Welcome to the 8th annual AU Scholars’ Day.

The secret is out. Anderson University students are incredible. Guided by world-class faculty, our students perform real research. AU students do not wait until they graduate to become scholars. They start right now.

Today, they share their scholarship with you. Browse, stop, and engage these student scholars. Ask them about their experience. Above all, let us celebrate together this good work.

Enjoy the day!

Dr. Chad Wallace
Dean, School of Science and Engineering
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ABSTRACTS

ACADEMIA: RELATIONSHIP BETWEEN PROCRASTINATION, PSYCHOLOGICAL RESILIENCE, AND IMPULSIVITY

Gloria Pflederer
Department of Psychology

Previous research has indicated that procrastination may be consistently predicted by impulsiveness and a lack of resilience. The aim of the study was to investigate the relationship between procrastination, psychological resilience and impulsivity among college students. The sample includes 80 freshmen students from a private Midwest university. All students completed an online, cross-sectional survey. The results indicated that high levels of procrastination were negatively correlated with low levels of psychological resilience, however high levels of procrastination were positively correlated with high levels of impulsivity. Additional research is needed to further examine the relationship between impulsivity and resilience. Also, the directional relationship of impulsivity and procrastination is still unclear.

ANXIETY AND DEPRESSION IN FAMILY MEMBERS OF PEOPLE WHO STRUGGLE WITH ADDICTION

Eleanor McArdle
Department of Psychology

While providing understanding and help for people struggling with addiction is essential, providing the same service for family members who have experienced distress in response to a loved one’s struggle with addiction is vital as well. Therefore, the current research aims to shed light on an important topic that currently has little emphasis, understanding, or prior research: how addiction affects immediate family members’ anxiety and depression levels. It was hypothesized that anxiety and depression would be significantly higher in students who had a family member addicted to drugs or alcohol than those without an addicted family member. These hypotheses were not supported by the data; there was no difference in levels of anxiety or depression based on having a family member with an addiction to drugs or alcohol. These results are not consistent with prior research, indicating that further examination of addiction’s effects on immediate family members is needed.
Acne vulgaris is one of the most common skin disorders to affect adolescents and young adults ages 12 to 25. Around 85% of adolescents are affected and 40% will continue to struggle with the condition well into their twenties. Many who battle this skin condition will suffer from intense psychological and social repercussions. Therefore, timely and effective treatment of this disorder is crucial. The pathogenesis of acne vulgaris is multifaceted. Potential causes include increased sebum production, hyperkeratinization, and overgrowth of microbial colonies of Propionibacterium acnes, which eventually lead to follicular rupture and inflammation. Many effective treatments are available through prescriptions and over the counter products. This study will focus particularly on the bactericidal efficacy of three over-the-counter products containing the active ingredients benzoyl peroxide, adapalene, and salicylic acid. The bactericidal effects of these active ingredients will be tested using the Kirby-Bauer disk technique and measuring zone of inhibition in cultures of P. acnes and S. epidermidis as well as measuring the spectrophotometer absorbance of both bacterial cultures grown in nutrient broth with the active ingredients.

Cervical cancer has become an epidemic of the developing world, but India carries much of this burden. Third world countries account for 85% of the global cervical cancer cases and deaths and India alone accounts for up to 33% of all new cases of cervical cancer annually. Disparities in screening and knowledge coupled with risk factors common to Indian lifestyle have created a dangerous storm that significantly enhances the susceptibility of Indian women to develop this form of carcinoma. The purpose of this research is to determine the extent to which adequate toileting and hygiene practices are available to women living in urban areas of India. In this observational study, the researcher will observe available toileting and hygiene services available to the average woman in four urban areas of India. The results should indicate that poor hygiene is a major risk factor that may be unavoidable for women in these regions. These findings are in agreement with previously reported studies. Adequate hygiene, along with vaccination and regular screenings are necessary for the control of cervical cancer in the developing world.
CREATIVE BIBLIOThERAPY WITH EARLY ELEMENTARY CHILDREN

Rebecca Fifer and Lisa Pay*

Department of Sociology, Social Work, Criminal Justice, and Family Science

Bibliotherapy is the use of literature to help treat various problems, such as mental illness. Creative bibliotherapy is specifically the use of fiction for therapeutic purposes. Creative bibliotherapy has been found to be effective in improving communication and creating a positive change in internalizing, externalizing, and prosocial behaviors. Bibliotherapy is most effective when it utilizes components of Cognitive Behavioral Therapy. It is also important that books selected for therapeutic purposes have a main character the client can identify with and are at an appropriate reading level that meets the client’s needs. Bibliotherapy can be used for bullied children, thus the focus of the literature review is on victimized transgender youth. Transgender youth are more likely than heterosexual, non-transgender peers to be victimized and experience suicidal ideation. Having supportive school faculty can help reduce the effects of bullying on transgender youth. The research was synthesized into a children’s book that can be used as a bibliotherapy tool for victimized transgender children, particularly in a school setting. The main character, Riley, is a transgender girl who confronts a bully that is in her first grade class. Through open communication and with the aid of a teacher, Riley and the bully both learn that people are more similar than different.

