44th Annual

Student Research and Creativity Conference

April 6, 2018

EASTERN NEW MEXICO UNIVERSITY

Student Success
that's what it's all about!

Eastern New Mexico University

Student Research and Creativity Conference

2018

Conference Proceedings

Portales, New Mexico
April 2018

About the Student Research and Creativity Conference

Eastern New Mexico University's annual Student Research and Creativity Conference is designed to showcase research and creative projects being done by undergraduate and graduate students. Students present their work in professional poster/visual art display and paper/performance sessions and are judged and critiqued by an inter-disciplinary group of faculty members. Through this process students can see how their work compares with that of other students, get feedback on their work and presentations, and practice their professional presentation skills. Students, faculty, staff and community members are invited to attend the presentations. Cash awards are presented at the evening banquet.

The Eastern New Mexico University Student Research Conference began in 1974 with a grant from the ENMU chapter of Sigma Xi, the Scientific Research Society. The first director of the conference was Dr. Ram Sharma, who held the position for 25 years. While the conference was originally for students in the sciences, later on students from all academic disciplines were eligible and encouraged to participate. A poster session was added to the conference in 2011. Fine art display and performance sessions were added for the first time in 2018, broadening the scope of the conference to include students in all majors..For the 2018 conference, 195 students submitted 238 entries representing 22 different academic disciplines.

For More Information

www.enmu.edu/srcc
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2017-2018

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Sarah Wall
Linda Weems
Dwayne Wilkerson

2018 Conference Schedule
Wednesday, April 6

9:00 - 11:00 a.m.	Poster session in the Campus Union Building Ballroom
9:00 - 11:00 a.m.	Visual art display session in the Campus Union Building Sandia Room
1:00 - 3:30 p.m.	Paper and performance sessions in rooms across campus
6:30 p.m.	Banquet in the Campus Union Building Ballroom

2018 Conference Banquet Speakers

Dr. David Hemley, Professor of Finance
Introductions

Dr. Jeffery Elwell, President
Opening Remarks

Ms. Jessica Gerlach, Assistant Professor of Art

USING OUR HANDS: What hand-setting type can teach design students about typography

The letterpress printing process is one of the oldest typographic printing methods for putting words on paper. The process originated in about 1450 when Johann Gutenberg introduced movable type in Europe and has remained virtually unchanged to this day. Over the past six years, I have been incorporating the use of letterpress into my Typography I and Typography II courses.

The students are introduced to the process of hand-setting metal and wood type and hand-printing using tabletop proofing presses. Through the process of hand-setting type, students gain a thorough understanding of the anatomy of type, scale, kerning, tracking, line spacing, and alignment as it is used in letters, words and paragraphs. They make connections between the terminologies of typography as it relates to the origins of movable type and typesetting. Working with manual typesetting, students learn to use problem-solving skills that are often overlooked in digital publications.

Dr. Suzanne Swift, Professor of Communicative Disorders
Presentation of Awards

2018 Conference Award Winners

Poster/Visual Art Display Presentations

Erick Martinez and Nathan Shelley
Advisor: Ms. Jenna Domeischel
Korry Waldon
Advisor: Dr. Ivana Mali
Shannon Jackson
Advisor: Dr. Matthew Barlow
Halley Paris
Advisor: Dr. Suzanne Swift
Lauren Salazar
Advisor: Mr. Dwayne Wilkerson
Raveena Bains
Advisor: Ms. Laura Bucknell
Tiffany Cheung
Advisor: Dr. Suzanne Swift
Lisa Reed
Advisor: Dr. Karen Copple
Hannah Floyd
Advisor: Dr. Rachel Lingnau
Davi Mondragon
Advisor: Dr. Hamid Allamehzadeh
Karen Gutierrez and Adrian Munoz
Advisor: Dr. Hamid Allamehzadeh
John Dermer
Advisor: Ms. Amanda Bonnie
Mary Trujillo and Troy Sanders
Advisor: Dr. Leslie Gill
Darien Sturtevant and Michayla Ainsworth
Advisor: Dr. Gary Bond
Angela Sanchez
Advisor: Ms. Maureen Muhlbauer

Paper/Performance Presentations

Konsuelo Vaipan
Advisor: Dr. Darron Smith
Michael Merritt
Advisor: Dr. John Montgomery
Leslie Sanford
Advisor: Dr. Manuel Varela
Andrew Letter
Advisor: Dr. Ivana Mali
David Rogers
Advisor: Dr. Darrell Roe
Javier Villela
Advisor: Dr. David Hemley
Cinthya Torres
Advisor: Dr. Karen Copple
Jamie Webb
Advisor: Dr. Adrienne Bratcher
Karah Tooley
Advisor: Mr. Dwayne Wilkerson
Jamie Gonnerman
Advisor: Dr. Adrienne Bratcher
Tessa Schmidt
Advisor: Dr. Suzanne Swift
Hannah Floyd
Advisor: Dr. Rachel Lingnau
Raveena Bains
Advisor: Ms. Laura Bucknell
Anna George
Advisor: Dr. David Sweeten
Alisa Boswell-Gore
Advisor: Dr. Darrell Roe
Edward Newell
Advisor: Dr. Thomas Brown
Joseph Miller
Advisor: Mr. Jonathan Barr
Jennifer Martinez
Advisor: Dr. Daniel Acheson-Brown
Javier Lopez and Zane Burden
Advisor: Mr. Kenneth Miller
Dustyn Crane and Stephen Yung
Advisor: Mr. Neil Rutland
Victoria Pallas and Troy Hardy
Advisor: Dr. Gary Bond
Catalina Arana-Mendoza
Advisor: Ms. Gloria Jurado

Poster/Visual Art Display Presentation Abstracts

Poster/Display Presentation Group 1

An Experimental Thermal Inquiry Into Gallina Conical Based Ceramics

Presenter: Aaron Whaley
Project Advisor: Dr. John Montgomery

Ceramics are a pivotal resource for study by archaeologists in the Southwestern United States. They can be used to establish chronologies and to identify cultural affiliations. Most of the attention in the study of prehistoric ceramics is devoted to decorated wares. This does not diminish the importance of the study of undercoated utility wares. The Gallina are a group that is rarely studied by archaeologists in the Southwest, and their conical based utility wares are seldom a center point for recent research. This case study will examine the function of the shape of Gallina utility wares and its relationship to thermal conductivity (heat efficiency). An experimental comparative analysis of Gallina conical based utility wares and Chacoan rounded bottom utility wares will be conducted to determine if/what the effect vessel shape has on thermal efficiency.

Projectile Point Variability at Fresnal Rock Shelter

Presenter: Donald Purdon
Project Advisor: John Montgomery

Current typological classifications of stone tool projectile points have been discussed and argued about for years. Many of these typological traditions were made decades ago and focused on the particular region where they were first found and were based on the opinions of the archaeologist who created them. The purpose of this thesis research is to contribute to this ongoing discussion, and to identify and document the morphometric variation of projectile points that are present in the Fresnal Rock Shelter assemblage. The named types within the Fresnal Rock Shelter assemblage will be tested against traditional and geometric morphometric attributes to see if the points have consistent form and variation.

