healthcare, and socioeconomic characteristics of one's neighborhood play a key role in one's overall health behavior and utilization (Meersman, Breen, Pickle, Meissner, & Simon, 2009). Currently, it is unknown whether the clinic's location is in close proximity to the patient population, whether the patients who utilize the clinics are concentrated geographically, and whether or not certain chronic conditions are more prevalent in specific areas. This project also could be useful to target resources to specific areas and tailor the services provided to the population served. Data are currently being collected and will have outcomes and findings by Denman Forum on March 29, 2017. The findings of this descriptive study may inform further research that could help the student providers, professional supervisors, and the steering committee of the clinic further their mission to provide the best possible care.
Abstract: Aggressive content in the environment has been shown to increase aggressive behavior and mood, but would a person be more likely to exhibit aggressive behaviors if the aggressive content was tied to another individual of divergent values and beliefs? Aggressive driving behavior is often elicited when another vehicle performs an action that frustrates or impedes the driver, and it has been linked to increases in vehicular accidents. An unanswered question has been whether drivers exhibit more aggressive behaviors when exposed to aggressive content that is tied closely to other human actors in the scenario, or whether the actions of these other individuals alone are sufficient to elicit aggressive responses from the driver. In the present study, content was tied to other actors in the scenario by placing bumper stickers on their vehicles. The bumper stickers reflected either neutral content (e.g., "ASSEMBLY LINE") or aggressive content (e.g., "CRUEL ATTACKS"), or reflected in-group affiliation (e.g., Buckeyes) or out-group affiliation (e.g., Wolverines). Measures of driver behavior (speed, following distance), cognition (thoughts), affect (feelings/mood) and physical arousal (heart rate/blood pressure) were collected for drivers exposed to neutral-content and in-group bumper stickers versus aggressive-content and out-group bumper stickers in a driving scenario. Forty college students recruited from the C-REP class pool were assigned to one of two groups based on bumper sticker content (20 neutral-content, in-group bumper stickers, and 20 aggressive-content, out-group bumper stickers). Participants drove a 30-minute simulation programmed with numerous frustrating events (e.g., traffic jams, cars cutting off the driver) in a six degree-of-freedom motion base driving simulator. Testing is currently underway, but preliminary data suggests that participants exposed to aggressive content had elevated blood pressure levels compared to drivers exposed to neutral content. These findings are discussed in terms of how external stimuli affect driver behavior, mood, and physiology.
Category: Social and Behavioral Sciences

Title: A preliminary study of football game incidents at The Ohio State University

Student Presenter: Sunder Sai

Faculty Advisor: Bellair, Paul

Abstract: Studies have shown crime, misconduct, and incidents tend to increase within and around stadiums during football games, in particular, alcohol-related misconducts. Ohio Stadium, home to The Ohio State University (OSU) Buckeyes college football team, hosts 7 annual home football games each fall. Minimal research has been presented observing trends regarding incidents during OSU's home football games. Furthermore, the causes for these potential trends remain unknown. The purpose of this study is to search for possible correlations concerning game-day incidents and note potential factors influencing correlations. Incident statistics from OSU's Department of Public Safety were examined for the 2014, 2015, and 2016 OSU home football game seasons. Alcohol arrests and citations inside and out of the stadium along with stadium ejections were compared across these three seasons. Additionally, game time, attendance, points scored, and game-day temperatures were observed as potential variables influencing game-day incidents. Preliminary findings show a decrease in total alcohol incidents, total arrests, and total ejections between the 2014 and 2015 seasons and between the 2015 and 2016 seasons. Within each season, incidents were highest for evening games that started at 6 p.m. or later. The findings also suggest that attendance, points scored, and temperature did not appear to have a significant relationship to the number of game-day incidents. This study provides initial findings showing a decrease in overall game-day incidents over three years. More data is currently in the process of being collected and analyzed. Future studies may analyze game-day incident trends and their potential causes across multiple seasons. The data ultimately could be of interest for the Department of Public Safety to help shape best incident-preventing policies and keep fans safe during game-days.
Abstract: The judicial system is a foundational democratic institution that is charged with the legal protection of citizens and their rights. Recent events in the US, Russia and Poland regarding the ill-functioning of the judicial system have inspired debate on the relationship between citizens and the judicial system's tendency towards justice or, in some cases, injustice. While there is a large international literature on trust in institutions, there is very little on trust in the judicial system, specifically. This subject has not been adequately studied in the countries of Central and Eastern Europe, where the association between social structural position and political attitudes on one side of the equation, and trust in the judiciary on the other, is not well-established. This research uses the Polish Panel Survey, POLPAN for the 2008 and 2013 waves, to answer the question, "to what extent does economic situation and political attitudes influence individual trust in Poland's judicial system"? Results suggest a positive and substantial relationship between subjective social status and the dependent variable, trust in the judicial system. High trust in other institutions—in this case, political parties and European Parliament—along with perceived positive influence of the government on corruption, also leads to increases in trust in the judicial system. The variable with the most significant and surprising impact on the dependent variable was age: Older Poles, who remember the failure of judicial and other major institutions during the Communist era, are less likely to trust in the judicial system than younger Poles who have no such direct memory. Further research regarding the relationship between aging and trust could perhaps offer institutions and social scientists a better understanding of public perception and contribute to explanations of attitudinal changes throughout the life course.
Category: Social and Behavioral Sciences