CROSS-CULTURAL EXPOSURE, CULTURAL SENSITIVITY, AND OPENNESS TO NEW EXPERIENCES

Eric Stone

Department of Psychology

Research is needed to explore the possible benefits of cross-cultural exposure among college students. The current study was designed to test the hypothesis that participants would experience a positive change in intercultural sensitivity after cross-cultural exposure. A second hypothesis was that open-mindedness would be an indicator of the change in intercultural sensitivity after cross-cultural exposure. The sample consisted of 23 college students who traveled on cross-cultural trips and completed a pre-test and post-test. The results support a significant difference in intercultural sensitivity from before and after the cross-cultural experience. The second hypothesis was not supported for open-mindedness being an indicator of change. Future research is needed to examine the potential benefits of cross-cultural exposure, as well as possible predictors of those benefits.
DO FOCUSING EVENTS DRIVE PHARMA RENT-SEEKING: EVIDENCE FROM DISEASE OUTBREAKS

Joseph Moran and Feler Bose*
Falls School of Business

Kingdon argues that for an issue to gain agenda status, three “streams” have to come together. The three streams are the political stream, the policy stream, and the problem stream. The three streams are independent of each other and the moment they meet, a window of opportunity is created for a policy change to occur. Various factors can cause the window of opportunity to occur and one of them is a focusing event (Kingdon, 1995). Events such as a shooting in a school creates a focusing event to push for more gun control or a move to arm teachers. An economic event such as the Great Recession was used to pass bailouts. Bose and Pandey (2015) show how environmental events are used to push through environmental policy. In these cases, it is obvious that media coverage plays a major role in the push for policy change. In our paper, we hypothesize that when disease outbreaks occur, whether it be international or within the United States, pharmaceutical companies use this as an opportunity to seek rents. The media hyps up a certain disease or virus outbreak, which in turn creates fear. Fear is one of the main contributors that drive policy change. We believe that Congress passes legislation under the pressure of certain events to payback different pharmaceutical companies who have funded many politicians. To do our research, we plan on using Google Trends to track the media coverage of different events coinciding with when the government passes legislation dealing with disease outbreaks.

DUAL PLATFORM DEVELOPMENT OF MOBILE EDUCATIONAL APPLICATIONS

Mikayla Phillips
Department of Computer Science

The use of technology to aid learning is becoming an increasingly common practice, especially when teaching foreign languages. Lower division language courses often include websites and computer programs for additional practice. Unfortunately, upper division modern language courses do not include such applications. I have developed a mobile application to be used alongside the Spanish Phonetics curriculum used at Anderson University. The application has been designed to work on both Android and Apple devices so that it can be made available as a student study tool the next time this course is offered.
ECONOMIC FREEDOM AND/OR SEXUAL FREEDOM: WHAT DO PARTY MANIFESTOS SHOW IN OECD COUNTRIES

Zachary Van Duyn and Feler Bose*
Falls School of Business

This study examines the correlation between economic freedom and sexual freedom in the twenty-two OECD nations included in the 2014 Comparative Welfare States Dataset (CWSD). Our research builds on prior work by Unwin (1934, 1935, 1940) and Bose (2012), who suggest that economic freedom and sexual freedom are negatively related. We will divide the parties into left, center, and right as determined by the CWSD; a positive value indicates that a party’s economic freedom score is higher than its corresponding sexual freedom score. Our hypothesis is that “right” parties will see more positive data points over time, while “left” parties will generally see more negative data points over time, and “center” parties may vary widely. Our secondary focus concerns the overall trend lines over the past four to eight decades.

EFFECTS OF TIMING OF RECALL ON EYEWITNESS MEMORY AND PSYCHOLOGICAL DISTRESS

James E. Harness
Department of Psychology

Eyewitness memory is a person’s episodic memory to a crime or other event that he or she has witnessed (Loftus, 1980). The goal of the present research was to investigate the effects of immediate vs. delayed surveying on eyewitness memory accuracy after exposure to an exceptional event. Literature on eyewitness memory suggests that interviewing an individual immediately after exposure to an event rather than delaying the process may reduce a person’s susceptibility to misinformation and increase eyewitness memory accuracy. The first aim of this study was to investigate how immediate vs. delayed administration of recall survey affects eyewitness memory accuracy. The second aim of this study was to investigate whether post-test anxiety scores would serve as a predictor for eyewitness memory accuracy. Fifty participants witnessed an exceptional event in a classroom setting and then completed the event-recall survey immediately or after one day. Results will be analyzed and discussed.
FIRST GENERATION COLLEGE STUDENTS:
PRE-COLLEGE SUPPORT SYSTEMS AND MOTIVATIONAL FACTORS

Emily D. McLaughlin
Department of Psychology

Children of parents who have not attended college may be at a disadvantage when it comes to choosing to pursue a post-secondary education. Students may have numerous motivating factors for choosing to go to college. The current study looks at levels of perceived social support and the motivating factors for both first generation and non first generation students, in an effort to examine how each source influences an individual’s decision to pursue a post-secondary education. Motivating factors included motivating people, money and career goals. A total of 47 college students (23% first generation students) were recruited to complete cross-sectional surveys for this study. The study found that first generation students do not have lower levels of perceived self-esteem compared to non first generation students, p=.03, while first generation students reported parents as a larger motivating factor for pursuing a higher education, Chi square=12.05.

HOW DO U.S. AGRICULTURAL SUBSIDIES AFFECT THE DOMESTIC ECONOMY AND THE DEVELOPING WORLD?