3D Scanning of Artifacts from Black Water Draw Site

Presenters: Deidre Howard, Oliver Williams
Project Advisor: Dr. Heather Smith

New developments in 3D scanning and interactive online websites is providing new avenues of sharing information with researchers and the public about the human past. The ENMU Anthropology department created our team of Anthropology students to scan 13,000-year-old stone projectile points from the Blackwater Draw Clovis site and create an online museum exhibit and digitally-curated database. The artifacts rotate clockwise in 18° intervals, each rotation receiving 35 different light patterns from a projector, which are scanned and recorded by a live action camera. Data recorded by the camera are digitally aligned using 3D-scanning software to create a virtual model of the object. The 3D models will be used in various types of artifact analysis and demonstrate how modern technology assists the field of archaeology. Making the results from this project accessible online will allow people, anywhere, to study these artifacts and share information about ancient peoples in Eastern New Mexico.

Augmented Reality as a Teaching Tool: Running Topographic Simulations in the Real Time.

Presenters: Erick Martinez, Nathan Shelley
Project Advisor: Ms. Jenna Domeischel
Award Winner

The development of the Augmented Reality Sandbox (ARS) was completed at UC Davis by a group of researchers that includes: UC Davis' W.M. Keck Center for Active Visualization in the Earth Sciences, UC Davis Tahoe Environmental Research Center, Lawrence Hall of Science, and ECHO Lake Aquarium and Science Center. The setup is powered by a Microsoft Kinect 3D camera, simulation software, and a projector. Once the setup was complete the ARS can display real-time topographic models that can be shaped using sand. Applications of the ARS include allowing students to create real time topographic models, explore watersheds, and provide real time visualization of contour lines and other geologic features. A version of the ARS is setup at the Blackwater Draw Museum. The goal of our research is to explore avenues in which the ARS can be used a teaching tools for students throughout Eastern New Mexico University.

Revitalizing Collections: The Charlie Parks Collection

Presenter: Stephen Sanchez
Project Advisor: Dr. John Montgomery

The Charlie Parks collection was donated by Calvin Smith to the Blackwater Draw Museum at ENMU in 2017. The collection contains ceramic sherds, projectile points, lithic debitage, organic material, and historic artifacts. Due to a lack of provenience information for many of the artifacts, a complete inventory and assessment was necessary in order to prepare the collection for long-term research use. The accession process is a crucial step of collections management and museum work overall because it enables public outreach, which attracts visitors and student scholars, and provides cultural experiences to the general public. Through a semester of work, best practices for collections management were followed and diverse areas of research potential identified. Areas of special interest include Paleoindian projectile point collections, temporally diverse potsherd assemblages, and several newly identified items unique to the Blackwater Draw collections.

The Role of Educational Institutions in the Creation and Retention of Individual Attitudes of Water Use and Conservation

Presenter: Justin Falls
Project Advisor: Dr. Erik Stanley

Attitudes about the use and conservation of water have and always will be prevalent globally, especially in times of such extreme climate change. A careful and complete understanding of both topics is especially salient in arid regions like the American Southwest, specifically Eastern New Mexico. Because schools are primary hubs of learning and information, the author hypothesizes that that the attitudes about the use and conservation of water of these institutions, both primary and secondary, will be very influential in the formation and retention of conceptions about water use and conservation at the individual level. In order to test and observe this correlation, the author will employ social research methods including: participant observation, one on one interviews, and surveys. Additionally, a literature review will also be employed for background and institutional information. Individual and institutional data will then be collected and analyzed in order to create extrapolations about attitudes on water use and conservation at individual, community, and local levels in Portales and Clovis. The data and understanding acquired from this study could be used to better understand how attitudes about water are taught and perpetuated in the rest of

New Mexico and other arid states. Additionally, further studies could be created to test other concepts that could be correlated with attitudes about water use and conservation.

Water Crisis in Eastern New Mexico

Presenter: Logan Johnson
Project Advisor: Dr. Erik Stanley

Eastern New Mexico is reliant on the Ogallala Aquifer, and is located on the uphill of the aquifer, (further south) where water shortages are starting to occur. Clovis and Portales in particular, are identified as facing water crisis if a solution is not found. This study will explore the problem from the perspective of the people and industries effected and the realistic potential of proposed solutions along with what, if any, impact conservation efforts might have.+

Faced with water crisis, the Clovis and Portales areas have both held discussions and hosted studies to determine options for providing water to residents and industries in the region. Possible solutions currently being examined in the Clovis and Portales areas include the creation of a pipeline to bring water to the area from Ute Lake as well as conservation strategies to try and slow depletion of the aquifer. However, with predictions of a few decades between the discussions and total water depletion, this study asks if enough is being done and if it will be done in time.

To study the implications, interviews will be conducted with people in the region who have begun to experience water decline. These interviews will focus on the type of water loss they have experienced and the effect it has had on their. Those interviews will be combined with a survey of current literature and research on the issue to understand the full scope of the problem and how realistic proposed solutions are toward addressing the problem.

Poster/Display Presentation Group 2

The Power of Water-Absorbent Crystals: Effects on Seed Germination

Presenter: Selena Sapien-Fierro
Project Advisor: Dr. Lesley Judd

Agriculture in southwestern U.S. faces many issues, particularly drought and water conservation. As a way to aid greenhouses around eastern New Mexico,

we have investigated the addition of water-absorbent crystals at different levels with potting mix to see if irrigation could be reduced for germinating seeds and seedlings. We found that the potting mix with or without the water-absorbent crystal had no effect on germination rate or growth of seedlings after germination when watered every other day. Watering less than this significantly decreased plant germination for cosmos and black-eyed Susan plant species.

How antibiotics affect the activity and population of nitrogen-fixing soil bacteria Rhizobium Leguminosarum

Presenters: Fernando Garcia, Abby McCarty
Project Advisor: Dr. Youngkoo Cho

New Mexico is known for corn, wheat, and peanut production along with livestock raising. Animal manures have been used for centuries to supply nutrients for crop growth, however livestock are heavily treated with antibiotics to control from bacterial infections. The stomach of livestock including cattle may not digest or break all antibiotics when it is mixed with feed. These undigested antibiotics go the cropping field through feces or urine and affects the soil microbes and its population. Soil microbes are essential for conducting biochemical reactions releasing soil nutrients available to plants, nitrogen fixation, form soil aggregates and helps in water infiltration. In the research planned to conduct at greenhouse of ENMU, commonly used antibiotics as tetracycline HCL, Streptomycin sulfate, and B & V organic antibiotics are be used at different concentrations of 1, 2.5, and 5 mg L-1 to study the change in population of nitrogen fixing bacteria, Rhizobium leguminosarum in soybean grown pots. R. leguminosarum are be inoculated in soybean (Glycine max) seeds by using bacterial bath over-night just before sowing. Growth parameters of soybean as number of days for first emergence of seedling, number of root nodules, and height of seedling will be studied. Also, different soil physical and chemical properties as soil pH, soil temperature, and soil water content will be studied. We have hypothesized that there will be significant differences in the bacterial population caused by different concentrations of antibiotics applied in the soil. Some results will be presented at the conference.

