AU’s 9th Annual Scholars’ Day

REPORT OF ABSTRACTS
Tuesday, April 24 | Reardon Lobby
Welcome to the 9th 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!

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Dean, School of Science and Engineering
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ABSTRACTS

AN EXAMINATION OF EARNINGS AND STOCK PRICE MOVEMENT

Justin Anderson and Nicholas Butcher
Falls School of Business

The intent of this study is to identify any potential patterns in stock price movement relating to earnings announcements. Data was collected for 72 companies across various industries and sectors. The data was collected for each of the previous eight fiscal quarters for each company. All 72 companies display high market liquidity and relatively volatile price movement. Variables for each stock include stock price seven days before the earnings report, stock price one day before the report, the closing stock price before the report, the closing stock price the day of the announcement, and the closing stock price seven days following the report. An individual regression equation was created for each company to estimate a 30-day price after the earnings announcement. Our level of significance for each regression equation was .05. Using the regression equation, the intent is to utilize an option investment strategy that would take advantage of these estimated price movements. After testing the data, our findings show that in order to predict stock price, it is necessary to include stock movement prior to the earnings announcement to determine if the price is inflated by investors.

NEW PRODUCT TO REDUCE HUMAN ERROR IN HOME HEALTH AND LOWER HOSPITAL READMISSION RATES

Thitina Asrat, Justin Harper, and Mistre Kebede
Department of Physical Sciences and Engineering

Patients with high-risk diseases, such as congestive heart failure, type 2 diabetes, hypertension, and COPD, cannot afford to take the wrong medicine or dose. Studies have shown that improper dose and wrong medication account for 80% of medication errors. A high-risk category for this type of error is elderly people with chronic disease, such as the diseases listed above. Our product, which uses a combination of hardware and software, strives to improve patients’ health by recording daily vitals, diet, and exercise. This data is used to accurately recommend the appropriate medicine and dose based on a physician’s guidelines. Furthermore, the physician will have the ability to remotely monitor the patient’s vitals through a secure database. This increases the chance of preventing foreseeable health risks and reduces hospital readmission.

COSTLY CURVES: HOW HUMAN-LIKE SHAPES CAN INCREASE SPENDING

Krista Baker
Falls School of Business

In 2016, Marisabel Romero and Adam W. Craig published a marketing research study called “Costly Curves: How Human-Like Shapes Can Increase Spending.” The study said that Western society associates thinness with economic value, and it argued that thin, human-like shapes influences consumer self-efficacy judgements.
and spending outcomes, depending on the perceiver’s weight. The research provided by Romero and Craig concluded with several contributions to theory and consumer policy. First and foremost, the research provided a deeper understanding of how seeing a shape resembling a weight group both activates stereotype knowledge and initiates social comparison processes. The research also examined how exposure to an overweight person can affect food consumption, which provided evidence that the positive association between thinness and economic benefits can affect consumer financial decisions. Furthermore, the research also demonstrated that when individuals are exposed to thin (vs. wide) images, both their financial self-efficacy judgments and financial decisions are affected.

The main issue in this research involves the impact human-like shapes can have on Anderson University undergraduates’ spending choices. The theory is that exposure to thin human-like shapes influences self-efficacy judgments and spending outcomes, depending on the participant’s weight. I wanted to test to see if seeing a thin (vs. wide) human-like shape leads consumers with a high body-mass index to make more indulgent decisions than low-body mass index individuals. Students were sent the survey through their campus email and be asked to complete it. The survey could be completed within 5 minutes.

THE EFFECTS OF MUSIC ON MENTAL WELLNESS

Bailey Barkdull
Department of Psychology

Music therapy is becoming more popular as research continues to show its effectiveness in treating different conditions. The current experiment examined the impact of both active and passive listening on college students’ well-being, as measured by depression, stress, and anxiety scores. The experiment involved 36 university students listening to a 30-minute classical-music playlist either actively, passively, or not at all in a controlled condition, and measuring changes in depression, anxiety, and stress levels. After analyzing the results, all groups showed a significant reduction in depression. Future research should be conducted using a larger, more diverse sample.

EVIL IN MUSIC: SCHNITTKÉ’S FOURTH VIOLIN CONCERTO

Loren Baumberger
School of Music, Theatre, and Dance

Although the polystylistic techniques of Alfred Schnittke have elicited much comment, the significant impact of Thomas Mann on his music has not been widely explored. Schnittke’s interest in Mann developed after reading Doktor Faustus, a novel written in consultation with Theodor Adorno. Adorno’s philosophies of music influenced the development of the Devil and Adrian Leverkühn, the composer protagonist. Schnittke even attempted to compose Leverkühn’s works as described by Mann. The tension between the rational and irrational and between good and evil in the Faust story particularly attracted Schnittke. Yet, rather polarizing these ideas, Schnittke, as well as Mann and Adorno, believed they belonged together. These polarities became fundamental to Schnittke’s compositional aesthetic. For example, he understood the concerto as an individual personality opposing a satanic social situation — most likely the Communist dictatorship — and he utilized
his fourth violin concerto to convey these dualities. In his fourth concerto, Schnittke reflects the duality of
Faustian good and evil through the use of monograms, popular culture references, and tonalities.

**IS FREE PLAY IMPORTANT IN THE DEVELOPMENT OF PERCEIVED SOCIAL SUPPORT?**

Sebastian Baxter  
*Department of Psychology*

Free play has been linked to promoting multiple aspects of mental health, including the way one interacts with
another (Gray, 2011). With media time, technology use, and school-related activities increasing sharply in the
past 30 years, the time children have to engage in free play is becoming minimal (Bureau of Labor Statistics,
2016; Common Sense, 2017). Social isolation, being a part of perceived social support, can be expected to
have declined with the increase in media in recent years (Primack et al., 2017). Minimal past research has been
done on free play with perceived social support. A survey was completed in the current study by 149
undergraduate students aged 18 years and older. Results indicated that free play was a significant predictor of
perceived social support. Gender and age were not significantly correlated with either variable.
Reincorporating free play into the early childhood stages should be emphasized, especially in education.

**GENETICS OF PTC AND TASTE PREFERENCES**

Brianna Beer  
*Department of Biology*

Phenylthiocarbamide (PTC) is a compound that is either bitter or tasteless, depending on the genetic makeup
of an individual. The gene controlling PTC perception has been designated TAS2R38 and is found on
chromosome 7. However, this gene is not inherited in a simple Mendelian fashion, as the TAS2R38 gene only
accounts for approximately 75% of the phenotypic variance seen today. The cause of the remaining variance
remains unknown but could be due to other genes or environmental factors. There have been no studies
analyzing the way PTC taste receptors respond to other bitter compounds. This study will be done to
determine if the ability to taste PTC results in an avoidance of bitter foods and drinks. Students from
Anderson University will be asked to taste PTC paper, document their results, taste a variety of coffee
samples ranging from black coffee to equal parts coffee and creamer, and determine which they prefer. The
results and conclusions from this study will be discussed.