Title: Exploring selection of attitude consistent media online and in print

Student Presenter: Jonathan Schulman

Faculty Advisor: Knobloch-Westerwick, Silvia

Abstract: Many scholars, and even former President Obama, voice concerns about "echo chamber" news consumption and subsequent polarization, where people only expose themselves to sources with which they agree, avoiding contact with opposing viewpoints. While previous related research has limited itself to online information, this study placed equal emphasis on online and print media in order to analyze an "echo chamber" effect amongst conservatives and liberals across both platforms. The study design tested if participants would read more attitude consistent or attitude dissonant information online versus in print. Four different versions of a print magazine and news website were created out of 32 pre-tested articles, with each containing different selections of articles in different orders During the 2016 election campaign, data were collected from 115 participants, who each browsed the online and print magazine for six minutes. Their behavior was tracked using software or taped video cameras. A repeated measured ANOVA yielded no significant differences in consumption of attitude consistent articles among conservatives. Among liberals, however, the reading of attitude consistent articles was dependent on the medium F(1, 114)=4.83, p=.03, &eta;^2=0.38, so while liberals showed no "echo chamber" effect in the print condition, they consumed more attitude consistent material (M=185s, SD=106) than attitude dissonant material (M=107s, SD=106) in the web condition. Hence the "echo chamber" was evident with liberals in the online condition, which we explain by the fact that at the time of data collection (February, 2016), the liberals were expected to win the upcoming election. This is the first selective exposure study of its kind to show that exposure to attitude consistent news is dependent on the medium by which the news is viewed, suggesting huge ramifications as more people are consuming news online.
Abstract: The Syrian Civil War, which began in 2011, has devolved into a vicious conflict between the predominantly Sunni Muslim Syrian opposition, Bashar al-Assad's Syrian government, and each side's external supporters. One of these external supporters is Hezbollah, a Lebanese Shi'i Muslim political actor and militia that intervened militarily in support of the Syrian regime in 2013. Strategically, Hezbollah depends on its Syrian ally remaining in power, though the group's support of the unpopular Syrian regime has led to political ostracization and to retaliatory terrorist attacks targeting Hezbollah population centers in Lebanon. This project analyzes Hezbollah's communication strategies from 2013 to 2014, examining in particular the group's framing of its contradictory goals of supporting the Syrian regime and providing security to its constituents. Hezbollah interviews and speeches, multiple of which were translated by the author from Arabic into English, were used to evaluate the strategies employed by the group and how these strategies parallel and differ from those it has historically utilized. Various regional newspaper articles and internet communications were used to provide context. Hezbollah has sought to explain its participation in the Syrian conflict by highlighting its founding identity as a bulwark against Israeli domination of Lebanon and a supporter of threatened Muslims. The preliminary findings indicate that Hezbollah has pursued two distinct but related strategies in order to highlight its founding identity within this new context. First, the group has alleged a conspiracy, largely designed by Saudi Arabia, Israel, and the United States, to destroy the region. Second, Hezbollah has redefined its identity from solely a supporter of threatened Muslims to a supporter of threatened Muslims and Christians alike. This work demonstrates the challenges imposed upon externally-sponsored actors and the abilities of these actors to respond to these challenges through shrewd communications strategies and effective identity manipulation.
Category: Social and Behavioral Sciences