Analysis of Nutrient Consumption in the Outdoor Algal Turf Scrubber System

Presenter: Symone Dawson
Project Advisor: Dr. Juchao Yan

For my experiment, I analyzed nutrient consumption levels (specifically nitrogen and phosphorus levels) affected by an outdoor Algal Turf Scrubber system. The nutrient consumption levels were largely affected by Algal mass and harvest times throughout the year.

Indoor cultivation of algae using dairy wastewater

Presenters: Jayamini Mudugamuwa Hewage, Dhanush Amarasekara
Project Advisor: Dr. Juchao Yan

Microalgae has been used in research for biodiesel production for many years. The reason for choosing microalgae beside other lipid containing sources is because algae takes up carbon dioxide, a greenhouse gas and can be cultivated in any harsh condition. In addition to algae been used as a possible biofuel source, it is also being used as a potential food source for humans and animals, a major ingredient in cosmetic industry and in pharmaceutical industry. Currently another issue that world faces is disposing of dairy and agricultural wastewater. This research bases on cultivating algae in untreated dairy wastewater. This wastewater comes from a farm in Portales near the university and it contain nutrients which facilitate the growth of algae. Using indoor cultivation in a photobioreactor, giving artificial light conditions, the growth of algae in wastewater is monitored to obtain high biomass concentration. The growth rate and biomass concentration are obtained from uv-vis spectroscopy by determining the optical density values at a specific wavelength. Use of the dairy wastewater was not directly applied for the growth but standard medium was used to dilute it to a usable range. Procedures were followed to make the wastewater suitable for cultivation algae. The wastewater before and after cultivation is examined to obtain the nutrient uptake of algae for nitrogen, phosphorus and potassium. This research can be followed as future work to obtain lipids from the algae cultivated, using wastewater in the optimum conditions found.

Using stable carbon and nitrogen isotopes to quantify diets of catfish in nursery ponds

Presenter: Jeremiah Olivas
Collaborator: Charles Mischke
Project Advisor: Dr. Jesse Filbrun

Channel Catfish (Ictalurus punctatus) and hybrid catfish (Channel Catfish × Blue Catfish, I. furcatus) have the highest production value of all food fish cultured in the United States. Juveniles in nursery ponds readily eat live

zooplankton and ultimately transition to eating commercial feeds. To improve best feeding practices, an experiment was performed to quantify zooplankton versus feed contributions to fish growth. Nine earthen ponds (0.04 ha) were stocked with swim-up fry at 250,000 fry/ha. Treatments consisted of stocking Channel Catfish (n = 4 ponds) or hybrid catfish (n = 5 ponds). All ponds contained live zooplankton and received feed continuously from the time of fish stocking. Fish, zooplankton, and feed were collected weekly from each pond, frozen, then dried and ground into fine powders. About half of the samples have been measured for stable C and N isotopes. I am currently packing the remaining samples for stable isotope measurements. In the meantime, I will be using the preliminary isotope and fish growth data to estimate the % contribution of C and N from each food source (i.e., zooplankton, feed) to fish muscle tissue growth. Results from this study will be used to identify when the fish transition from eating zooplankton to feed, allowing managers to avoid early wasteful additions of feeds.

Dietary preferences in two native bufonid species, Bufo woodhousii and Bufo cognatus

Presenter: Matthew Creswell
Project Advisor: Dr. Ivana Mali

Sound husbandry strategies are required to maintain a healthy condition for animals in captivity, especially in zoo settings or for captive breeding programs. Retaining a suitable habitat is necessary; however, providing appropriate diets and nutrition cannot be overlooked. Eastern New Mexico University is known for supplying knowledge on local biodiversity through education at the Gennaro Natural History Live Exhibit. This exhibition houses a wide variety of species, including the native bufonid toads. To better our ability to provide a proper care for the animals, we aimed to identify the dietary preference of two species of toads: Bufo woodhousii and Bufo cognatus. In the summer 2016, we collected a total of 33 specimens (23 B. woodhousii, and 10 B. cognatus) in Roosevelt and Curry County. Each specimen was kept in a separate terrarium for a week and fed daily with an assortment of food items: mealworms, crickets, and earthworms. The criteria for evaluating preferences in diets were the time taken to consume the given amount of food and the amount of food left over after a specific time. We found that the B. woodhousii showed a preference toward an active prey item (crickets), while B. cognatus did not show any particular preference. With this finding, we will be able to provide a more appropriate diet for each species of the native bufonid toads in the museum.

Rio Grande cooter (Pseudemys gorzugi) natural and life history observations in New Mexico

Presenter: Korry Waldon
Collaborators: Thanchira Suriyamongkol, Andrew Letter
Project Advisor: Dr. Ivana Mali
Award Winner

The Rio Grande cooter (Pseudemys gorzugi) is a relatively large riverine turtle native to the Lower Rio Grande River Basin and its tributaries. The species is listed as threatened in Mexico and New Mexico and a Species of Greatest Conservation Need in Texas, concurrent to its review for federal listing by the United States Fish and Wildlife Service. Human modification of habitats and ongoing detrimental population-level effects of historic commercial harvest represent potential threats to the species. Unfortunately, very little is known about this turtle's biology and there is an increasing need for information to further existing conservation measures. In 2016, we began multi-year surveys of P. gorzugi in along the Black River, New Mexico with the overall goal of understanding the species demography and life history. Here, we summarize short-term and single time observations during our methodical surveys in 2016 and 2017. Specifically, we report our findings on the maximum clutch size, annual growth rates, and reticulate melanism in males. We also point out additional threats due to recreational practices (i.e., fishing). Our findings reveal previously un-reported observations such as fish hook ingestion, which is relevant to evaluating conservation measures.

Detecting the persistance of Soft Ticks in abandoned prairie dog towns in eastern New Mexico

Presenter: Kaniya Wandoval
Project Advisor: Dr. Ivana Mali

Soft ticks (Family Argasidae) are a cryptic and long-lived group of arachnids that differ from hard ticks in many structural and biological characteristics. They are restricted to sheltered microhabitats and harvest blood meals quickly. This makes soft ticks particularly hard to monitor and studying their ecology remains a challenge. Soft ticks represent an import human health concern as they are known vectors of bacterial pathogen that causes relapsing fever in humans. For these reasons, we focused on soft tick surveys among prairie dog towns in eastern New Mexico to learn more about their ecology and distribution. In the fall of 2016, we discovered soft ticks in a recently abandoned

prairie dog town in Roosevelt County, which represents the first time that soft ticks were discovered directly in prairie dog burrows. Based on this initial discovery, we sought: 1. to evaluate how long soft ticks persist in this town over time, and 2. to use game camera traps and detect which potential hosts soft ticks feed on. In the spring 2017, we detected soft ticks in 3% of the surveyed burrows while in the fall 2017, ticks were detected in 63% of the surveyed burrows. The number of ticks per infested burrow varied from 1 to 154 per survey occasion. We found that many vertebrate animals serve as potential hosts and dispersers of ticks across the landscape. We speculate that soft tick detection rates become higher as the ticks increase their search for blood meals.