**THE EFFECT OF GRASTON ON MUSCLE FLEXIBILITY**
**IN COMBINATION WITH STRETCHING**

Nicholas Boardman and Brian Stout  
*Department of Kinesiology*

A majority of athletes tend to have tight hamstrings due to extreme muscle bulking with lack of stretching,
causing their bodies to hurt and create compensations hindering athletic performance. The purpose of this
study is to determine if the use of Graston Technique and stretching — either PNF (Proprioceptive
Neuromuscular facilitation) stretching or Static stretching — will increase range of motion in the hamstring.
PNF stretching and Static stretching will be directly compared to each other to see which form of stretching
increases range of motion more in the hamstring in combination with Graston Technique. Twenty-five participants from a Midwest division three university will take part in this study. Mostly baseball, soccer, and athletic training students will be used as participants for this study. For the purpose of this study, every athlete will have some type of hamstring tightness. There is no specific definition to having a tight hamstring, but for this study, if the patient cannot pass a 90-degree angle on a straight leg raise test, they will qualify for tight hamstrings. If the participant can pass 90 degrees on straight leg raise test, then they will be excluded from the study.

**EVALUATION OF RADIATION AND DESIGN CRITERIA FOR A LUNAR HABITAT**

Hayley E. Bower and Rob K. Shaver  
*Department of Physical Sciences and Engineering and the Honors Program*

The effects of cosmic and solar radiation serve as a major hurdle for lunar habitation. Radiation is not only detrimental to the health of human beings but also to electronics and plant life. As such, quantifying the amount of expected radiation in the lunar environment is vital. Furthermore, investigation of current mitigation strategies is required to identify the feasibility and trade-offs of various tactics. Approaches vary, with significant research directed toward material shielding, magnetospheres, and lava tubes, among others. This report is a concise resource on the current state of research on these approaches and provides results from material effectiveness simulations along with a recommendation for a radiation-safe habitat configuration. This report is a part of Purdue University’s Resilient ExtraTerrestrial Habitats (RETH) project, which aims to holistically design a safe and self-sufficient lunar habitat.

**HAS THE EMERALD ASH BORER DESTROYED NORTHERN MICHIGAN TREES?**

Courtney Broshar  
*Department of Biology*

Many of Northern Michigan’s ashes have been destroyed by the infestation of a species known as *Agrilus planipennis* (emerald ash borer) in the last few decades. The phloem-feeding beetle was brought in from China most likely by the transportation of firewood or wood-packing materials. Ash trees will face extinction if the infestation continues to spread, which would limit sources made with and/or used from ash wood. Ash wood is valuable in making tools because of its toughness and elasticity. Scientists have been examining Michigan ash species in local forests to determine if the species is still at risk, and if so, what can be done to enhance populations. In this study, transects within a given area of a local forest in Northern Michigan near Blue Lake Township were conducted. Performing forest transects show what tree species are still in existence in the area and their age range. The number of each seedling, sapling, and tree species within the transected area was recorded, including the number of either simple-leaved or compound-leaved ashes. Theory suggests that the ash species may be reverting back to their more simple-leaved form as a mechanism of resistance to the emerald ash borer. The results show a large population of ash at the seedling maturity level suggesting possible regeneration. Compound-leaved ash was more prevalent than simple-leaved or indeterminate ash at all three levels of maturity.
MATERNAL AND FETAL MORTALITY IN THE DOMINICAN REPUBLIC

Laura Brown
School of Nursing

There exists in the Dominican Republic a severe health disparity in concerns to maternal care and management of labor. Despite the fact that 98.8% of births occur in a healthcare facility, one of the highest rates of Maternal and Fetal Mortality (37-280 maternal deaths/100,000 births and 52 perinatal deaths/1000 pregnancies estimated by WHO) in Latin America exists in the Dominican Republic. Experts regard this as the “paradox of the Dominican Republic.” Despite the fact that there is public healthcare and well-developed infrastructure, including secondary and tertiary hospitals, the quality of the care being provided is not adequate. My research will attempt to delve into the reason why the “Dominican paradox” exists by taking a look into women’s health care, intrapartum care, and what changes are being made or could be made to attempt to close this disparity.

LOWER EXTREMITY DYSFUNCTIONS AND CHRONIC LOW BACK PAIN: A CORRELATIVE STUDY

Jenna Casale
Department of Kinesiology

Back pain is a prevalent issue in active patients, and a seasonal maintenance program is a typical quick fix. If the body is looked at as a system, the identification of lower extremity dysfunctions provides an opportunity to suggest different solutions for consistent discomfort. The purpose of this research was to determine if there is a correlation between lower extremity dysfunctions and chronic low back pain. The study investigated the data collected on a STarT back screening tool, a patient reported outcome measure, and a functional movement screen. The results showed a statistically significant negative correlation, thereby validating the experimental protocols and proving there is a correlation between lower extremity deficits and low back pain.

PRIOR KNOWLEDGE OF, EXPOSURE TO, AND OPENNESS TOWARDS AUTISM

Barbara Castellano
Department of Psychology

Past research examining negative attitudes about stigmatized groups has found that increased knowledge and exposure is one method for improving attitudes. The purpose of this research was to determine how participants’ amount of knowledge and exposure affect their attitudes of autism. Participants (n = 102) in the current study completed an online survey that assessed knowledge of autism, level of contact, and amount of openness toward individuals with autism. Overall, participants had high levels of knowledge about autism (94.4% average score). However, participants scored low in exposure to autism. There were significant correlations found among knowledge, exposure, and attitudes of autism. This research has found that knowledge was positively correlated with openness and that exposure was positively correlated with openness. It may be that if college students are more accepting and open towards peers with autism, then their peers may feel a greater sense of belonging on their college campus.
The phrase “money does not buy happiness” is often invoked among aspiring professionals. Opening the intellectual corridors into the field of happiness economics, Richard Easterlin transformed this adage into a research question by which he affirmed this hypothesis. Easterlin found that the pursuit of money deteriorates individual happiness through long work hours and resulting complications with health and family members. My research explores the economic conditions under which happiness levels increase coupled with the strains imposed by personal factors. Parts of my results run contrary to those of Easterlin. Through an ordered logit analysis, I found a positive relationship between individual happiness levels and income, both family and individual. This factor holds true at the aggregate level. A regression analysis demonstrated a positive relationship between a country’s aggregate happiness and wealth. Rich countries are happier than poor countries and domestic happiness levels rarely rise out of sync with economic growth. Other individual factors closely correlated with happiness includes one’s work status and the relative quality of their home. Variables for one’s health, marital status, quality of marriage, and level of education are currently being recorded in order to test their effect on functions of economic happiness.

ON THE CREATION OF RANK TWO CENTROSYMMETRIC MATRICES

Christina Coats, Ashley King, Emily Miller, Dr. Lee Van Groningen*

Department of Mathematics

For any square matrix B, we can create a centrosymmetric matrix A as A= B+BJBJ, where J is the skew identity matrix. If the matrix B is created as the outer product of two vectors v and h, the resulting centrosymmetric matrix will have a maximal rank of 2. However, not all such rank two centrosymmetric matrices can be written in this form. In this work, we fully examine when a 3 x 3 centrosymmetric matrix can be created from two vectors and generalize our results to larger matrices.