Title: Food and the personal shopper in the age of the internet: an autoethnographic study

Student Presenter: Abbigail Seasly

Faculty Advisor: Cohen, Jeffrey

Abstract: This poster builds upon the co-PI's experiences as a personal food shopper working at Whole Foods. The personal food shopper is an individual who takes an online order for groceries and fulfills that order for pickup or delivery. While the structure of engagement between the shopper and consumer is defined by completing the order, it also is an opportunity to evaluate the personal shopper's relationships with her or his customers. Specifically, the relationship of the personal shopper to her or his customer tests Daniel Miller's "theory of shopping" and updates his findings for online shopping. In his book A Theory of Shopping (1998, Cornell University Press), Miller argues that shopping is more than provisioning for self and other. He uses data collected in London, UK to argue that shopping creates strong and durable social connections. These connections are created around: Provisioning or buying the staples of daily life for self and other Thrift or purchasing with an eye to saving money Treats or the extra and extravagant items bought as an exception and usually for a specific individual. We argue that Miller's model can be extended beyond the physical act of shopping to include personal shoppers who establish social relationships with consumers who order their groceries online. Personal food shoppers make decisions concerning thrift, taste, and quality as they fulfill online orders to meet the expectations of their customers. In the process personal shoppers develop social relationships with their customers that transcend the digital contract.
Abstract: Acid-sensing ion channels (ASICs) are proton-gated ion channels critical for normal brain functions. However, they also mediate brain damage following ischemic stroke, a condition where blood flow is cut off from parts of the brain and extracellular pH falls. Inhibiting ASIC1a in animal models prevents much of the damage following stroke, suggesting that ASIC1a is a novel therapeutic target for neuroprotection. Surprisingly, little is known about the mechanism for ASIC-induced neuronal death, and there are currently no drugs to specifically inhibit ASIC1a in patients. The purpose of this project is to optimize a method to quantify ASIC-mediated cell death in brain slices subjected to oxygen glucose deprivation in order to better mimic cerebral ischemia in vitro. This will provide a bridge between using neuronal culture and whole animal studies to investigate the mechanism of ASICs and how they are regulated. The method involves cutting 250 um thick hippocampal slices using a vibratome. The slices were allowed to recover in oxygenated artificial cerebrospinal fluid (aCSF) for 1 hour. Afterwards, they were exposed to either oxygen glucose deprivation (OGD) in which the glucose is replaced with sucrose and the oxygen gas is replaced with nitrogen gas, or an aCSF control. The slices were then reperfused for 1 hour in oxygenated aCSF and then stained with TO-PRO-3Iodide, fixed with 4% PFA, and imaged using a confocal microscope. Images are taken at a depth of 25 um, which has optimally shown specific death in the pyramidal cell layer of the hippocampus. The results have shown more staining, and therefore more death, in the oxygen glucose deprivation treatment than in the control. Future steps are to use this model to study the mechanism of ASIC-dependent cell death and the impact of certain interventions that we have developed in the lab to prevent ASIC-mediated neuronal death.
Abstract: Fetal Alcohol Spectrum Disorders (FASD), resulting from alcohol consumption during pregnancy, can have negative impacts on cognitive function. Ethanol has been shown to increase pro-inflammatory signaling, which may alter glutamate release and synaptic plasticity and thus contribute to hippocampus-dependent memory deficits. Cognitive dysfunction is evident in rodent models of third trimester ethanol exposure when the brain, particularly the forebrain, is susceptible to damage as it undergoes rapid growth and synaptogenesis. In this study, Long-Evans male and female rats were treated with binge-like doses of 5 g/kg/day ethanol (5E) via intragastric intubation across postnatal days (PD) 4-9, a period comparable to the human third trimester, or submitted to sham intubation (SI). This study investigates the effect of glycyrrhizin, an anti-inflammatory drug, to reduce ethanol-induced neuroinflammation. The drug binds to and inhibits High Mobility Group Box 1 (HMGB1) protein, an integral part of the inflammatory pathway through its role as an endogenous agonist of Toll-Like Receptor 4 (TLR-4). Thirty minutes prior to ethanol treatment over PD4-9, rats received intraperitoneal injections of saline vehicle or glycyrrhizin (20 mg/kg/day) and euthanized on PD10. The hippocampi were collected and analyzed via qPCR for the expression of inflammatory genes, including Interleukin (IL)-1β, Tumor Necrosis Factor (TNF), Glial Fibrillary Acidic Protein (GFAP; astrocyte marker), and Cluster of Differentiation protein 11B (CD11B; microglia marker). Preliminary results suggest ethanol upregulates IL-1β and CD11B gene expression in 5E animals, and glycyrrhizin attenuates this effect. Additionally, the effect of the drug on hippocampal memory was tested using Trace Fear Conditioning (TFC) in juvenile animals. We predict a lessening of the cognitive deficits in hippocampal learning with co-treatment of glycyrrhizin, similar to the effects we have previously reported for ibuprofen. The putative effectiveness of glycyrrhizin could reveal future treatment options to enhance cognition in individuals with FASD.
The development of caregiver resilience in complex, chronic care situations