Poster/Display Presentation Group 3

Comparing Vascular Deficiency between Caucasians and Hispanics

Presenter: Lorenzo Juarez
Collaborators: Annajita Rubio, Ariel Gomez, Abraham Gomez, Klaudia Szych, Andi Johnson, Shannon Jackson
Project Advisor: Dr. Matthew Barlow

Low levels of High Density Lipid Proteins (HDL) increase the risk of coronary heart disease (CHD). We compared Caucasians and Hispanics populations with vascular tests using Doppler ultrasound, daily activity from accelerometers and Metabolic Syndrome screenings. We compared data from Hispanics (N=14) and Caucasians (N=14) with a total of (N=28). Data indicates that HDL levels were higher in Caucasians (p=0.0095) with an average of (59.65mg/dl) compared to Hispanics (44.5mg/dl). The Leg Kick test measure vascular diameter and flow of the femoral artery starting at rest then increase workload by 5 watts every two minutes until task failure at or near 15 watts. Our test concluded that Caucasians had a larger average diameter during Rest (p=0.049), 10watts (p=0.0699), and 15watts (p=0.0484) compared to Hispanics. Flow calculations were significantly different from the unloaded (p=0.003) and 5watts (p=0.0154) between the groups. Popliteal FMD velocity test compared rest to max velocity during FMD, which had a difference between Caucasians and Hispanics (P=0.056) with Caucasians average of (0.9056 cm/sec) and Hispanics (2.3327cm/sec). The accelerometer data indicate that Hispanics had more sedentary breaks (p=0.022) and a higher average sedentary time (p=0.048). In conclusion, Hispanic group differences in lower HDL, higher delta velocity and more sedentary breaks could potentially be responsible for the observed vascular deficiency in the velocity change in popliteal artery and femoral artery diameters leading to a potential

health disparate difference when studying metabolic and vascular mechanisms of Cardiovascular Disease.

Baseline and Post-Concussive Neurocognitive and Physiological Assessments in Minor Student Athletes

Presenter: Sarah Massey
Project Advisor: Dr. Matthew Barlow

There is a higher risk of post-concussion syndrome among minor athletes resulting in the Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT), which is currently the primary test for collegiate and high school athletes for concussion assessment.. Previous work from our lab indicates a significant cognitive deficit with a battery of cognitive testing including the Test of Variables of Attention (TOVA) and balance testing with the Stroop (DTS) and the SCAT3. We aimed to determine whether there is a significant difference in neurocognitive function between prepubescent and pubescent minor students age 10-18 and if there is declining function in young minor athletes. Participants were asked to perform the measurements of the SCAT 3, the DTS, Minnesota Spatial Recognition (MSR), the Perdue Peg Board (PPB), a Reaction Time test (RTT), and the administration of the TOVA to assess the Attention Comparison Score (ACS). Significant declines between the minor concussed and controls were found during the Stroop and the DTS, Hopkins Verbal Learning Task, dominant hand RTT, and MSR time and increasing errors for both hands. When comparing the pubescent and pre-pubescent boys control groups there is a significant negative scoring in pre-pubescent scores on left had RTT, Stroop errors, PPB mistakes, MSR mistakes and time DTS balance error and number balance correction foot taps. Finally, the TOVA ACS in the concussed minors indicates a significant difference presenting with symptoms of moderate ADHD. Our battery indicates a broad area of significant identification markers of neurocognitive and neurophysiological dysfunction compared to non-concussed.

The Effect of Sedentary Behavior on Arterial Stiffness in Healthy and Metabolic Syndrome Women

Presenter: Annajita Rubio
Collaborators: Ariel Gomez, Klaudia Szych
Project Advisor: Dr. Matthew Barlow

Overweight physical stature has been associated with increased endothelial dysfunction and cardiovascular disease with development of

Metabolic Syndrome and Diabetes. Our purpose was to determine if daily activity is associated with carotid arterial compliance and vascular response in young healthy and Metabolic Syndrome women. 32 sedentary control and 7 Metabolic Syndrome women wore an accelerometer for 7 consecutive days to determine daily activity and sedentary phases. Carotid and radial arterial compliance was measured using Tonometry technique to determine Pulse Wave Velocity. Each participant performed a handgrip exercise procedure while beat-to-beat blood pressure, brachial artery diameter, and blood flow with Doppler Ultrasound and B-mode imaging were measured simultaneously. Statistical analysis included correlations between daily step activity and peripheral arterial stiffness. Metabolic Syndrome women, unlike the control group of women, have a positive correlation (0.760, $p=0.0476$) between PWV and total time of sedentary bouts. Metabolic Equivalents compared with total time in sedentary breaks displayed a stronger, positive correlation (0.637, $p=0.0000882$) in the group of control women than the group of Metabolic Syndrome women. The Metabolic Syndrome group have a significantly ($p<0.05$) diminished arterial conductance in the brachial artery during handgrip conductance from rest to peak (1.5 watts). Individuals who sustain longer sedentary periods in their daily activity, such as Metabolic Syndrome women, have higher peripheral stiffness. The increase in peripheral arterial stiffness would indicate a significant rational for the mechanisms responsible for the vascular response deficit in Metabolic Syndrome participants during the muscle exercise.

Insulin sensitivity and vascular responses to flow mediated dilation in Metabolic Syndrome women

Presenter: Ariel Gomez
Collaborators: Klaudia Szych, Annajita Rubio, Andi Johnson, Shannon Jackson, Abraham Gomez, Lorenzo Juarez, Sarah Massey
Project Advisor: Dr. Matthew Barlow

Sedentary populations with obesity and metabolic syndrome (MetSyn) have presented with impaired vascular dysfunction, including vasodilation reduced 40-50%. The mechanisms of vascular endothelial dysfunction has also been associated to the bioavailability of Nitric Oxide (NO) levels. We hypothesize that decreased reactive hyperemia observed in MetSyn compared to age matched-control patients are primarily due to mechanistic dysfunction of the NO pathway resulting from lower Insulin Sensitivity Index (ISI). 30 participants(10 MetSyn and 20 Controls) completed brachial FMD testing and vascular changes were recorded using Doppler ultrasound. A blood pressure cuff was placed on the upper forearm and upper calf for analysis of brachial and popliteal arteries. Images

were analyzed with Brachial Analyzer software and sheer rate calculated by digital recordings of blood velocity. Insulin sensitivity index was assessed by an oral glucose tolerance test with fasting and post-prandal glucose measured with a glucometer and insulin measured by a Human Insulin ELISA kit. The resting bioavailability of NO assessed by EPR spectroscopy. In the popliteal arteries, there is a significant difference between the % dilation, rate to peak from reperfusion ($P<0.05$). We observed correlations among changes in arterial measurements, Insulin Sensitivity Index (ISI) and resting NO concentration. ISI is observed to be correlated to Peak Diameter ($p=0.0943, r= 0.59$) and Rate to Peak ($p=0.07, r=.0628$) measurements in the MetSyn. Postulated mechanism of this vascular endothelial dysfunction during insulin resistance begins with the decreased sensitivity of the insulin receptor preventing the effect of insulin and the AKT/PKB eNOS pathway.