EXAMINING THE RELATIONSHIP BETWEEN SOCIOECONOMIC STATUS, TYPE OF EXPOSURE TO POLICE, AND CURRENT ATTITUDES

Tarah Collins

Department of Psychology

While race has been consistently found as a predictor of attitudes toward police, research is lacking in examining other predictors. The purpose of this study was to examine socioeconomic status and social media use as predictors. It was expected that socioeconomic status, direct contact experience, and social media usage would be significant predictors of attitudes. Further, it was hypothesized that citizen-initiated direct contact experiences would result in a more significant attitude change than police-initiated contacts. Results showed that socioeconomic status was not a significant predictor of attitudes. However, direct contact experiences and social media experiences were. There was not a significant difference in attitudes surrounding who initiated the contact. Current results indicated that it is the quality of exposure citizens have to police — through personal and social media encounters — that is important in determining attitudes.
CORE TRAINING AND THE EFFECT IT HAS ON VERTICAL JUMP AND MEDICINE BALL THROW

Destiny Crawford
Department of Kinesiology

Although some research has been done on the effects of a core-training program on power, the overall results are not well understood. I am focusing on upper and lower extremity power to determine if a core-training program will affect lower and upper extremity power through a vertical jump test and medicine ball throw. Eighteen healthy individuals from a small Midwest University participated in the research. They completed core training exercises with two trials of vertical jump and medicine ball throws. The vertical jump and medicine ball throw were measured at the beginning and the end of core training program. Compiled results suggested that the core training program did not show a significant increase in either the vertical jump or the medicine ball throw. In theory, it is accepted that core stability and muscular power are interrelated, however, there is no current literature that fully supports it. The researcher hypothesized that there would be significant results from the pre to post tests, however, that was not found in this study.

TREATING MENTAL ILLNESS: PREPAREDNESS AND ATTITUDES OF NURSING STUDENTS

Kirstin Crawford
Department of Psychology

Research has shown that while patients with mental illness presenting to an Emergency Department often have negative experiences, medical professionals with greater self-efficacy in treating patients with mental illness have more positive attitudes (Clark et al., 2014). The purpose of this current study was to see if education, clinical experience, and preparedness were positively correlated with the attitudes of nursing students. Seventy-four undergraduate nursing students completed an online survey that measured demographics, level of attitudes, and preparedness. The results showed significant, positive correlations between attitudes and preparedness ($r = 0.38$, $p < 0.01$) and between attitudes and amount of education ($r = 0.23$, $p = 0.02$). Students with mental health clinical experience did not have more positive attitudes ($t(72) = 1.17$, $p = 0.24$); however, they did report greater levels of preparedness ($t(69) = 4.24$, $p < 0.01$). The findings of this study indicate that having mental health clinical experience is related to increased preparedness in students, and feelings of preparedness in treating patients with mental illness is related with more positive attitudes in students.

CUPPING VERSUS FOAM ROLLING EFFECTS ON RANGE OF MOTION AND VERTICAL JUMP

Halley Crum and Brendan Kane
Department of Kinesiology

The quadriceps is a large muscle involved in the actions of knee flexion and hip extension. It is required for the mechanics of jumping. Understanding the physiological effects of some treatments could lead to increased flexibility and/or increased vertical jump. We used a randomized controlled trial of 10 male ($20 \pm 2$) and 4 females ($19 \pm 1$) volunteers to participate in this study. We measured vertical jump, hip extension, and knee flexion. Patients were randomly split into two testing groups. One group received cupping treatment on
the quadriceps and had their quadriceps passively stretched. The second group self foam rolled their quadriceps and their hamstrings. The second group also had their quadriceps passively stretched. Results indicated that cupping and stretching increased hip extension range of motion (P < .05). Foam rolling and stretching did not prove to have any benefits for hip extension or vertical jump. In conclusion, one treatment did not seem to prove better than the other. Depending on what the target outcome is, different treatments may be favored.

ANXIETY REDUCTION THROUGH DANCE

Dominica Dello Iacono
Department of Psychology

Anxiety is a common mental disorder in our society. The purpose of the current study was to see if dance was associated with decreased levels of anxiety. Specifically, levels of anxiety between people who had and had not danced were compared. All participants completed a survey with dance history questions and a measure of anxiety. Data will be analyzed and discussed.

FIRST GENERATION STUDENTS AND THEIR COMMITMENT TO SCHOOL

Amey Dice
Department of Psychology

The number of first generation college students is on the rise. Research shows that first generation students can be less prepared academically, socially, and have less knowledge about the college culture as a whole (Hicks, 2003). Ultimately, first generation college students seem to have less persistence within higher education (Pascarella, 2004). The current study examined both first generation college students and student's academic self-efficacy (ASE) and commitment to school. Ninety-six undergraduate students at a small private university in the Midwest completed an online survey with measures of ASE and commitment to school. I hypothesized that both being a first generation college student and higher academic self-efficacy would be positive predictors of a student's commitment to school. Results showed no correlations between a student's first generation status, ASE, and commitment to school. Post-hoc analyses indicated gender differences, with ASE predicting commitment to school for males only.

PREVALENCE AND IMPACT OF MESOAMERICAN NEPHROPATHY IN NICARAGUA

Regan Donnell
School of Nursing

In recent decades, chronic kidney disease of nontraditional causes (CKDnt) has become an epidemic in Pacific coast lowland areas of Central America. CKDnt, also known as Mesoamerican Nephropathy (MeN), is not associated with traditional causes of CKD, such as hypertension and diabetes. Rates of MeN in these specific areas are highest among male agricultural workers, specifically sugarcane field workers. Numerous epidemiological studies have been done to determine the environmental and occupational risk factors associated with this disease process. Researchers have agreed that intense labor in hot environments leading to repeated episodes of heat stress and dehydration is the main causal factor of MeN. The aim of this quantitative, descriptive study is to better understand the prevalence and impact of MeN in certain villages around Chinandega, Nicaragua. A questionnaire was used to collect information from Nicaraguans who are directly or indirectly affected by Mesoamerican Nephropathy.
THE RELATIONSHIP BETWEEN PARTNER ANXIETY, STRESS, AND RELATIONSHIP FLOURISHING
Roseanna Duffie
Department of Psychology

Previous research has examined anxiety and depression and the potentially negative relationship these diagnoses have with relationship satisfaction (Whisman, Uebelacker, & Weinstock, 2004). The purpose of the current study was to examine how partner anxiety is related to their spouses’ stress and perceptions of relationship flourishing. I surveyed 48 married couples from two locations. Results showed no significant relationship between partner’s anxiety and spouses’ levels of stress or relationship flourishing. Results did show a significant, negative relationship with participants’ levels of anxiety and their own stress and relationship flourishing. A person’s anxiety may only interact with their own view of a relationship, not their partner’s view.