Student Presenter: Katie Simpson

Faculty Advisor: Dabelko-Schoeny, Holly

Abstract: The purpose of this study is to examine how primary caregivers who provide complex, chronic care develop individual resilience through the exploration of the caregiver experience. As the population in the United States ages, increasing numbers of family members are positioned to serve as the primary caregiver for a family member who requires complex, chronic care. This level of care includes the performance of complex medical or nursing tasks, such as administering medication and wound care, often without professional training and oversight. Family caregivers are most often spousal caregivers over the age of 65 years, or adult children with a median age of 54 years. These caregivers have few opportunities for respite and formal support. In order to examine the development of individual resilience in caregivers providing complex, chronic care, in-person qualitative interviews were conducted with caregivers referred from local healthcare facilities and support centers. Though still in progress, these interviews indicate that resilience is largely gained from past experiences, and is reinforced and developed as the individual solidifies their identity as a caregiver. However, while the presence and development of resilience is a critical protective factor for caregivers, there is still a strong need for more advanced formal support and respite efforts, which is an area for further research and study in this area.
Category: Social and Behavioral Sciences

Title: Mandated wage increases and gift-exchange in labor markets

Student Presenter: Eric Spurlino

Faculty Advisor: Healy, Paul

Abstract: Through the use of an experimental methodology, I seek to examine the productivity effects of a wage increased due to an externally imposed mandate in comparison to a wage increased as an active choice on the part of the employer. This paper also introduces a new experimental framework for exploring the concept of gift exchange in labor markets using groups of participants acting as employers and employees on a real effort task. We find that there is a significant effect of wages on effort levels. In addition, we find that when wages are increased due to an external mandate-all else equal-workers increase their effort levels less than if their wages were increased due to an active choice by their employer. Analysis of firm profits in these contexts also shows us that firms do incur a significant reduction in profits from a minimum wage increase.
Abstract: Herodotus writes of two ancient battles fought at the Greek colony of Himera, in Sicily, between Greek and Carthaginian forces. In the Battle of 480 BCE, the Greeks emerged victorious after assembling a coalition of allied and mercenary soldiers from other regions. In contrast, in the Battle of 409 BCE the Greeks were defeated after having had little time to prepare and relying heavily on citizen soldiers to defend the city. Himera was then destroyed and abandoned after the Battle of 409 BCE. In order to determine the accuracy of Herodotus' accounts, we analyze strontium isotope ratios of human tooth enamel from 28 individuals recovered from mass graves associated with the two battles, to distinguish "local" soldiers from "non-locals" and compare them across battle contexts. We compare human values to those of four faunal enamel specimens (pig, sheep, and dog) and three shells that represent baseline 87Sr/86Sr values for Himera. Non-local humans are designated as those whose 87Sr/86Sr ratios are outside one standard deviation of the mean of the faunal baseline. Results show more non-local soldiers in the 480 BCE mass graves (n=17; 81%) than in the 409 BCE mass graves (n=1; 14%), supporting historical accounts that soldiers from mainland Greece, elsewhere on Sicily, and possibly other Mediterranean regions, bolstered the army in 480 BCE and contributed to a Greek victory. Lacking support from other Greek cities and allies, Himera lost the Battle of 409 BCE. These data show how a postcolonial sense of shared Greek identity could help support and sustain colonies distributed throughout the ancient Mediterranean, even generations after their foundations.