Effects of Metabolic Syndrome Risk Indicators on Brachial Artery Compliance to Flow Mediated Dilation

Presenter: Shannon Jackson
Project Advisor: Dr. Matthew Barlow
Award Winner

Metabolic Syndrome (MetSyn) is a group of risk factors that increase a person's risk of developing heart disease, stroke and diabetes. These risk factors include blood pressure (>130/85mmHg), waist circumference (>35 inches in women). HDL cholesterol (<50mg/dl in women), triglycerides (.150mg/dl) and high fasting glucose (>100mg/dl). We previously demonstrated that women with MeySyn have decrease vascular compliance when measured by Flow Mediated Dilation (FMD). We aimed to investigate whether an increased number of risk factors has a more profound effect on the compliance of the brachial artery measured in the form of resting velocity, time to peak diameter and the 60 sec reperfusion velocity following occlusion. Females diagnosed with MetSyn (n=6) are compared to female controls (n=30) using Doppler ultrasound FMD of the brachial artery at rest, during occlusion and during reperfusion. In the MetSyn group, there was a positive correlation between the number of risk factors present in each participant and their resting velocity. The SBP and triglycerides have an effect on the resting velocity, the time to peak is effected by the SBP and the 60 sec reperfusion velocity correlates to the fasting glucose levels. The results indicate that a greater number of risk factors increases the blood pressure and resting velocity and effects the time to peak. An increase in triglycerides also leads to a higher resting velocity and an increase in fasting glucose concentration causes an increase in 60 sec reperfusion velocity following occlusion.

Essential Amino Acid supplementation exercise comparison of females and males

Presenter: Abraham Gomez
Project Advisor: Dr. Matthew Barlow

The objective of this study was to identify significant differences in overall performance between female and male participants receiving acute essential amino acid supplementation. Participants completed a three-day exercise protocol containing 8 exercises in an hour to measure flexibility, strength, and endurance. The tests performed include sit-and-reach, shoulder-flexibility, Handgrip, 20-meter sprint, Push-ups, Pull-ups or hang-time, dips, and a timed 1.5mile run. The EAA supplement was mixed with Gatorade and given throughout the workout for three consecutive days compared to placebo by random double-blinded assignment. The EAA Females improved in push-ups with an average change of 6.14 compared to – 3.8 in males (p= .0123). Males had a faster average time of 12.407 minutes and females 12.52 minutes for the 1.5mile run (p= 0.007). The males had a significant improvement in the 1.5 mile run not seen in the females. Males had a larger change than females from day 1 to 2 in number of dips with an average change of 4.4 and 0.57 in females (p=0.06). Females had a higher percent change compared to males in the sit-and-reach from day 1-3 with an average percent change of 9.48 compared to the males -63.2 (p=0.07). Females also improved more in push-ups from day 1-3 and had greater percent change in sit-and-reach. Thus, there was significant physical changes in performance between the sexes when provided acute oral consumption of EAA during early stages of activity for sedentary participants.

Mode of Reversible Inhibition of Carbonic Anhydrase by Gallocatechin

Presenter: Aubree Turner
Project Advisor: Dr. William Cooper

Carbonic Anhydrase catalyzes the interconversion of bicarbonate and proton to carbon dioxide and water, -HCO_3 + H+ CO_2 + H_2O. The active site of most carbonic anhydrases typically contain zinc ion, and, therefore, carbonic anhydrases are classified as metalloenzymes. Since the main function of carbonic anhydrase is to interconvert bicarbonate to carbon dioxide, it is responsible for the balance of acid/base pH in the blood and other tissues. Since this is a main function, inhibition of carbonic anhydrase has been an attractive target for glaucoma treatment. One such inhibitor of carbonic anhydrase that is used to treat glaucoma is acetazolamide. Gallocatechin is a flavan-3-ol found in green tea and pomegranates. Since it interacts with the cannabinoid receptor, it is

thought to have health benefits. The purpose of this research is to determine if gallocatechin indeed inhibits carbonic anhydrase, and, if so, what is its reversible mode of inhibition. This will be obtained by plotting a series of Lineweaver-Burk lines from inhibition assays and determining the y- and x-intercepts. Henceforth, gallocatechin as a glaucoma treatment will be evaluated.

Synthesis of Ladder-Type Oligomer

Presenter: Dulce Velazquez Perez
Collaborator: Vance Miller
Project Advisor: Dr. Juchao Yan

Organic electronics and solar cells show to work with polymers whose molecules are composed of comparatively few repeating units when they join with a phenylene-base. These polymers are called oligomers. Brookhaven National Laboratory (BNL) has developed new designs of ladder-type oligo that have a nitrile substituent. These oligomers have an inability to be forced out of shape and have planarity. A multi-step organic synthesis is going to be carried out to achieve the target molecules. In the summer of 2017, only three out of five step were completed. Column chromatography will be utilized to purify the intermediate compounds and NMR will be used to see if the compounds are purified. The synthesis will focus on the molecules of L3PCN.

Poster/Display Presentation Group 4

The Effects of Peppermint-Diffused Essential Oils on Delayed Memory in Female Adults

Presenter: Courtni Fontenot
Project Advisor: Ms. Nicole Bougie

This study investigated the effects of peppermint essential oils on delayed memory in female adults ages 18-40. While small amounts of anxiety may serve as motivation, a negative correlation exists between higher levels of anxiety and academic performance scores, further suggesting that individuals with high levels of anxiety should seek alternative methods for managing stress and anxiety. In previous studies, peppermint essential oils were found to reduce stress levels and increase skill performance, memory, and alertness. The Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) was used in

a control group post-test only design to assess the memory of 30 female adults, 15 in the control group and 15 in the presence of peppermint-diffused essential oil. Statistical results were analyzed through use of an independent measures t-test with alpha set at .05 and a critical value of 1.701. When comparing delayed memory between the control and experimental groups, a t-score of 1.08 indicated no significant increase in delayed memory scores while in the presence of peppermint-diffused essential oils.