THE EBB AND FLOW OF MODERN ENTERTAINMENT PRICING: THE CHILDREN’S MUSEUM OF INDIANAPOLIS’ CHANGE TO DYNAMIC PRICING ABSTRACT
Evan Dulaney
Falls School of Business

The Indianapolis Children’s Museum is a world-renowned leader in the museum and entertainment industry, making any change it makes worth noticing. Said museum working with Digonex Technologies recently adopted a dynamic ticket price plan, where the price of tickets changes daily based on certain variables. Why such a successful organization chose to change its price plan, how this change is being presented to the public, and what the desired effects of the change are all questions that need answers. I plan to research the basics of dynamic pricing, study the local media reaction to the museum’s change, and speak with both the Indianapolis Children’s Museum and Digonex Technologies to get these answers. The results will be displayed as a poster presentation. The Indianapolis Children’s Museum is an industry leader making a change that could signal a trend for other museum and entertainment organizations to follow, a trend that needs to be studied.

TEARING THE VEIL: WOMEN’S ROLES IN AN HONOR-SHAME WORLD
Nikki Edrington
School of Theology and Christian Ministry

The first hundred years of Christianity were marked by Roman culture. The new faith was adamant in its rejection of Rome as the ultimate power, and yet the growing Church was not able to fully break away from the cultural expectations of the honor-shame society in which it was birthed. Christian women were afforded freedoms like never before, but their autonomy remained veiled. The honor-shame system left its mark on women in the early Church, that although they were nearly freed, their shame would continue to prevail.
NEW PRODUCT: LOW COST ADDITIVELY MANUFACTURED PROSTHETIC HAND
Joshua Ewing and Jordan Kinning
Department of Physical Sciences and Engineering

The average cost of a prosthetic hand in the United States is $18,000. This high price prevents many families of lower income from getting hand prosthetics. The printable prosthetic hand project here at Anderson University is concerned with designing, developing, and building a prototype for a fully mechanical prosthetic hand. Our team is dedicated to producing a low cost prosthetic hand for a targeted market. Team members are currently looking into the most efficient and cost effective methods of producing and testing such a product with aims of producing an effective open source prototype capable of replication and development improvements by other members of the open source community.

ANKLE INSTABILITY AND HEALTH RELATED QUALITY OF LIFE RELATED TO REHABILITATION DURATION
Lilly Finley and Nathaniel Ryan
Department of Kinesiology

Ankle sprains and ankle instability affect a large portion of the active population. Rehabilitation has long been the fix for restabilization of the ankle, along with an increase mental perception of stability. Our objective was to determine whether there is a correlation between ankle instability and quality of life of patients who have endured an ankle sprain in the past year. The correlation between the three tests — Rehabilitation, BESS, and FAAM — proved to be insignificant. We were not able to find significance between the three tests with the Pearson R correlation significance being -.002 for the connection between the BESS score and rehabilitation and a -.227 significance between rehabilitation and the FAAM score. The overall comparison of the scores between the three tests offered statistically insignificant data when comparing the scores. The data shows that there is not enough correlation between the three tests to give significant statistical data.

A STUDY OF CHILDHOOD NUTRITION IN NICARAGUA
Rachel Gibbons
School of Nursing

Nicaragua is the second poorest country in Latin America, and poverty often leads to malnutrition. Proper nutrition is essential to childhood development; poor nutrition can lead to delays in growth, behavior issues, and delays in mental development. Research shows that the role of the mother in the care of her family can determine how well a child is fed. The purpose of this study is to see the prevalence of malnutrition in rural Nicaragua and to identify any contributing factors. This study was completed during clinics offered to families in small Nicaraguan villages. The height and weight of the children was obtained, and mothers answered four questions on a questionnaire.
MALE ADOLESCENT PERCEPTION OF MASCULINITY AND ITS EFFECT ON SELF-ESTEEM

Joe Grossman
Department of Psychology

Bullying has been linked to adherence to and endorsement of masculinity among adolescent males (Reigluth, 2016). Conformity to these norms also has been linked to low self-esteem, depression, and aggressive behavior (Espelage, 2017). Because ideals and behaviors surrounding masculinity are connected with bullying tendencies and mental well-being, the current study examined the influence of two masculinity types (adherence and endorsement) on bullying tendencies (both bullying and being bullied) and mental well-being. Results showed that, among 49 males, adherence to masculinity significantly predicted bullying tendencies, but did not predict mental well-being. However, being bullied significantly predicted lower mental well-being scores. In addition to behaviors being the primary influencer behind bullying, there is an apparent disconnect between beliefs (endorsement) and behaviors (adherence). Implications of this research highlight a need for future research in masculinity types and predictors of bullying.

GENDER AND PERSONALITY AS PREDICTORS OF EYEWITNESS MEMORY ACCURACY

James Harness
Department of Psychology

The goal of the present study was to investigate eyewitness variables such as gender, as well as Big Five personality traits (conscientiousness, openness, and neuroticism) as it related to predicting eyewitness memory accuracy. Literature on eyewitness memory suggests that gender-related differences occur; however, these differences are small. A total of 100 participants (50 males; 50 females) were presented with an eyewitness stimulus and then completed an eyewitness memory test and a personality inventory. Gender was a predictor of eyewitness memory accuracy; females had significantly higher memory scores than males, t(96.71) = 2.58, p = .01. The personality traits conscientiousness, openness, and neuroticism were not predictors of eyewitness memory accuracy. There was a statistically significant, weak, positive correlation between openness and eyewitness memory accuracy (r = .23, p = .02). Future research should experimentally investigate personality traits and its role in predicting eyewitness memory accuracy.

THE INFLUENCE OF COMPANION ANIMALS ON THE QUALITY OF LIFE OF ADOLESCENTS

Madison Harper
Department of Psychology

Prior research has found that spending time with one’s companion animal, particularly for those who are greatly attached, positively relates to quality of life. To investigate this further, a survey was completed by 266 undergraduate students from a small, liberal arts university in the Midwest. Participants completed a measure of quality of life and, if they had a pet during their adolescent years, completed a measure of attachment to their pet. Results revealed insignificant differences in quality of life scores between the groups: with and without a companion animal. There was no difference in attachment scores between dogs and cats. However, those who exhibited lower quality of life scores during their adolescent years revealed greater attachment to their companion animals. This contradicted my initial hypothesis but has profound implications for future research.
Malaria is a mosquito-borne disease spread through the saliva of a number of female *Anopheles* species. *Plasmodium* parasites are estimated to have caused 212 million cases of malaria and around 429,000 deaths in 2015. Potential drug resistance to treatments using artemisinin, recommended by WHO as the core compound in combination treatments for uncomplicated malaria, has been detected in countries in Southeast Asia. Preventative measures play a key role in reducing cases of malaria and deaths, but in developing countries where malaria is prevalent, current repellents can be costly and difficult to integrate into local traditions and practices. DEET is the current gold standard for preventing mosquito bites. Alternative methods include insecticide-treated bed nets and indoor residual spraying but this does not protect individuals outside the home.