Abstract: This thesis explores the relationship dynamics between grandmothers who act as kinship caregivers for their grandchildren and the biological parents who have given up or lost custody of these children. As of 2014, there are nearly 2 million grandmother kinship caregivers in the United States (US Census Bureau, 2014). This study implements a narrative approach and a mixed-methods research design, consisting of two surveys followed by an individual interview with current grandmother kinship caregivers (n=7). The surveys describe the caregiver's wellbeing and demographics, while the interviews focus on the following topics: general nature of the grandparent-parent relationship, changes in this relationship, feelings towards the parent, parenting role, services accessed or needed, and the impact of this relationship on the grandchild. Thematic coding was used to analyze each interview and highlight different areas of strength or need as expressed by the participants. Participants in this study ranged in age from 48 to 62. Four participants were African American and three were White, and they were caring for one to three grandchildren. Preliminary results indicate that the grandparents would prioritize the safety of their grandchild over strengthening their relationship with their adult child. All participants acknowledged the lack of resources available to support their relationships with the birth parent; however, the need for such services was not a high priority for them. Given the number of grandmothers who are kinship caregivers, their strengths and needs continue to be an important discussion in child welfare. U.S. Census Bureau. (2014). Comparative social characteristics in the United States. Retrieved from http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_14_1YR_CP02&prodType=table.
Category: Social and Behavioral Sciences

Title: National revolution and international interference: how American intervention influences revolutionary states

Student Presenter: Joe Twinem

Faculty Advisor: Herrmann, Richard

Abstract: As states across the Middle East have undergone revolutions since 1979, The United States has acted to ensure outcomes that protect and further their economic, military, and political interests. The product of this interference is often further destabilization and political upheaval of the target state. The purpose of this study is to look at revolutions, and near-revolution to see what impact American intervention and aid has had on the outbreak of revolution, and if the history of American intervention shows that it has a significant impact on the success or failure of revolutions. This project analyzes 4 cases of revolution since 1978 and identifies changes in American intervention, impacts, and the underlying political drivers. It identifies relationships between American intervention and national policy and draws conclusions on the relationship between revolutions and American foreign aid. This project concludes that the process of attaining American national interest in the context of foreign revolutions is complex and often unsuccessful. Furthermore, it shows that American intervention must adapt to focus on developing good governance in order to become beneficial to national interest. This work is intended to inform the work of scholars and policy makers alike and allow for a greater comprehension of the attainability of American aims in the context of national revolutions.
Examining the osteological paradox: frailty in mass graves versus the general population at the Greek colony of Himera

Student Presenter: Janelle Tyler

Faculty Advisor: Kyle, Britney

Abstract: Bioarchaeologists frequently use skeletal stress markers as a proxy for frailty during life. However, according to the Osteological Paradox, skeletal stress markers also may be indicative of lower frailty because individuals with skeletal lesions survived stressful conditions. Here, we examine prevalence of physiological stress in two skeletal series from the Greek colony of Himera: one from mass graves who died in the battles of Himera (480 and 409 BCE) and another from the general Himera population (648-409 BCE), who most likely died following a major health event, such as disease or nutritional deprivation. This study compares these two populations to determine if stress, indicated by skeletal lesions, is associated with lower morbidity and mortality (more prevalent among the soldier population) or increased morbidity and mortality (more prevalent among the general population). Four skeletal stress indicators, cribra orbitalia, porotic hyperostosis, linear enamel hypoplasia (LEH), and periostitis, were recorded in 173 individuals from Himera (mass grave n=64; general population n=109). All individuals interred in the mass graves were young or mid-aged adults, therefore we compared this sample to young and mid-aged adults in the general population. No differences were observed in the prevalence of cribra orbitalia and porotic hyperostosis. However, chi-square tests showed significantly greater prevalence of LEH (p
Category: Social and Behavioral Sciences