Effects of Binaural Beats on Memory

Presenter: Lauren Gamble
Project Advisor: Dr. Adrienne Bratcher

This study aims to figure out if the use of binaural beats will enhance memory. Binaural beats are when two frequencies of tones are presented individually, one to each ear. Once the tones are heard the brain begins to respond causing brain entrainment. Subjects include 34 ENMU CDIS graduate students, who were randomly assigned to experimental and control groups. The experimental group listened to binaural beats, while the control group listened to no auditory stimulus. The dependent variable (memory) was examined by having the experimental group subjects listen to binaural beats and then complete a memorization task.

Writing vs. Typing for Optimized Learning in a Classroom Setting

Presenter: Emily Davis
Project Advisor: Dr. Adrienne Bratcher

The purpose of this study was to investigate the effectiveness of writing as a note taking technique and the effectiveness of typing as a note taking technique. Thirty-four students were selected for participation in this research. The participants were first semester undergraduate students at Eastern New Mexico University, and were enrolled in a Freshman Seminar class. This research compared the two note taking techniques and determined which, if any, was more beneficial when used in a classroom setting. Participants in this study were instructed to watch a brief lecture during which half took notes manually, while the other half typed their notes. The participants were allowed access to their notes while taking a brief test. The participants were also instructed to complete a pre-experiment questionnaire at the start and a post-experiment questionnaire at the end of the research. Test results were compared to determine the more

effective note taking strategy, and questionnaire responses were compared to determine if the participants' perceptions matched up with their performance.

A Tradition as Old as Time: How Storytelling Affects College Students' Story Recall When Compared to Video and Print Presentation Modalities

Presenter: Halley Paris
Project Advisor: Dr. Suzanne Swift
Award Winner

This study explores how story recall is affected when a story is presented through live-dramatic storytelling, video, and print presentation modalities. Previous research suggests that print modalities result in higher recall scores for adults when compared to video conditions; however, no study on the effects of presentation modality has considered how storytelling might influence recall. Participants were assigned to one of three groups: a live-dramatic storytelling condition, a print condition, or a video condition. Each group was presented the same story, and after the presentations, each took a story recall test. Significant differences between the raw scores of the three groups were analyzed using an analysis of variance. No significant difference was found between the three groups. Individual analysis of questions determined that questions with more concrete answers were more likely to result in significant differences between the groups compared to abstract questions. Wide variance of recall scores within groups suggests that individual learning styles may affect recall ability within the different presentation modalities.

The Impact of Multitasking During Lectures on Academic Performance

Presenter: Victoria Montoya
Project Advisor: Mr. Jesse Martin

Multitasking is a common occurrence in today's learning experience. People perform significantly worse when they work simultaneously on tasks than when they work sequentially on tasks (Buser & Peter, 2012). This research examined how multitasking during an online lecture impacted the academic performance of distance education students. The alternative hypothesis was that the subjects' comprehension of an online lecture would be significantly worse while multitasking on the Internet than when performing a single task. The null hypothesis was that there would be no difference in the comprehension of the online lectures during the two treatments. Data collection for this project was

done using a repeated measures design with counterbalancing from one setting in four different sessions, with a total of 49 subjects. All sessions were administered in person by the primary investigator.

Descriptive and inferential statistics were used to analyze the data; inferential statistics included an Independent Measures T-test, and Cohen's d effect size. When the subjects provided their full attention to listening to the audio lecture they answered more questions correctly (M = 5.16, SD = 1.01) than when they were asked to pay attention to the audio lecture while completing the five-minute personality quiz (M= 3.71, SD = 1.41). The results of the Independent Measures T-Test were significant, t (96) = 5.84, p = .00001, d= 1.18. The null hypothesis was rejected; when the subjects provided their full attention to the audio lecture they answered significantly more questions correct.

Improving Memory Recall: Does the Use of Visual and Aural Presentation of Information Improve One's Memory Recall in College Students Ages 22 to 55?

Presenter: Hope Douglas
Project Advisor: Dr. Adrienne Bratcher

Differences in learning styles have been a topic of interest in the research world for many years. These differences can affect memory recall. This study analyzes whether or not combining two learning styles, visual and aural, increases an individual's ability to recall information. It takes into consideration additional variables such as the duration of exposure, and type and number of stimuli used. The study will be conducted through the use of a quasi-experimental method. The goal is to increase the amount of knowledge regarding the simultaneous use of visual and aural mediums when presenting material and its effects on memory recall in order to aid in the improvement of education and therapy procedures.

The Impact of Multi-Sensory Stimulation on Working Memory

Presenter: Robert Chaires
Project Advisor: Ms. Nicole Bougie

The purpose of this study was to examine the impact simultaneously stimulating multiple aspects of the sensory system has o working memory. Working memory is a combination of simultaneous storage and processing of information, which is necessary for successful language comprehension and production (Just & Carpenter, 1992). The research will use a between group

design (consisting of 80 college aged students) to investigate if multiple sensory stimulation will have a greater positive effect on working memory than no stimulation or single sensory stimulation.

On-campus Versus Distance Education Students' Perceptions about Speakers' Characteristics

Presenter: Mojgan Allamehzadeh
Project Advisor: Dr. Suzanne Swift

The influence of speaker characteristics on teaching and learning is not well established. Perceptions of these characteristics may influence the culture of a classroom. With the recent explosion of distance education, how do educators adapt when teaching on campus and distance education students in the same course section? Student perceptions of these environments may be critical to beginning a reasonable investigation of this question.

Student perceptions of instruction typically focus on course evaluations and other institutionalized measures. Instructors' speaking characteristics and interaction styles while teaching are not currently well researched. This study used a purposeful convenience sample drawn from 189 students to compare 99 on-campus and 90 online students' perceptions of faculty speaking and interaction characteristics. Seventeen Likert scale and four open-ended questions asked students to rate their current class instructor's language, organization, voice, gestures, accent, knowledge, familiarity with students, and approachability.

Results showed significant difference between distance education and on-campus students' perceptions of instructors' characteristics ($p=0.031492$), especially in "familiarity with students" ($p = 0.028380$) and "approachability" ($p = 0.001863$). Interestingly, significant difference was also between females' vs. males' perceptions, with male responses noted as markedly more positive and less critical than female respondents in several areas ($p=0.000246$). Significant difference was also recorded between different age groups. Qualitative responses also showed distinct thematic differences in student perceptions in several delineated areas, with students providing clear trends regarding advantages and disadvantages of on campus vs. distance education learning.

Poster/Display Presentation Group 5

The Effects of Having Siblings on the Theory of Mind Development in Deaf Children

Presenter: Lauren Salazar
Project Advisor: Mr. Dwayne Wilkerson
Award Winner

This research was conducted to determine whether having siblings close in age can promote Theory of Mind (ToM) Development in deaf and hard of hearing children, whose primary language is American Sign Language (ASL). Theory of mind is defined as the ability to understand that others have beliefs, perceptions, desires and intents that may differ from one's own. The participants of this experiment were separated into two groups, which are children with siblings and children with no siblings or siblings not within 3 years of age in the home. Participants were tested first using a non-verbal intelligence test. Based on those scores and chronological ages, participants were matched into pairs, one subject with a sibling and one without. The matched subjects were then given a task battery to assess their ToM development. Scores for each group on the ToM task battery were analyzed using a t-test for independent measures and cohen's d, with scores, $t(28)= 2.55$, $p= .017$, $d=.93$, indicating significant difference between the groups. The group with siblings scored significantly higher in ToM than the group who did not have siblings. These findings encourage parents and educators to increase peer social interaction. Consistent social interaction for young children enhances their ability to view situations from another's point of view. This ability can make children more socially accepted by their peers, enhance their academic performance, and boost their self-esteem.