Brandon Lien and Hyeon Joon Shin*
Falls School of Business

This research offers an overview of the economic effects of U.S. agricultural subsidies. Agricultural subsidies in the U.S. have positively and negatively affected the U.S. and world economies in many ways since they first introduced in the late 1920s and early 1930s. We basically introduce a simple theory of subsidies and provide the history of U.S. agricultural subsidies. Also, we examine how U.S. agricultural subsidies have positively and negatively affected the U.S. and world economies. U.S. agricultural subsidies are beneficial to U.S. farmers mostly because they provide domestic farmers with consistent income and make domestic agricultural products more competitive in the world markets. However, this government intervention in U.S. agricultural sector increases the tax burden of domestic taxpayers and hurts the developing world.
HOW HELICOPTER PARENTING PREDICTS LEVELS OF INTERPERSONAL DEPENDENCY AND SOCIAL ANXIETY IN COLLEGE STUDENTS

Grace Pardieck
Department of Psychology

Given potential changes in parenting patterns for the current generation, it is important to consider how parenting predicts mental and interpersonal outcomes. I hypothesized that helicopter parenting would predict both interpersonal dependency and social anxiety. I recruited 142 undergraduate students from a university in the Midwest. Results indicated that helicopter parenting explained a significant amount of variance in interpersonal dependency scores, $R^2 = 0.11$, $F(1, 129) = 15.32$, $p < 0.01$, and was a significant individual predictor of dependency scores, $\beta = 0.33$, $p < 0.01$. Helicopter parenting did not explain a significant amount of variance in social anxiety scores, $R^2 = 0.09$, $F(1, 125) = 15.32$, $p = 0.30$. Future research is needed to look at the differential effects of helicopter parenting on various relational outcomes of college students.

IDENTIFICATION AND PERCENT COMPOSITION OF GUT FLORA IN MICE

Michael Brewster and Dr. Kimberly Lyle-Ippolito*
Department of Biology

The gastrointestinal systems of mammals contain a wide variety of bacterial flora. The bacteria exist in a symbiotic relationship with the mammals they inhabit and live off of partially digested food within the digestive tract. In addition, these bacteria produce various vitamins that can be used by the mammal and play a crucial role in overall health as a result. Our research aims to identify the percent composition and variety of bacteria in isolated mouse stool over time. To measure this, fecal samples were collected from mice over several weeks and DNA was isolated from the samples using a QIAamp DNA Mini Stool Kit. This was done to ensure that enough DNA was present to run a multiplex polymerase chain reaction (PCR). PCR is a laboratory technique of cloning that utilizes a specialized polymerase enzyme. Once DNA was isolated from each of the samples, PCR was conducted in order to determine both the percent composition and presence of gut flora within the mice.
IDENTIFYING DISCONNECTS THAT EXIST BETWEEN HIGHER EDUCATION AND THE WORKPLACE: A CASE STUDY FOR MARKETING COMMUNICATIONS

Victoria Shaw and Emmett Dulaney*
Falls School of Business

This project sought to identify the skills most commonly required skills to gain employment at the entry-level of marketing agencies, and how successfully/unsuccesfully universities are preparing students with those skills. Preliminary research was conducted by examining entry-level job postings from marketing and/or public relations agencies in the Midwest. These job postings were analyzed to see what tangible skillsets were required for such positions. The tangible skillsets identified included: campaign creation and execution, project management, social media, client relations, HTML coding, and other skills.

Upon analyzing the top requested skillsets, the research continued to qualitative interviews with Indiana marketing directors in agencies to discover which skills are most highly valued in the hiring process. These interviews spanned agencies of many sizes and client types. After discussing best practices in portfolio presentation and skill demands with these managers, a final analysis was conducted with Anderson University marketing faculty. The goal of this analysis was to determine if there was a disconnect between skills demanded in the workplace, and those taught in university classrooms. Ultimately, the information presented is useful to prospective employees and graduates in the marketing and public relations industry as well as universities looking to match their curriculum with industry needs.
INDIVIDUALISM AND COLLECTIVISM: CROSS-CULTURAL PERSPECTIVES ON THE RELATIONSHIP BETWEEN DEPRESSION, ANXIETY, STRESS, AND SELF-ESTEEM

Han Na Lee
Department of Psychology

The current study aimed to investigate the mediating effects of self-esteem on depression, anxiety and stress among Chinese and American college students. I hypothesized that self-esteem would act as a mediator between stress and both depression and anxiety, with anxiety and self-esteem having a bidirectional relationship (with both self-esteem and anxiety negatively affecting each other). I also hypothesized that location (China vs. the United States) would moderate the relationships involving self-esteem. A total of 271 American college students participated and 315 Chinese college students participated. All participants completed cross-sectional surveys. Analysis revealed that stress, self-esteem and location together explained 54% of the variance in depression, and 61% of the variance in anxiety. Interestingly, the role of self-esteem was more protective among American than Chinese students. Findings of this study extend the value of previous research, highlighting the cultural influences on the role of self-esteem. This study suggests that among students who are from individualistic society, enhancement of self-esteem would be important in order to effectively deal with depression and anxiety. In addition to enhancing self-esteem among students who are highly collectivist, providing more social support would be essential.
INTERPERSONAL SKILLS AND INTERROGATION METHODS IN LAW ENFORCEMENT

Aaron Bergman
Department of Sociology, Social Work, Criminal Justice, and Family Science

One of the primary roles of law enforcement officers is to perform retroactive investigations of past crimes. This process involves a great deal of interaction between the investigator and potential suspects and witnesses. For this reason it is important for law enforcement officers to possess and use adequate interpersonal skills in order to obtain valuable information. Furthermore, it is vital for investigators to use these skills during the interviewing and interrogation aspects of their investigations. Interrogation methods have changed drastically over the course of police history, evolving from physical abuse used in the late 19th century to more relational tactics used from the 1930’s to the present. The goal of my research is to look more in depth at the changes in interrogation methods throughout police history. More specifically, my research aims to summarize the most prevalent methods of interrogation used in modern policing and the role that interpersonal skills have played in the employment of said methods. Through my research, I have been able to further understand the use of the Reid Technique, which is a dominant approach in police work, as well as a few other approaches to interrogation. Overall, my research supports the importance of possessing strong interpersonal skills among law enforcement officers, particularly in the areas of interviewing and interrogation.
MORALS AND METHODS IN GEORGE MACDONALD'S FAIRY STORIES FOR CHILDREN: 
AN ARGUMENT IN DEFENSE OF SOFT DIDACTICISM