In 2010, Logan *et al.*, published a study of the effectiveness of natural human derivatives: 6-Methyl-5-hepten-2-one, geranylacetone, octanal, nonanal, and decanal, as well as the synthetic compound DEET using arm in cage tests. Using the derivatives singularly and in combinations, the mixtures were applied to the participant’s arm and the number of times a mosquito landed on the individual was recorded. The combination that proved most repellent was a 1:1 ratio of 6-methyl-5-hepten-2-one and geranylacetone. Further research may lead to improvements of commercialized repellents and a potential decline in malaria transmission and in medication resistance.

**DIFFERENCE IN BODY IMAGE PERCEPTION AND SELF-ESTEEM LEVELS AMONG MALE AND FEMALE COLLEGIATE ATHLETES**  
*Chloe Hassett*  
*Department of Psychology*

Past research has indicated body dissatisfaction among athletes is problematic and may be linked with low self-esteem. The current study examined the differences in body image perception and self-esteem levels among male and female Division III collegiate athletes within a private university in the Midwest. The participants (41 females and 40 males) were given a demographics survey, a measure of self-esteem, and a measure of body dissatisfaction. Upon analysis, male athletes reported having higher levels of self-esteem than females. Males and females did not differ in their overall body dissatisfaction, however differences were found in certain types of body dissatisfaction. Males experienced more dissatisfaction in areas related to weight fluctuation and orientation with their appearance. Females experienced more dissatisfaction in areas related to specific body areas and self-evaluation of appearance. This emphasizes the necessity to continue research pertaining to both genders in regards to body image dissatisfaction.
A WAR OF IDEAS: VULNERABILITY ASSESSMENT OF THE AMERICAN DEMOCRATIC SYSTEM

Garrett Henderson
Department of Psychology

The 2016 U.S. Presidential Election sparked subsequent investigations into the presence and methods by which foreign actors may have attempted to influence voter behavior and turnout. The current study conducted an archival data analysis of the American National Election Studies (ANES) 2016 Presidential Election Time Series to probe whether social media is a feasible vector for political influence in U.S. elections. Analyses include the effects of social media use for political information gathering during the election on the absolute value of polarization toward candidates, and said candidate polarization score on voter turnout. Results will be analyzed and discussed. The influence of Twitter and Facebook in the 2016 election may demonstrate a need for critical analyses of identified influence operations (IO’s) and unidentified vectors of illicit political influence in the election. Future research may include analyses of social media post sentiment, vote decision, and potential regional influence of the IO’s in the election. America’s security and electoral integrity depend upon the electoral system’s ability to adapt and meet the challenge of globalized anonymous political influence.

QUALITY OF ANKLE TAPINGS WITH IMPACT ON SUPPORT AND PREFERENCE
Patricia Jones and Synnthia Faulkner
Department of Kinesiology

Ankle injuries are prevalent in all sports, and ankle taping is the most common way to help prevent or decrease the risk of further injuring the ankle joint. There are multiple techniques that people use to tape the ankle. The idea is to compare four different techniques to find what patients may prefer for performance. This was a single series study that consisted of four different sessions with four different tapings. Each subject had four sessions with randomized taping techniques. There was no control group. After the tapings, the subjects were tested on their joint position sense and run through a series of exercises. At the end, the subjects completed a survey for rating comfort and stability. The survey given to the subjects and the joint position sense errors proved that the different taping techniques were based on personal preference and not one ranked higher over another.

IS ETANERCEPT EFFECTIVE WHEN USED TO TREAT THE CHRONIC SYMPTOMS AFTER A STROKE OR TRAUMATIC BRAIN INJURY?
Chase Kimmerling and Dr. Richard S. Pottorf
Department of Physical Sciences and Engineering

There are two major kinds of stroke: ischemic and hemorrhagic. Ischemic stroke is the result of a clot or other obstruction that restricts blood flow to a certain part of the brain, while hemorrhagic stroke is the result of a ruptured vessel inside of the brain. This loss of blood from either form of stroke results in neuronal death, ultimately causing a loss of motor and/or neurological function. There is a ~ 6-month window where the patient has a chance for rapid recovery, but, after 3-6 months, neuron elasticity begins to rapidly decline. This study aims to determine if a new treatment of perispinal administration of etanercept (commonly known as Enbrel™) is effective at restoring neuronal function (≥6 months). A clinical study measuring the
effectiveness of Etanercept in a cohort of n=629 patients (t=6 months to t>>6 months) was used to determine the result of the study. The study was highly controversial, and potential biases were examined, including those such as the placebo effect, poor experimental design, author bias, and others. Ultimately, the results demonstrate that etanercept is a new and emerging method of regaining neurological and/or motor function for patients affected by stroke (t>.5 months).

FOOT POSTURE INDEX AND ANKLE INSTABILITY

Steven Koger and Phillip Boor III
Department of Kinesiology

Ankle instability is a condition that many people have developed in different severities through a variety of mechanisms. Foot posture varies between individuals, and those with poor foot posture could increase their risk of injuring their ankles. Since foot posture is such an important aspect of the foot and ankle, it is important for clinicians to know if it has an affect on such things as ankle instability. We sought to determine whether there is a correlation between Foot Posture Index scores and ankle instability scores based on the Cumberland Ankle Instability Tool. We had 30 subjects (18-23 yrs; 157-193 cm; 58-136 kg) from a division three university. We measured foot posture using the Foot Posture Index on both feet of each patient and level of ankle instability for both ankles using the Cumberland Ankle Instability Tool. The results of both tests will be statistically analyzed to determine if there is any correlation.

QUANTIFICATION OF DNA & EXTRACTION OF LACTOBACILLUS IN MICE FECAL MATTER

John Lee and Dr. Kimberly Lyle-Ippolito*
Department of Biology

Pre-existing studies have identified a distinct interaction between the brain and the digestive system. A number of studies have observed how the natural microbiota influence the central nervous system and homeostatic wellbeing of its host. For this study, fecal matter was collected from 12 laboratory mice fed normal mouse chow and kept under normal conditions in order to establish a baseline quantification and identification of normal flora species. DNA from the samples were isolated, quantified through absorption values, analyzed through polymerase chain reaction (PCR), and run on 1.5% gel electrophoresis with DNA from the positive controls Lactobacillus acidophilus, L. rhamnosus, and L. plantarum. Results suggest that there exists a significant level variability in the amount of DNA between individual mice. PCR analysis was inconclusive and further research is necessary.
DIFFERENT DICTIONARIES: PREDICTORS OF ERROR IN IDENTIFYING DOG BODY LANGUAGE
Sarah Lozano
Department of Psychology

Dog body language is often misperceived by dog owners, which may be a contributing factor to the number of dog bites per year, among other concerns. Humans and dogs have a different vernacular for communication: humans primarily through mutually understood verbal and nonverbal language, and dogs through vocalizations (barking and growling) and a large nonverbal dictionary. This study explored the relationship between gender, anthropomorphism, and the ability to correctly identify dog body language and signals. Results show that women anthropomorphize more than men, which is consistent with studies showing the effects of oxytocin on female tendencies toward anthropomorphism and the use of pet-directed speech. However, this does not predict how well a person identified canine body language. Further exploration must be done on the role of gender and anthropomorphism, particularly as human-animal interaction studies gain popularity.