The Effects of Preferred Music on Reading Comprehension Performance of 9th Grade Students

Presenter: Danielle Chatham
Project Advisor: Dr. Karen Copple

With the increased availability of personal devices and increased need for standardized testing, school districts have regulated the use of personal devices in the classroom for the purpose of attaining higher levels of concentration and higher performance outcomes. Research on the effects of background music on educational performance has produced inconsistent findings across studies. This study sought to determine the effect of preferred, personal device music on

reading comprehension tasks as measured by the State of Texas Assessments of Academic Readiness (STAAR) test for 9th grade students. Students in the experimental group (n=16) received a 15-20 minute version of the STAAR test while listening to one of four preferred genres of music: country, contemporary, hip-hop/rap, or classical presented through headphones. Students in the control group (n=15) completed the test with headphones without musical stimuli. Results were compared between groups revealing no significant difference on performance outcomes for students listening to music and those without music.

The Mozart Effect and Its Use as A Language Therapy Tool with Elementary Aged Children: A Pilot Study

Presenter: Amy Braddock
Project Advisor: Dr. Karen Copple

The ability for elementary age children to maintain their focus, attention and behavior while participating in language therapy services is a concern of most speech language pathologists (SLPs). The use of background Mozart music (the Mozart Effect) may decrease negative behaviors, increase attention and productivity, and result in outcomes during therapy activities. The Mozart Effect has been studied with college students, but it has not been studied extensively with children. Purposeful random sampling was used to choose participants. A total of 30 children were used to examine the use of background Mozart instrumental music during language intervention to determine its effect on auditory comprehension. This study will follow a true experimental design with a control group in which children were presented with passages and asked to answer corresponding “wh” questions while hearing background Mozart music. A t-test for independent means revealed that the presence of background Mozart music does not appear to have a significant effect on the ability to answer “wh” questions ($t= (28, n=30)= -0.42$, $p=0.34$) in elementary aged children.

Just Dance into Language: The Effects of Simultaneous Song and Dance on Language in Preschool Children with Autism

Presenter: Dana Simon
Project Advisor: Dr. Suzanne Swift

Language skills are especially important for children diagnosed with autism. Previous studies suggest music is one modality that increases age appropriate skills in language and social development; however, no study has

been published that targets simultaneous song and dance. This study explored the effects of simultaneous song and dance on language development and social skills in preschool students diagnosed with autism. ¬¬¬Five preschoolers were encouraged to engage in the treatment along with provided models through YouTube videos. Statistical significance was analyzed using four 2-factor ANOVAs with repeated measures on both factors and a repeated measures t-test. All students showed improvement in areas being observed through length and frequency of variables with statistical significance seen in both expressive and social language.

The Effectiveness of Augmentative and Alternative Communication Education on Students in Rehabilitation Majors

Presenter: Casey McAtee
Project Advisor: Dr. Karen Copple

A large percentage of individuals in an acute medical setting have some communication impairment that affects how they communicate with their health care professionals. In the acute setting they may receive augmentative and alternative communication (AAC) devices or use AAC strategies. An AAC team in an acute setting is made up of speech and language pathologists (SLP), physical therapists (PT), occupational therapists (OT), and nurses. This study examined student's knowledge of AAC devices and simple intervention techniques in the fields of physical therapy (PT), occupational therapy (OT), speech and language pathology (SLP), and nursing programs. A one group pretest posttest design was chosen to evaluate the knowledge of graduate students in these four majors at universities across the country. A total of 121 graduate students participated. They received a link with the pretest, posttest, and watch a PowerPoint presentation. The results indicated that the students had an increase in knowledge of AAC devices after watching a presentation.

Preferred Communication Methods of Adolescents with Complex Communication Needs and Their Applications for Peer to Peer Communication

Presenter: Katelyn Ferguson
Project Advisor: Ms. Laura Bucknell

The time of adolescents is marked by a period of great growth for young people. Communication with peers is an important staple within this period of time. Often, adolescents use modalities other than face to face communication to

keep in touch with their peers. Adolescents who have complex communication needs (CCN) may need to use supplemental communication devices in order to communicate with their peers. Alternative and augmentative communication devices (AAC) can help a person with complex communication needs (CCN) to communicate their thoughts, needs, and ideas. Little research had been conducted comparing new forms of AAC devices such as cellular phones to tradition AAC devices such as digitized speech devices. Ten adolescents were randomly selected and were asked to communicate with one another using an AAC device and SMS texting with emojis. The subjects used each device three times in order to ensure user reliability. After the subjects had used each device three times they were asked to fill out a survey. The results of the study indicated that there was a significant difference between the preference of the two devices. Qualitative data also indicated that the adolescents did not enjoy using the AAC device to communicate with a peer.

Is the introduction of an aided high-tech AAC device effective in initiating language acquisition for an adult male with a cognitive communication disorder?

Presenter: Emill Ajilat
Project Advisor: Dr. Karen Copple

Effects of early augmented and alternative communication intervention on Down syndrome children and adolescence have been well researched in the past, as well as, similar intervention on those with other cognitive disorders, non-verbal limitations and/or other severe communication difficulties. There is very little research catered specifically to intervention amongst adults with a cognitive disorder, who acquire high-tech devices after establishing years of non-verbal means of communication. Many advancements in the past 25 years with technology (i.e. high-tech devices) were obviously not yet made available for early intervention, it only makes sense to measure the effectiveness, if any, on those acquiring the devices after the age of 21. A single subject design research was used to isolate the effects, usage, and support of intervention with a cognitive disorder. A one way ANOVA was used to test for differences amongst each questions asked in each setting during baseline and intervention (Gravetter & Wallnau, (2017). The results concluded that there was a significant difference between using the device for language acquisition versus non-verbal communication.

Impact of Restrictive and Repetitive Behaviors

Presenter: Ileana Dennis
Project Advisor: Dr. Suzanne Swift

Restrictive and repetitive behaviors are characterized as actions performed by an individual that do not serve a specific purpose. These physical behaviors are often considered stereotypical and can be seen in individuals with Autism Spectrum Disorder (ASD), Intellectual Disorders (ID), and other Developmental Disorders (DD). These behaviors can include hand clapping/flapping, finger snapping, body swaying/rocking, head movements, and vocalizations/jargons. Speech Language Pathologists (SLPs) work regularly with children who display these types of behaviors. It is not uncommon to find varying viewpoints among therapists regarding the most appropriate response when a patient engages in restrictive and repetitive movements during therapy. Depending on epistemological background and clinical experience, restrictive and repetitive behaviors are either extinguished with operant conditioning or are ignored and "worked around." This research aims to determine whether these "extra" behaviors impact social communication. This study seeks to determine the impact of interacting with a person engaging in restrictive and repetitive behaviors on the attention and efficiency of typical adults completing tasks involving multi-step complex directions. With these results, both new and experienced therapists may be provided with evidence based data that will allow them to practice intervention with these special populations more effectively.