Heather Cook
Department of English

George MacDonald, Scottish-Victorian author, is little-known by today’s readers. Those who recognize his name primarily know him as the man who wrote Phantastes, the book that revived C. S. Lewis’s Christian imagination. However, MacDonald was an admirable author in his own right, referred to by some as a “poet-preacher”. His ministerial background pervades his fictional work, resulting in an emphasis on the virtues of kindness, obedience, selflessness, love, and humility. This research project examines in detail two of his children’s fairy stories, The Princess and the Goblin and The Wise Woman, and seeks to discover the morals conveyed through these works. In a review of relevant literature, this research project investigates several canonized children’s fairy stories and moral stories, including Biblical parables, Aesop’s Fables, C. S. Lewis’s The Lion, the Witch, and the Wardrobe, Madeleine L’Engle’s A Wrinkle in Time, and William Bennett’s The Children’s Book of Virtues. The purpose of this literary survey is to compare the didactic approaches of these canonized authors to MacDonald’s own unique style of “soft didacticism”, or indirect and gentle correction. A particularly valuable aspect of this method is MacDonald’s establishment of a “we” including himself and the reader, as well as his confidential tone when discussing the seriousness of moral vices. Additionally, MacDonald’s choice of the Fairy Tale is enormously effective in conveying moral messages because the unfamiliarity of landscape forces readers to search for the more familiar morals.
MOTOR VEHICLE ACCIDENTS: HOW IMPACT MAKES ONE GROW

Kayla Medaris
Department of Psychology

The present study examined the relationship between the psychological impact of motor vehicle accidents on victims and the posttraumatic growth they experience as a result of the accident. Participants included 124 students and faculty/staff from a small, private Midwestern university. 61 of the 124 participants are represented due to active involvement in a motor vehicle accident. Each participant completed a 66 item questionnaire. Severity of the motor vehicle accident was evaluated by a self-made Severity of Accident Self-Report Scale and a self-made Severity of Accident Checklist. Involvement in a motor vehicle accident, litigation, and age during accident was self-reported on a demographics questionnaire. Psychological impact was evaluated using Weiss & Marmar’s (1997) Impact of Events Scale-Revised (IES-R), and posttraumatic growth was evaluated by using Tedeschi & Calhoun’s (1996) Posttraumatic Growth Inventory (PTGI).

Results indicated that as a whole, the subscales of the IES-R, intrusion, avoidance, and hyper arousal, there were significant findings related to posttraumatic growth, but not as individual subscales. Results also indicated a significant finding in the relationship between perceived severity of the motor vehicle accident and posttraumatic growth. The findings of the present study open opportunity to research in the future on how people perceive situations relates to psychological growth.
PLATELET-RICH PLASMA THERAPY FOR LATERAL EPICONDYLITIS

Brett Anderson
Department of Biology

Lateral epicondylitis, commonly referred to as tennis elbow, is an injury to the extensor carpi radialis brevis tendon of the elbow characterized by microtears in the tissue. Treatment strategies for this injury include rest, physical therapy, braces, corticosteroid injection, and surgical repair. Corticosteroid injections have been considered the best treatment although they are not always successful. Autologous platelet-rich plasma (PRP) has been used as a treatment for various medical conditions and has potential to be an effective treatment for tendon and ligament injuries. Platelets are a component of blood that assist in clotting and injury repair by activating growth factors which could lead to healing with lasting effects. Peerbooms, Sluimer, Bruijn, and Gosens conducted a double-blind randomized trial to compare the effect of platelet-rich plasma therapy to corticosteroid injection as a treatment for lateral epicondylitis. Treatment was considered successful upon a 25% or greater reduction in pain, which was measured using a Visual Analog Score (VAS), and disability, which was measured by the Disability of the Arm, Shoulder, and Hand (DASH) score. According to the VAS, 73% of the PRP patients were successful compared to 49% of the corticosteroid patients. According to the DASH scores, 73% of the PRP patients were successful compared to 51% of the corticosteroid patients. It can be concluded that PRP is a more effective treatment for lateral epicondylitis than corticosteroid injections. Further testing is needed to confirm these results and improve the PRP injection process.

PRACTICAL THEOLOGY: THEOLOGICAL EXAMINATION OF RURAL CULTURE AND THE RURAL CHURCH

Mitchell Stacy
School of Theology and Christian Ministries

While rural communities occupy 97% of America’s geographical space, rural communities can be overlooked due to over 80% of America’s population residing within urban communities (Census Bureau, 2010). In spite of the geographic isolation of rural communities, as well as their relatively smaller population sizes, rural churches and their congregants are able to relate to Scripture and minister in ways that are appropriate to their contexts. Additionally, rural and urban communities each view themselves as being more favorable than the other (Jung and Agria, 1997). The purpose of this present research is to explore and examine the rural church as it exists within Putnam County, Indiana. In addition to an examination of published literature, interviews with two resident Putnam County pastors explored the realities and self-perceptions of rural churches. Findings included feelings of isolation and burnout among rural pastors. Further research is needed to examine how individuals from the urban church perceive the rural church and rural culture.
PREVALENCE, TREATMENT, AND CAUSES OF RESPIRATORY CONDITIONS IN NICARAGUA