Title: Mast cell-mediated neurodevelopmental effects of early life immune challenge

Student Presenter: Douglas Vanderhoof

Faculty Advisor: Lenz, Kathryn

Abstract: Perinatal inflammation and being male are risk factors for autism, schizophrenia and ADHD. We focus on testing whether sex differences in immune function in the brain may underlie this risk. Mast cells, a type of immune cell, are more abundant in the developing male rat brain, and could be an important aspect in understanding males' increased vulnerability to disruptions in behavioral development. Mast cells release neuroactive mediators in response to inflammation, including histamine and inflammatory cytokines, but their effect on brain development is unknown. Mast cells are found in brain regions implicated in social behavior (e.g., hippocampus, septum and amygdala), and thus the purpose of this project is to explore the mast cell-mediated effects of perinatal immune challenge on social behavior. Lipopolysaccharide (LPS), a bacterial endotoxin, was injected into newborn male and female rats to induce systemic inflammation. LPS/vehicle was co-administered with either a mast cell inhibitor (Cromolyn) or vehicle. Animals were assessed on a juvenile social play behavior test in adolescence. We found a trend toward increased social play in animals treated with LPS as compared to controls. Mast cell inhibition attenuated effects of inflammation in males, but had no effect in females. We next performed biochemical assays to determine whether LPS increased the release of mast cell derived mediators, including serotonin, histamine, and cytokines. LPS caused increased histamine, serotonin, and interleukin 13 in both males and females. These effects were much more dramatic increases in females, and partially attenuated by co-administration of Cromolyn. Ongoing experiments will identify the brain regions where mast cell degranulation induces immediate early gene expression, to narrow in on which portions of the social behavior circuit may show disrupted development following early life inflammation. Together, these studies implicate mast cells as regulators of brain and behavioral development following early life inflammation.
Abstract: Recent studies examining allostatic load in captive gorillas show that females sustain higher levels of physiological stress than coresident males, disparities explained by mismatched zoo environments and gorilla socioecology. To gain insight into sex-based stress differences in wild ape populations, we applied a skeletal frailty index (SFI) to quantify cumulative stress in three genera of great apes (gorillas, N=66; chimpanzees, N=40; and orangutans, N=43). Our SFI comprised four biomarkers of stress--periodontal disease, trauma, periostitis, and arthritis-collected from Lovell’s Patterns of Injury and Illness in Great Apes. We compared individual 4-biomarker SFIs between and within genera and sexes using Analysis of Variance/Covariance (ANOVA/ANCOVA). Results of the ANOVA/ANCOVA demonstrated no significant differences (P-value
Abstract: There continues to be a need for basic science insight into the Alzheimer's disease phenotype. One approach to this end involves analysis of gene expression in late-onset Alzheimer's disease (the most prevalent form of AD) relative to non-demented control cases. Previous studies have leveraged this strategy to identify a broad array of biological processes altered in disease. We hypothesize that the approach can be refined by disaggregating expression data on the basis of regional severity, and by better controlling for the variables of sex, age, post-mortem interval, and RNA integrity. Here we test this hypothesis using publicly-available data sets derived from authentic human tissue specimens. Preliminary results have identified expression changes in genes related to the glutamatergic neurotransmitter system, including NPTX2 and RhBG, and clarified the relationship between these emerging biomarkers and AD neurodegeneration. Certain neuron populations were also identified as being selectively vulnerable to AD pathogenesis. The results indicate that novel insight into AD neurodegeneration phenotype can be generated by prioritizing expression differences on the basis of regional severity.
Category: Social and Behavioral Sciences

Title: Effects of developmental microglia depletion on neuronal morphology and acute stress response