TIME SPENT IN ATHLETIC TRAINING ROOM IN COMPARISON TO SLEEP ACCUMULATION AMONG MALE BASKETBALL PLAYERS
Kylie Martindale and Regan Sharp
Department of Kinesiology

The objective of this study was to determine the correlation between sleep accumulation and the time spent in the athletic training room. Eight male, collegiate basketball players completed an online document for their hours of sleep per night over four weeks. Participants who recorded at least 14 out of the 28 days were used for research purposes. Two researchers analyzed the hours of sleep and medical documentation for the participants. The medical documentation consisted of the injuries/treatments among the participants. In conclusion we determined that the hours of sleep and time spent in the training room do not have a significant correlation. For better results, researchers may benefit from a greater number of participants, including the use of multiple sports teams.

BUSINESSNESS AND LACK OF LEISURE TIME AS A STATUS SYMBOL
Eleanor McArdle
Falls School of Business

The objective of this current research was to investigate if college students and college-aged people perceived someone with a busy lifestyle (and who lacks leisure time) to have significantly more desirable traits than someone with a leisurely lifestyle; specifically, this research aimed to investigate status, human capital, and scarcity in a busy-versus-leisurely lifestyle. The results of this research indicated no significance in the difference between a busy and leisurely lifestyle pertaining to status but did indicate significance in the perception of human capital and scarcity between a busy and leisurely lifestyle. These perceptions of a busy lifestyle could impact people’s desires to appear busy, therefore impacting their conspicuous consumption of products that demonstrate this lifestyle. Shifting the desire from products that convey a luxurious lifestyle to
products that convey a busy lifestyle, this cultural phenomenon may be causing people to present themselves as if they do not have leisure time.

**ATTITUDE TOWARD PREMARITAL COUNSELING BASED ON RELIGIOSITY AND FAMILY-OF-ORIGIN**

Kaylee McDonald  
*Department of Psychology*

Premarital counseling is not widely emphasized in today’s society, as it is utilized by only a small percentage of the population (Stanley & Markman, 1997). Thus, the purpose of the current study was to identify characteristics — specifically, level of religiosity and perception of family-of-origin — which might correlate with willingness to participate in premarital counseling. As a part of a larger questionnaire, three scales were administered to undergraduate faculty, staff, and students at a small liberal arts university in the Midwest (n=171) to assess attitudes on religiosity, family-of-origin, and premarital counseling. It was found that the correlation between high religiosity and a positive attitude toward premarital counseling was significant (r = .42, p < 0.05), but the correlation between positive perception of family-of-origin and a positive attitude toward premarital counseling was not (r = .04, p = 0.29). These findings suggest that groups who are less religious need to be targeted in the creation of new premarital counseling programs, and that future research should be done regarding the type of family a person grew up in in relation to attitudes toward premarital counseling.

**BEYOND A BRUISE: WHEN ABUSE BECOMES EMOTIONAL BAGGAGE**

Kayla Medaris  
*Department of Psychology*

More research is needed to examine the negative consequences of abusive relationships. The present study examined the relationship between self-esteem and emotional abuse (EA) within an intimate partner relationship from the age of 18 to current day. Participants included 77 students, with 87% reporting experiencing EA of varying levels. Each participant completed a series of measures through an online questionnaire, including demographic questions, a measure of self-esteem, and levels of emotional abuse. Results indicated that there was not a significant correlation between current self-esteem and past EA, nor was there a difference in self-esteem levels among men and women who had experienced EA. The findings of the present study indicate a need to research other factors that may aid in improving self-esteem after experiencing EA.

**VENDORS AND VENUES BUSINESS PLAN PROJECT**

Faith A. Middleton  
*Falls School of Business*

Planning a wedding can be a highly stressful and time-consuming undertaking, and many engaged couples do not have the time to devote to the extensive search for vendors. Oftentimes when searching for vendors, many emails or calls must be exchanged, meetings may be arranged, and dates must be confirmed across the board for smooth sailing on the wedding day. With convenient technology available, there is no reason that
this arduous process must remain as such. This business plan addresses the problem of the extensive and
complicated wedding planning process. The business concept is a strategically run platform that allows
engaged couples and wedding planners to search for vendors and venues for their wedding day based on
several different filters, including date and price. Research was completed in the areas of competitive analysis,
market analysis, and financial analysis. Through the business planning process, I conducted a feasibility study,
planned out management structure, completed financial projections, and plotted out a trajectory for scaling.
The scope of the project includes a complete business plan, marketing strategy, and a presentation.

**DAUGHTERS’ PERCEPTION OF MATERNAL BODY IMAGE**

Colleen Murray  
*Department of Psychology*

The purpose of the current study was to investigate the relationship in females between body-esteem and
perception of maternal body image. Participants (n = 74) were asked to complete a survey that included the
Body-Esteem Scale Revised (Frost, Franzoi, Oswald, & Shields, 2017) and the Maternal Attitudes toward
Physical Appearance (Cash, 2000; Rieves & Cash, 1996). Demographic questions also were asked. It was
hypothesized that there would be a negative correlation between body-esteem and maternal appearance
orientation, a negative correlation between body-esteem and maternal overweight preoccupation, and a
positive correlation between body-esteem and maternal appearance evaluation. Data will be analyzed and
discussed.

**EDUCATION AND INCOME INEQUALITY IN SUB-SAHARAN AFRICA**

Oluwatosin Okeniyi and Hyeon Joon Shin*  
*Falls School of Business*

Income inequality is proved to have a negative impact on people’s standard of living. The question about the
main causes of income inequality is at the core of the debate on income inequality. This study considers
education as a determinant of income inequality, in particular, in Sub-Saharan Africa. Using a panel data set of
GDP per capita, education, and income inequality from 32 Sub-Saharan African countries, we empirically
examine the relationship between education and income inequality and find that a higher level of income
inequality is significantly associated with a higher level of education inequality in the region. In addition, our
empirical findings support the validity of the Kuznets hypothesis in Sub-Saharan Africa, which explains why
income inequality becomes more severe as GDP per capita rises in the region.

**BECOMING HISTORY: LIFE IN ANCIENT CIVILIZATIONS**

An Exhibit of the Jeeninga Collection  
Hannah Overstreet  
*Department of History and Political Science*

Exhibition development processes used by today’s museums emphasize relevance and visitor interaction. The
Field Museum’s process is a top-down approach to exhibits and is useful for creating exhibits based on
existing collections, such as the Gustav Jeeninga Museum of Biblical and Near Eastern Studies. Using the
exhibit software Omeka, this project aims to interpret the collection using the Field Museum exhibit development process. In doing so, it will establish a model for future digital exhibits based on the collection. *Becoming History: Life in Ancient Civilizations* highlights the Bronze Age collections of the Jeeninga Museum. It builds upon the existing archaeological research about the artifacts to discuss life in the ancient Near East and its relevance for visitors today.