Kylie Kantner
School of Nursing

Nicaragua has a concerning rate of respiratory illness related to a myriad of factors. The focus of this research relates to the correlation between cooking methods and respiratory issues. A combination of lengthy preparation time, limited space, and lack of knowledge and resources are all driving forces in the connection of respiratory issues related to cooking. In rural and poor areas, Nicaraguans commonly cook on a “traditional cook stove”, sometimes referred to as a “three rock” fire. Using this method, leaves women and children breathing in fumes from an open fire for hours at a time during meal preparation. Frequently a family’s cook stove is inside the home where ventilation is poor and therefore potentiates the issue of fume inhalation. The National Institute for Development performed a census in 2005, the results revealed that a significant 62% percent of Nicaraguans continue to use firewood or charcoal to cook. Nicaragua is the primary source for this data collection. Results reflecting one on one interviews conducted by the researcher, over a period of 11 days, regarding the method of cooking, associated risk factors, and the presence of respiratory conditions will be presented in this document.

PROOF-OF-CONCEPT PROTOTYPE FOR AUTOMATED SEARCH OF CONNECTED DRIVES FOR IMAGE FILES, WITH ABILITY TO MANUALLY TAG SUSPICIOUS FILES

Jeshua Cooper, Nathan Dunn, Matt Harter, Kaleb Weddle, and Brian Schultz
Department of Computer Science

The software product designed and initiated during the CPSC 4500 Computer Science Senior Capstone course was further developed, and presented to Rook Security as a proof-of-concept prototype. The software searches through a selection of drives, identifying all images, displaying thumbnails of the images, and allow a police officer or other individual to easily scroll through the images, tagging specific files that seem suspicious for further study. A database stores the information about the disk locations of the images, EXIF data (time/location of when the photograph was taken), and whether or not it was tagged as being suspicious.
POVERTY IN NICARAGUA: EXPLORING THE EFFECTS OF POVERTY ON HEALTHCARE IN NICARAGUA

Casey Showalter
School of Nursing

Nicaragua is one of the poorest countries in the Western Hemisphere. Almost half of the country’s population lives below the poverty line of 1.25 dollars per day. Research has shown that the highest rates of poverty exist in rural areas of the country leading to a higher exposure to environmental toxins and violence, less hope and chance for improvement, and higher morbidity and mortality rates. Literature has suggested that poverty in Nicaragua affects healthcare by causing a lack of access due to physical distance and financial reasons, higher morbidity and mortality rates in comparison to non-impoverished families, and unique health beliefs and ideas. The aim of this qualitative pilot study is to identify the greatest effects of poverty on healthcare in Nicaragua. A ten question interview was administered to adult individuals in Nicaragua regarding factors affecting poverty and healthcare in their families. The data from the interviews were analyzed to determine the aspects that caused the strongest ties between poverty and healthcare.

RESIDENTIAL LOCATION AND STIGMA AS PREDICTORS OF HELP-SEEKING ATTITUDES

Hannah J. Turner
Department of Psychology

Attitudes of mental illness and treatment presumably determine an individual’s inclination to discern a need for help, and the individual’s evaluation of the expense and value of obtaining treatment (Eisenberg et al., 2009). This study seeks to understand how residential location and stigma predicts help seeking. Participants (n = 131) were students from a private college in the Midwest. Participants completed demographic and residential location questionnaires, followed by measures of perceived public stigma and help seeking attitudes. Contrary to expectations, results indicated residential location was not significantly related to help seeking attitudes (r = -0.07, p = 0.45), and people with high levels of perceived public stigma toward help seeking had more positive attitudes toward help seeking (r = 0.18, p = 0.04). These findings indicate further research should attempt to discover explanations for discrepancies, such as the majority of participants being in “helping” majors.
RIVER SAMPLING: UPSTREAM AND DOWNSTREAM OF A TRIBUTARY

Miranda Wentz and Dan Ippolito*
Department of Biology

Chemical and biological tests can be used to determine the Water Quality Index Rating (WQI) and Pollution Tolerance Index rating (PTI) of a body of water. A tributary in Falls Park in Pendleton, IN appears polluted on visual inspection. An assessment was conducted using three sites: upstream of the tributary, the tributary itself, and downstream of the tributary. The three sites were tested for chemical and biological parameters. The data was collected at all three sites on three separate dates (5-30-16, 7-26-16, and 9-25-16). The results for the chemical testing on the first date indicate that Site 2 had the highest Water Quality Index Rating (WQI) at 85.53 while Site 1 and 3 have lower ratings. The second date’s data indicate that Site 2 had a higher WQI at 89.97, while Sites 1 and 3 have a lower WQI. The third date’s data indicate that all three sites have a fairly high WQI with Site 1 having a slightly lower WQI. Biological testing indicates that Site 1 had a higher PTI than Site 3. The second date’s data show just the opposite (Site 1 has a lower PTI than Site 3). The third date’s data show a PTI of 22 for Site 1, while Site 3 has a much lower PTI. Conclusions based on such a limited set of data is not conclusive. More testing would need to be conducted to generate more conclusive results.