Student Presenter: Spencer Warden

Faculty Advisor: Lenz, Kathryn

Abstract: During development, microglia, the brain's resident immune cells, regulate normal cell genesis, synaptic patterning, and cell survival. We have previously found that depleting microglia by infusing a microglial-specific toxin, liposomal clodronate, into the brain in the early neonatal period decreased anxiety and depressive-like behavior and decreased stress response in adult rats. In this experiment we sought to determine if neonatal microglial loss induces these behavioral changes in adult rats via mediating effects on the development of neuronal morphology in the medial prefrontal cortex (mPFC), a brain region that is responsible for regulating mood-related behavior and the stress response. We used Golgi-Cox staining to examine dendritic spine density, cell body size, and dendritic morphology of pyramidal neurons in the mPFC of adult rats. We found no effect of treatment on apical or basal dendritic morphology. We found a trending decrease in cell body size in clodronate-treated rats. We also found a trending sex difference in dendritic spine number in clodronate-treated rats, but not vehicle-treated rats. These results suggest that the behavioral phenotype observed is not likely caused by overt changes in the morphology of PFC neurons. To determine if there are functional changes in the mPFC neurons that relate to the decreased stress response we previously observed in clodronate-treated rats, we are currently using immunofluorescence to analyze cFOS expression, a marker of activated cells in response to acute stress. We predict that cFOS expression will be decreased in the mPFC of clodronate-treated rats compared to vehicle-treated rats following stress exposure. These results will help us to determine whether functional changes in the mPFC might be driving the decreased anxiety behavior and stress responsivity observed following early life microglial loss. These results will show how microglial developmental processes impact later brain function that may play a role in mood.
Abstract: For youth living in poverty, the development of poor social skills is a growing concern. In order to combat risk exposure, The Ohio State University developed a sport-based positive youth development (PYD) initiative called Learning in Fitness and Education through Sports (LiFEsports). LiFEsports serves approximately 650 youth annually through a 19-day Summer Camp, follow up clinics, and year-round Youth Leadership Academy (YLA). LiFEsports focuses on improving social and athletic competencies of youth by teaching Self-Control, Effort, Teamwork, and Social Responsibility (S.E.T.S.). The YLA builds on these skills and focuses on leadership development and college and career readiness for high school youth who were past LiFEsports campers. Youth Leaders involved in the YLA also serve as Junior Counselors during LiFEsports Camp. In 2016, 90.0% of youth participants attending the LiFEsports were African American and 81% lived within 200% of the poverty line (LiFEsports, 2016). The purpose of this study was: 1) to examine if social skills (i.e., S.E.T.S.) improve among youth involved in LiFEsports Camp and, 2) to explore if youth with better outcomes are led by Youth Leaders who have favorable perceptions of their leadership skills. Descriptive statistics and t-tests examined growth in "S.E.T.S." among four groups of youth (N=81). Examination of youth scores on pre- and post-test measures showed youth perceptions of "S.E.T.S." significantly increased over the course of the camp. Notably, one group of youth had statistically significant growth on all S.E.T.S. (psports is an effective sport-based PYD program that promotes positive social skills among youth. Results also suggest the presence of competent Youth Leaders may further contribute to positive outcomes for younger youth. In the end, LiFEsports is an innovative model which uses sport to positively influence youth outcomes.
Category: Social and Behavioral Sciences

Title: The relationship between state economic growth and renewable portfolio standards in the United States: a panel causality analysis

Student Presenter: Sophia Zupanc

Faculty Advisor: Nesbit, Todd

Abstract: This article uses a panel dataset measuring both state economic growth and renewable portfolio standard (RPS) policy parameters to examine the causal relationship between percent change in per capita GSP and RPS Stringency. Given the increasing number of states that have adopted RPS policies, a deep understanding of their economic ramifications is needed. The panel dataset presented in this paper is analyzed using Panel Unit Roots Tests, Cointegration Tests, Dynamic Ordinary Least Squares Models (DOLS), and a Vector Error Correction Mode VECM. The estimation from the DOLS model suggests that both percent change in per capita GSP and RPS Stringency have significant positive effects. The Panel VECM results suggest that there is long-run causality running from RPS Stringency to percent change in per capita GSP.