**NEGATIVE ATTITUDES SURROUNDING OLDER ADULTS WITH SEVERE MENTAL ILLNESS**

Sarah Repp  
*Department of Psychology*

Given the increasing number within the aging population, it is particularly important to consider issues they face, particularly among those who are most vulnerable. The current study focused on attitudes regarding older adults with severe mental illness, namely schizophrenia. I hypothesized that there would be an interaction between health status and age, with greatest stigma toward older adults with mental illness. A total of two hundred participants were randomly assigned to one of four different vignettes, differing only in age and mental health status of the hypothetical person in the vignette. The participants were then all given a measure of mental illness stigma. Contrary to the hypothesis, results showed that there was no significant difference in negative attitudes based on age. Post hoc analyses indicated there was a significant difference in negative attitudes based on mental health, with more negative attitudes toward people with mental illness. Looking ahead, the researcher plans to expand this study to encompass implicit and explicit stigma and how they compare when pertaining to older adults with mental illness.

**SELF-EFFICACY AND COPING SKILLS IN PEOPLE WITH PARENTAL CHRONIC ILLNESS**

Delaney Roegner  
*Department of Psychology*

Chronic illness has a high prevalence in the United States, impacting around 40% of adults (Adams, Kirzinger, & Martinez, 2013). Having a parent with a chronic illness may impact a person's coping self-efficacy and well-being (Murphy & Marelich, 2008). The current study examined self-efficacy and coping skills in people who have a parent with a chronic illness and those without parental chronic illness. The General Self-Efficacy Scale (Schwarzer & Jerusalem, 1995) and the Brief COPE Inventory (Carver, 1997), along with a brief demographic questionnaire, were used in assessment. Participants (n = 110) were recruited from a liberal arts university in the Midwest. Findings indicated lower levels of coping skills for those with parental chronic illness and a positive correlation between self-efficacy and coping skills. These findings support that having parental chronic illness impacts a person. More research on the topic is needed.
EFFECT OF PROPRIOCEPTION TRAINING ON UPPER-EXTREMITY POWER
Rebecca Roell
Department of Kinesiology

The objective of this study is to explore the effect of proprioception training on the upper extremity power in overhead collegiate athletes. Participants in the study were nine National Collegiate Athletic Association Division III collegiate overhead athletes. The post-exercise testing numbers did not show a statistical significant increase in power. Further research would be needed to determine if proprioception exercises can benefit power in the upper extremity.

RETURN ON INVESTMENT OF PERSONALITY ASSESSMENT USE IN THE WORKPLACE
Alle Roley
Falls School of Business

Personality assessments are increasingly being used in the workplace to aid in both the hiring and onboarding processes of new employees. The effectiveness of this practice is often questioned, as some measures of personality have proven to be more valid than others. Although personality assessment use in the workplace has just recently appeared at the forefront as an issue, they have been utilized throughout the history of modern industry. Over time, The Big 5 Personality Traits have arisen as the most valid, practical, all-encompassing explanation of one’s personality. My research aims to demonstrate that utilizing personality assessments when hiring, specifically to measure The Big 5 Personality Traits, helps one create the most effective workforce possible. This has both a direct and indirect return on investment. Personality can predict how effective an employee will be in a specific work environment. Additionally, employees whose personalities are compatible with their fellow employees, as well as with the overall company culture, are likely to have higher job satisfaction. These elements work together to lower absenteeism and turnover rates, increase life satisfaction and heighten productivity levels. All of these outcomes can result in a visible return on investment.

¿CÓMO SE DICE…?: A SPANISH PHONETICS STUDY GUIDE APP
Lizette Romero and Ally Wallace
Department of Computer Science

Our client, Professor Carrie Clay, wanted a study tool for her students that would be customized specifically for her upper-level Spanish language class. After presenting this idea to the software engineering class at Anderson University, it was selected as the group project for fall semester. The software engineering class worked on the project using the Agile software development method. The team of five people conducted two-week sprints and participated in weekly standups, for a total of ten class weeks. Client input was regularly solicited and implemented. Work on the project continued into Spring semester by the authors. The final product contains study help for students, including vocabulary, allophones, and a speaking and listening portion. This study tool is expected to be used by the SPAN 3140 Spanish Phonetics class this fall semester.
CONVERTING “GOD’S TROMBONES”:
AN ANALYSIS OF JAMES WELDON JOHNSON’S SERMON POEMS

Faith Sayles
Department of English, Department of Music, Theatre, and Dance, Honors Program

James Weldon Johnson was a poet, lawyer, teacher, and civil rights activist, among other things. One of his greatest works is *God’s Trombones: Seven Negro Sermons in Verse*. A black preacher’s musical voice and intonation inspired Johnson to write the poems included in *God’s Trombones*. The sermons Johnson converted into poems are all common sermons that are taught in most churches: Noah and the ark, the prodigal son, and the crucifixion. My study began with analyzing three of Johnson’s poems for intent, voice, and persona. After analyzing the poems, I explored how to convert these poems into dances. My three dances (“And God Said,” “A Welcome Friend,” and “When I Think How Jesus Died”) were inspired by Johnson’s poems “The Creation,” “Go Down Death,” and “The Crucifixion.” The dances were performed by AU dancers.

RELIGIOUS IMAGES IN THE 4TH CENTURY

Ryan Schwartz
School of Theology and Christian Ministry

This paper discusses how religious images acted as a distraction from worship to the 4th century CE Christian church. The first section attempts to identify what worship was considered to be in the 4th century church to act as a standard. The following sections show how images were used for political gain by influential figures such as Constantine and how having religious images was an act of idolatry according to what they thought was idolatry. Hopefully this paper gives a better understanding of how images functioned in the early church.

THE RELATIONSHIPS BETWEEN GOD-LOVE, SELF-LOVE, AND SHAME-PRONENESS

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A growing body of literature has found shame to be consistently linked to negative and problematic outcomes. Conversely, there also is literature demonstrating that love mitigates these outcomes, or produces the opposite effect of shame. Despite this, there is not much literature which explicitly examines love and shame simultaneously. Furthermore, while previous literature has examined the various qualities of love, there is little literature explicitly examining where individuals derive love from. The purposes of this present study, therefore, were to examine the relationship between love and shame, and to examine feelings of love from distinct sources (namely, love from the self and love from God). These three variables — God-love, self-love, and shame-proneness — were examined using both correlation and path analysis methodologies. God-love was found to both correlate with, and predict, self-love. Similarly, self-love was found to correlate with, and predict, shame-proneness. It is recommended that future research be done examining the relationships of loves, based on source, with shame and with love from other sources.
EFFECTS OF DYNAMIC STRETCHING ON SPEED AND AGILITY AND VERTICAL JUMP HEIGHT

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Throughout the span of athletic history, athletes have used many types of warm-ups and stretching. The most common of these has been the use of static stretching. There is also a method called ballistic stretching. More recent studies show that dynamic stretching may be more efficient. Dynamic stretching is an active stretching that makes the person use their muscles in a sport specific manner. The participants of the study included nine healthy, physically active Anderson University students (age = 20 +/- 2 years). Test subjects were measured on the 40-yard sprint, agility ladders, T-test, 25-yard shuttle run, and vertical jump height. The effect dynamic stretching had on 40-yard dash (.010) and agility ladders .009) were statistically significant. The effect that dynamic stretching had on T-test (.723), 25-yard shuttle (.095), and vertical jump (.781) were deemed statistically insignificant.