ROTATION CURVES OF SELECT GALAXIES
PROVIDING EVIDENCE FOR DARK MATTER

Hayley Bower and Dr. Jennifer Coy*
Department of Physical Sciences and Engineering

Current cosmological research suggests that the universe is flat, expanding, and matter is dominated by the presence of dark matter. Measurement of galactic rotation curves shows a discrepancy between the measured orbital speeds of stars and the speed predicted by the amount of luminous matter observed within galaxies. Scientists assume that the discrepancy is due to the undetectable presence of dark matter in galactic halos. The work of Begeman, Broeils, and Sanders along with the Groningen Image Processing System (GIPSY) were used in our research. Comparing these measured rotation curves with the amount of matter and radiation within galaxies leads to a discrepancy which is consistent with the presence of dark matter. Thus, by observing the velocity of rotating stars within galaxies, we affirmed the findings of the aforementioned scholars and gained an understanding of the fate of the universe. There are several proposed theories concerning this topic. If the matter in the universe is truly dominated by dark matter, its fate is a slow and cold death, referred to as the “Big Chill.” It is believed that dark matter is responsible for 84.5% of matter in the universe, and although scientists have yet to directly measure it, its presence is confirmed by our research into its gravitational effects.
SEEKING TO FLOURISH: LIBERIA AND PROPOSED DECENTRALIZATION

Haley Bate, Trevor Blok, Gabrielle Guerra, Corrinne Huber, and Jack Render

Department of History and Political Science

The nation of Liberia has weathered many conflicts and setbacks since its formation in 1847. From the two civil conflicts it faced during the years of 1989-1996, to the recent Ebola crisis, the nation has been trying to reclaim stability and peace. However, if they wish to achieve this goal the nation will have to become more politically stable and efficient than it is in its current form of governance. As seen in the past, one major reason for the civil conflicts seen within Liberia resulted from a corrupt and inefficient government (Kieh 2009). While currently operating as a democracy the nation would be considered as having a centralized form of governance. While Liberia has been functioning under this form it has struggled to thrive and has run into multiple problems within the nation. This has led many to classify Liberia as a fragile state, which has hurt them politically as well as economically. The predicament at hand begs the following question; should Liberia remain a centralized state and if not what are the best steps that the nation needs to take in order to adapt a decentralized form of governance? This research addresses Liberia’s current proposed policy plan in regards to decentralization; explores several case studies of centralized, decentralized, states that are currently transitioning from centralization to decentralization; and makes recommendations for how the nation should proceed in the governance of their people.
SHOSTAKOVICH'S PERSONAL REQUIEM: DISABILITY STYLE
IN THE FIFTEENTH STRING QUARTET

Loren Baumberger
School of Music, Theatre, and Dance

Studies examining Shostakovich usually focus on his earlier pieces, while much of his late work has been deemed complex. Even studies examining his late works ignore significant factors in his life that could affect his composition, such as amyotrophic lateral sclerosis (ALS), heart attacks, and lung cancer. Joseph Straus studied how ailments affected compositions, naming it disability style, in his book Extraordinary Measures. Multiple characteristics describe disability style, and three of them fit Shostakovich’s fifteenth string quartet perfectly. The quartet conveys introspection, austerity, and retrospection very clearly throughout. This quartet was composed at a crucial time in his life: after receiving a fatal lung cancer diagnosis. He also struggled with his deteriorating health through his ALS and heart attacks, all of his ailments keeping him in the hospital for much of his later life. Because of his ailments, Shostakovich was acutely aware of his impending mortality, which not only greatly affected his life, but also his music. Instrumentation, textures, musical quotations, and narratives utilized in Shostakovich’s fifteenth string quartet fit the three characteristics of disability style. By examining Shostakovich’s music with a biographical understanding of his life, one can reach the conclusion that his mortality played a large part in his late compositions. Through being introspective, austere, and extremely retrospective, Shostakovich’s fifteenth string quartet conveys how he was affected by his illnesses during his later life.

SOCIAL SUPPORT AND RELIGIOSITY AS PREDICTORS OF ADOLESCENTS’ HELP SEEKING FROM FORMAL AND INFORMAL SOURCES

Logan Baker
Department of Psychology

Although mental illness is prevalent among adolescents, rates of mental health service utilization are low. Research is needed to address this issue. This study’s purpose was to examine whether social support and religious orientation predicted the help seeking of adolescents recruited from a private, Christian school in the Midwest. The sample was composed of 55 middle school and high school students with a mean age of 14.85 years (SD = 1.67). Multiple regression analyses indicated that gender, social support and religiosity are important factors in predicting an adolescent’s likelihood to seek help from formal and informal help sources. It is of particular importance for educators, pastors, parents, and peers of youth to be aware of their potential to be called upon as source of help for adolescents. Training and psycho-educational resources should be provided to these help sources so that they may be equipped to serve adolescents and refer them to mental health professionals.
STRETCHED THIN: THE EFFECTS OF MEDIA EXPOSURE ON BODY SHAME, INTERNALIZATION, AND EMOTIONAL DISCLOSURE

Merissa Milnickel
Department of Psychology

Negative feelings about one’s body has been found to support the development of body shame. Likewise, repeated exposure to society’s “ideal body” that subsequently results in a negative body image is a common predictor of internalization. The act of emotional disclosure, while considered a beneficial response to difficult internal circumstances, is often not practiced by people who fear a shame-based reaction from others. All these variables have relevance when discussing the impact of mass media and societal expectation. The effect of objectifying media exposure upon levels of body shame and internalization was analyzed in this study, as well as the correlation between emotional disclosure and body shame. Undergraduate students from a small liberal arts university (n=80) were randomly assigned to control and experimental groups. Surveys were administered before and after seeing a series of 10 photos. These photos were either neutral or objectifying depending on the group (control vs. experimental). Two mixed design ANOVAs demonstrated no significant impact of media exposure on levels of body shame or internalization. t-test results did indicate a significant difference between the experimental and control group post-test scores of body shame, but no difference between groups for internalization. Correlation analyses found no correlation between body shame and emotional disclosure. Data of interest were internalization and emotional disclosure being positively correlated, as well as gender being positively correlated with body shame and emotional disclosure. Possible reasons for results are discussed, as well as implications for future study.

STUDYING THE BEHAVIORS OF SEXY PRIMES

YeRim Kang
Department of Mathematics

A sexy prime number is a prime number that differs from another prime number by six. Although there are many proofs of the infinitude of prime numbers, it is unknown whether there are an infinite number of sexy prime pairs. For this research we investigated various properties of sexy prime numbers. Specifically we divided a list of sexy primes by 6 and compared the proportion with remainder of 1 to those with remainder of 5. We also looked at patterns concerning specific digits within these prime numbers.
THE EFFECTS OF ACTIVE VERSUS PASSIVE RECOVERY ON ANAEROBIC PERFORMANCE OVER TWO CONSECUTIVE WINGATE TESTS

Derek Mallory, Griffin Walizer, and Drew Wilson

Department of Kinesiology

High-intensity interval training (HIIT) usually consists of short, repeated intervals (around 30 seconds or less) near max intensities of 80-100% of one’s peak heart rate. Its benefits include increases in cardiorespiratory fitness similar to those gained from traditional moderate-intensity continuous training and improvements in anaerobic capacity, or an individual’s capacity to fully resynthesize the energy source adenosine triphosphate (ATP) through anaerobic metabolism. In order to improve performance throughout these high-intensity intervals, knowledge of the best recovery method is essential. Active recovery (AR) involves light exercise, like jogging or stretching, in order to nearly return physiological functions to baseline levels. Passive recovery (PR) ceases exercise completely, often involving lying down or standing. The purpose of this research was to determine whether AR or PR better prepares an athlete for consecutive high-intensity intervals. Subjects performed two consecutive Wingate Anaerobic Tests with 5 minutes of AR or PR between bouts. All subjects utilized both recovery methods on separate days. After each interval, blood lactate was measured and anaerobic power and capacity was calculated. By observing the difference in mean power between the first and second WAnT of a trial, AR was deemed the more effective method. The average difference in mean power for AR and PR was -74.11 ± 79.86 W and -111.78 ± 46.36 W, respectively. This study’s findings will help athletes better understand the effects of each recovery method on repeated interval performance.
THE EFFECTS OF CAFFEINE ON ANXIETY AND DEPRESSION IN CHILDREN AND ADOLESCENTS

Ashlee Ritchie  
Department of Biology

Depression and anxiety disorders are caused by a variety of factors including genetic, biological, environmental, and psychological factors. Caffeine, which is a known psychoactive substance, can cause adverse effects by influencing the levels of certain neurotransmitters, which have been shown to play roles in causing such disorders. This suggests that caffeine intake has the ability to influence depression and anxiety disorders. Luebbe and Bell conducted a study based on the Child Depression Inventory (CDI), State-Trait Anxiety Inventory for Children-Trait Version, and a questionnaire regarding caffeine intake and effects to determine how caffeine influences the presence of anxiety and depression symptoms in 5th and 10th grade students. The hypothesis was that caffeine intake is positively related to both depression and trait anxiety symptoms. Results showed frequent and high levels of caffeine intake. While anxiety showed no significant relationship to caffeine intake, both groups showed depression to be positively related to weekly caffeine intake. A hierarchical regression analysis showed that withdrawal plays a role in mediating this relationship. Based on these findings, a recommended daily intake of caffeine should be determined for children, and parents and schools should work together to help youth avoid the potentially harmful effects of high levels of caffeine intake.

THE EFFECTS OF HUMAN-CANINE INTERACTION ON PERCEIVED STRESS

Sarah C. Lozano  
Department of Psychology

There is growing interest in examining the ways in which humans and animals experience mutual benefit through interaction. Previous research has shown that dogs may reduce stress in humans, particularly college students (Crossman, Kazdin, Knudson, 2015). This is beneficial because stress has been shown to have detrimental effects on health. Human-canine interaction may be a cost-effective means of managing stress in colleges and university students. The purpose of the current study was to determine if a single, short interaction with a dog would reduce perceived stress. 23 participants took pre-surveys of the Pet Attitude Scale (Templer & Ariwaka, 1981) and the Perceived Stress Scale (Cohen, Kamarack, & Merrelstein, 1984), and following either interaction with a dog or viewing a video of dogs, took a post-survey of the Perceived Stress Scale. Results will be analyzed and discussed.
THE RELATIONSHIP BETWEEN PERCEIVED SOCIAL SUPPORT, RESILIENCE, AND RISKY BEHAVIOR IN ADOLESCENTS

Mallory R. White
Department of Psychology

Adolescence is a developmental stage in which one is particularly susceptible to risky decision making. The current study seeks to understand the relationship that exists between perceived social support, resilience and risky behaviors in adolescents, in an attempt to know how to better counter these behaviors. A total of 150 college-aged participants were recruited from a Midwestern university and Amazon Mechanical Turk, and were asked to complete surveys regarding their behaviors and attitudes while in high school. Multiple regressions were used to analyze each hypothesis. Social support from friends (Beta = 0.20, p = 0.03), family social support (Beta = 0.26, p < 0.01), and significant other social support (Beta = 0.21, p = 0.03) were each significant individual positive predictors of resilience. The results of this study especially emphasize the importance of family social support in preventing risky behavior.