SELF-EFFICACY AND ACADEMIC ACHIEVEMENT OF SPANISH LANGUAGE LEARNERS

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Past research indicates that students who were proficient and achieved in language learning better acquired a second language. Likewise, language achievement has been related with overall academic achievement and academic self-efficacy (Hoigard, Kovač, Øverby, & Haugen 2015; Multon, Brown & Lent, 1991; Zimmerman, 1995). The purpose of the current study was to analyze these variables in students who learn Spanish as a second language. Participants (n = 118) reported their GPA and were surveyed using the Self-Efficacy Questionnaire (Gaumer et al., 2016) and the Bilingual Language Profile (Birdsong, Gertken & Amengual, 2012). Pearson correlations showed that students who reported higher academic achievement also reported higher academic self-efficacy (r = .22, p < .01). Results also showed that academic self-efficacy was positively correlated with Spanish proficiency (r = .27, p < .01). Future research is needed to examine how professors can impact students’ academic achievement by investing in students’ academic self-efficacy. Research also may find how Spanish proficiency may be influenced by what a student believes they can accomplish academically.

CULTURAL ADJUSTMENT: RELATIONSHIP BETWEEN STUDY ABROAD, SELF-ESTEEM, AND PSYCHOLOGICAL RESILIENCE

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The transition into college as well as a transition into a new country and culture are stressful factors alone, and even more so in combination. The purpose of this study was to examine the relationship between study abroad, self-esteem, and psychological resilience. The participants (n = 70), 28 who had studied abroad and 40 who had not, were all from a small liberal arts college in the Midwest. Participants were asked to fill out an online survey with demographic questions as well as questions from the Brief Resilience Scale (Smith et al., 2008) and the Rosenberg Self-Esteem Scale (Rosenberg, 1965). It was hypothesized that students who had
studied abroad would have significantly higher levels of self-esteem and psychological resilience than those students who had not studied abroad. Data will be analyzed and results will be discussed.

AUTOMATION: ECONOMIC BOOM
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Automation has become a major cause of concern in the last century. Fears that robots will take over jobs and leave many unemployed have become prevalent in people’s minds. While it is true that automation has resulted in the loss of some jobs, it also offers numerous benefits. Many of the jobs that robots have taken were dangerous for humans to perform. The gains in production from automation have made many products less expensive and thereby have helped raise the standard of living. Robots have also increased quality control and have reduced the number of mistakes made in the manufacturing processes. New areas of employment have also been created thanks to automation adding new jobs to the economy. Many of these new jobs offer better pay and require mental engagement instead of mindless repetition. The design and programming of these new industrial machines are examples of these occupations. The development of automation has led some companies to bring their factories back to the United States and employ people in new jobs, such as the setup and upkeep of these devices. New areas of the economy are quickly being automated through the use of artificial intelligence and machine learning. In order to maximize the benefits of automation while limiting the drawbacks, both new and displaced workers must be trained and educated for the jobs of the future. Doing this will ensure that the ongoing development of machines and artificial intelligence continues to benefit humanity.

THE RELATIONSHIP BETWEEN EXPOSURE TO INTIMATE PARTNER VIOLENCE AS A CHILD AND ADULT ROMANTIC RELATIONSHIP HEALTH
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The purpose of the current research was to determine if exposure to intimate partner violence as a child is a significant predictor of becoming a victim or perpetrator of intimate partner violence as an adult. Previous research on the topic found high levels of victimization for females exposed to intimate partner violence as children and high levels of perpetration for males. Participants in the current study completed measures of exposure to intimate partner violence, as well as their own perpetration and victimization. It was found that higher levels of exposure to intimate partner violence as a child significantly predicted higher levels of both perpetration and victimization, as hypothesized. It also was found that perpetration scores were significantly and positively correlated with victimization scores. The findings of the current study indicate a need for resources for children exposed to intimate partner violence at home.
AMERICAN GUN VIOLENCE: ANALYSIS OF ISSUES AND SOLUTIONS

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Gun violence claims the lives of about 33,000 Americans on a yearly basis. In addition to horrific mass shootings that dominate headlines, U.S. citizens are victims of far more suicides, homicides, and accidents than other developed nations. Discussion of potential solutions or methods of reduction is stymied by intense controversy, and polarization largely based on partisan affiliation has prevented research and action. In addition to exploring the prevailing political context surrounding passage of gun legislation, this paper analyzes solutions to reduce gun deaths including, but not limited to, stronger background checks, mandatory reporting of firearms as stolen, barring ownership to certain groups such as domestic abusers, funding for suicide awareness programs, safe storage laws, application of “smart gun” technology, and more.

MATERNAL HEALTH AND PREGNANCY IN NICARAGUA

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Known as the poorest country in Central America, Nicaragua’s economy suffers from extreme underemployment and poverty. High rates for maternal morbidity and mortality exist, influencing the top hospital admissions in Nicaragua relating to maternal health problems. The leading causes of death for women include postpartum hemorrhage, hypertension during pregnancy, and sepsis. A review of literature indicates there are many factors contributing to the health of mothers in Nicaragua, such as a lack of family planning, lack of prenatal care, lack of access to emergency obstetric services, and high burden of chronic malnutrition and multiparity. The aim of this qualitative, non-experimental study aims to examine current practices of pregnant women, accessibility of health care services and barriers to receiving prenatal care. Health care workers were interviewed using a questionnaire about circumstances impacting maternal health. Observations were also conducted in the health care setting to see maternal health issues and attitudes toward pregnancy and childbirth health practices. The results indicate a need for further education regarding the importance of prenatal care in addition to a need for supportive measures for mothers with geographical barriers to have access to health care workers and facilities.

THE EFFECT GRADED MOTOR IMAGERY HAS ON FUNCTIONAL ANKLE INSTABILITY

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The brain has long been thought of as a plastic organ. The understanding of pain fell into the same category. Within the last decade, medical professionals have decided to take a closer look into why exactly pain occurs, how it gets worse or better, and where it comes from. Coupled with new technology, interest, and ineffectiveness of established rehabilitation programs for neurological disorders, researchers have begun to look at alternate measures designed to mix, or redirect, the pain signals that are sent to the brain. This resulted in the creation of graded motor imagery therapy, or GMI. GMI is a combination of mirror therapy, explicit motor imagery, and left/right discrimination used to improve symptoms in patients with chronic pain, stroke.
survivors, alleviate phantom limb pain, and improve proprioceptive movements. My research goal was to determine if GMI techniques improved functional ankle instability. Results from the study showed a statistically significant improvement in left/right discrimination accuracy scores \(p < 0.05\) scored through Recognise (Moseley, 2012) as well as a statistically significant improvement in both the activities of daily living \(p = 0.09\) and sports subscale \(p = 0.003\) of the Foot and Ankle Ability Measure (FAAM) questionnaire. It can be concluded that GMI does in fact improve functional ankle instability. Further studies are encouraged.