THE ROLE OF THE CHRISTIAN CHURCH IN THE RISE AND FALL OF DEMOCRACY IN POST-COMMUNIST EUROPE

Jessica Thaman
Department of History and Political Science

In 1991, the fall of the Soviet Union led to the creation of fifteen newly independent nations within Eastern Europe. Each member of this religiously diverse group has its own unique story of liberation, including a particular role played by the influence of Christianity. On the surface, it appears that nations with an Orthodox Church or Catholic Church majority would have similar outcomes regarding the extent of democratization. However, the denomination alone cannot accurately predict this. This study compares the influence of religious diversity within the nation, the relationship between the Church and the Communist Party, and the degree to which the majority Church is part of the national identity in order to explain different levels of democratic consolidation in Poland, Bulgaria, and Ukraine.
THE SOCIAL ACCEPTANCE OF FEMINISM AND WOMEN’S RIGHTS IN THE DOMINICAN REPUBLIC AND THE UNITED STATES

Ashleigh Ellson and Brandan Grayson*
Department of Modern Foreign Languages and Cultures

Feminism and women’s rights are currently widely-discussed topics in our country and our world, but they certainly are not new topics. The history of these issues differs in every country and culture, and the development of the concept of feminism depends on a number of factors. By juxtaposing the history of the Dominican Republic and the United States, however, it becomes clear that the manifestation of women’s rights and feminism has been most influenced by the type of government and the social climate. This research analyzes the effects of the United States’ commitment to representing the people and pursuing justice under Christian principles in comparison to the dictatorship of Rafael Leonidas Trujillo and the forceful imposition of his machismo-based values onto the people of the Dominican Republic. Specifically, this project finds that the United States’ representative government and openness to social change have resulted in effective feminist movements in comparison to the Dominican Republic, whose past oppressive governments and commitment to traditional values have resulted in a cultural climate that oppresses women’s rights.

USING MACHINE LEARNING TO PREDICT HEAT PROPAGATION FROM A DRILLING PROCEDURE IN A NOVEL MINIMALLY INVASIVE, IMAGE-GUIDED COCHLEAR IMPLANTATION TECHNIQUE

Mitch Fulton
Department of Physical Sciences and Engineering

The current surgical process for cochlear implants involves a mastoidectomy, which is painful for the patient and requires several days of recovery time. Because of this, a new minimally invasive technique is being developed to potentially turn the cochlear implant procedure into an outpatient surgery. However, in previous clinical trials heat generation from drilling in this minimally invasive procedure has caused damage to the patient. A model to describe heat generation was desired to improve patient safety and recovery. With the heat generation from the drill simplified to a single point source a three-dimensional model was made to predict how the heat would propagate. The data from these simulations were then used as training data for a machine learning algorithm.
VARIATIONS IN HOSPICE CARE GIVEN IN INDIA COMPARED TO BEST PRACTICE GUIDELINES

Jessica Mendoza
School of Nursing

The process of dying can be argued as one of the most transformative human life events. Death is ultimately inevitable for all human beings and so the subject is one of the most disputed, feared, celebrated, and anticipated topics in all matters that are discussed. Therefore, end of life care is a fundamental field of study within healthcare today. Adequate pain management is asserted as a critical factor contributing to positive outcomes related to end of life care. However, in India, research has identified that there is an enormous lack regarding the distribution of opioid pain medication which is leaving many individuals in severe pain with little control and relief. This is largely caused by the government’s macro structural force within India. The purpose of this study is to assess the efficiency of pain management techniques at Mother Teresa’s home for the dying and destitute in Kolkata, India. This study focused on the availability and distribution of opioid analgesics for patients receiving end of life care at Mother Teresa’s facility. A pain medication checklist and a nonverbal pain assessment scale were preformed once on a minimum of two patients each day spent at Mother Teresa’s facility. The combined observational guides were used to assess whether or not pain medication was given and if the medication administration made a difference in the patients’ nonverbal pain scores. The results compared the facility’s use of opioid analgesics to the World Health Organization’s recommendation for the use of opioid analgesics in end of life care.

WHY THE WAR ON DRUGS SHOULD END

Hannah Marsh
Department of History and Political Science

Beginning officially in the 1970’s, President Nixon waged The War on Drugs in America and caused drastic repercussions throughout the country, some of which continue today including an overflowing amount of incarcerations. America incarcretes more of its people than any other country in the world. The War on Drugs has proven to be ineffective because of the high costs, the steadily rising incarceration rates, and the targeting of minorities. The War on Drugs should end because there are much better alternatives to incarceration including drug courts and community-based treatment. These alternatives are not only more cost effective but the statistics show that recidivism rates are much lower for people who participate in these programs rather than being incarcerated. Treatment courts have become more popular in recent years. As the courts continue seeing a lower recidivism rate and being more cost effective compared to incarcerating addicts, the original justification for the War on Drugs becomes less compelling.
WORK-RELATED BURNOUT AND ANXIETY IN COLLEGE-AGED LEADERS AND NON-LEADERS

Christina G. Garza
Department of Psychology

Considering burnout may have negative consequences of anxiety, it is important to examine whether college student leaders experience increased burnout compared to their fellow peers. The purpose of this present study was to investigate the work-related burnout experienced by undergraduate leaders. Additionally, an overall correlation of work-related burnout and anxiety was examined. A sample of 159 undergraduate students from a small private liberal arts university in the Midwest were recruited. Findings did not support the hypothesis that leaders would report more feelings of work-related burnout compared to non-leaders. Contrary to expected findings, non-leaders demonstrated higher levels of work-related burnout. As expected, there was a positive and significant relationship between work-related burnout and anxiety. Further research is needed to examine burnout interventions specifically geared towards college students.