Poster/Display Presentation Group 6

Riding for Recall: Horse Riding and the Effects on Adult Memory in a Single Subject Design

Presenter: Chelsi Arnold
Project Advisor: Dr. Suzanne Swift

Animal assisted therapy is becoming more popular in the therapeutic world; however, the research surrounding animal assisted therapy is still developing. Instead of receiving speech services solely in a clinic room, clients can now use the movements of a horse, (hippotherapy and therapeutic riding). Several conducted studies have shown the positive aspects of horse riding; however, the research remains limited.

To better understand the benefits of animal assisted therapy, this study

investigated the speed and accuracy of an adult's memory recall after riding a horse. A single-subject quantitative study was conducted in July of 2017. A female subject over the age of fifty participated in the thirty-one day study.

To determine whether riding a horse had an effect on the subject's memory recall, the subject performed three days of pretesting in a quiet room. The subject was presented two, fifteen word lists and was asked to recall as many words from the list as she could. The subject's recall time was also timed. Following the pretests, the subject spent the next twenty-five days riding a horse for fifteen minutes. The subject then completed her three days of post testing in the same room used during the pretests.

The study's results indicated a significant difference in the adult's ability to accurately recall words after riding a horse; however, the results also concluded the subject required longer time to recall the words. In order to increase the study's reliability and validity, it was recommended for further research to be conducted.

The Correlation Between Sensory Processing and Articulation Performance in Toddlers

Presenter: Jennifer Williams
Project Advisor: Dr. Suzanne Swift

Many children experience articulation delays or disorders and sensory disorders but limited research has discussed any correlation. Spoken language involves highly coordinated speech movements of the articulators (e.g., tongue, lips, teeth) that involve the sensory-motor system. Sensory processing patterns can involve hyperresponsiveness, hyporesponsiveness, and sensory seeking factors, each of which can account for variability in social and communicative abilities (Watson et al., 2011). The sensory process involved in perceiving spoken language and the articulatory processes involved in manipulating speech sounds are essential for developing intelligible speech productions. The purpose of this study is to identify a correlation between articulation delays/disorders and sensory disorders in young children aged 2 to 5 years. A standardized articulation screening tool, the Goldman Fristoe Test of Articulation-3rd Edition (GFTA-3) and a standardized questionnaire, the Sensory Profile 2 will be used to obtain information on articulation and sensory in the participants. Findings were analyzed using a Pearson's 'r' to determine correlation. Identifying these relationships and analyzing specific correlations will allow therapists to further improve intervention efficacy.

Socioeconomic status effects on vocabulary in kindergartners

Presenter: Raveena Bains
Project Advisor: Ms. Laura Bucknell
Award Winner

Socioeconomic status (SES) is one of the most widely studied constructs. SES is measured by a quantification of family income, parental education, and occupational status. Research has shown that SES is associated with vocabulary development. This study is a retrospective causal comparative design that looks at the effects of socioeconomic status on receptive and expressive vocabulary in kindergartners. A socioeconomic status survey was given to parents or guardians. The SES survey was created using the Hollingshead four-factor survey. It measured 4 domains: marital status, occupational prestige, educational attainment, and retired/employed status. The Receptive One-Word Picture Vocabulary Test (ROWPVT-4) and Expressive One-Word Picture Vocabulary Test (EOWPVT-4) were used to compare the high and low SES vocabulary. A Pearson r correlation and independent measures t-test were used to analyze data. There was a significant difference between socioeconomic status and receptive/expressive vocabulary. There was a weak significant relationship between low socioeconomic status and ROWPVT-4 scores. There was no significant relationship between high SES and EOWPVT-4/ROWPVT-4 scores and low SES and EOWPVT-4 scores.

Effects of a Speech Sound Disorder on Phonological Awareness Skills in Kindergarteners

Presenter: Tessa Schmidt
Project Advisor: Dr. Suzanne Swift

There are similar processes of linguistic knowledge used for both reading and speaking/listening. If there are deficits in speech then there is a good chance there may be deficits in other areas, such as literacy. Literacy is an important skill taught early on and several skills are needed to obtain successful literacy; phonological awareness being one of them. This current study looked at the effects of a speech sound disorder (SSD) on early literacy skills to answer the question of, “Do kindergarten children’s emergent literacy skills differ based on phonological awareness when a speech sound disorder is present?”

Data collection consisted of 100 kindergarteners’ responses recorded on the appropriate assessment protocol during the administration of the “Sounds in Words” section of the Goldman-Fristoe Test of Articulation 3 (GFTA-3) and

the “Phonological Awareness Composite Score” (PACS) subtests from the Comprehensive Test of Phonological Processes-2 (CTOPP-2). Raw scores were converted to standard scores and calculated through inferential t-test statistics and Pearson correlation coefficients to compare results.

CTOPP-2 t-test for independent measures scores showed statistically significant difference of $t(98)=2.43$, $p<.05$, $d= 0.56$, between those without a SSD verses those with a SSD. Pearson r correlations of various comparisons of GFTA-3 to CTOPP-2 showed positive, but weak correlations, signifying that SSD is one factor to consider.

There was a large enough difference between CTOPP-2 scores for those without a SSD compared to those with a SSD, indicating that a SSD may play a role on phonological awareness development and understanding.

Auditory Recognition of Words Pronounced Correctly vs. Incorrectly in Kindergarteners

Presenter: Megan Ratzlaff
Project Advisor: Dr. Adrienne Bratcher

A study with 120 kindergarten-aged participants was conducted to analyze if they have developed the necessary word recognition skills needed to identify a correctly pronounced word or an incorrectly pronounced word. Investigation of this question consisted of a presentation of 30 pictures with 30 correctly and incorrectly pronounced words that differed by one segment. The errors in these words were spread evenly across the initial, medial and final positions and in blends. The children had to identify whether, the words were pronounced correctly or incorrectly by pressing a red button for incorrect and a green button for correct pronunciation.

Do Standardized Pragmatic Language Tests Differentially Identify Disorders of ADHD?

Presenter: Christine Lopez
Project Advisor: Dr. Karen Copple

Objective: Clinicians continue to administer standardized screenings and formal language assessments to diagnose a Pragmatic Language Disorder (PLD) in children. The purpose of the study was to determine whether or not a previously used standardized pragmatic language assessment and or a new attention-deficit/hyperactivity screening instrument was better at differentially identifying ADHD in children. Previous research has documented that children with ADHD present with pragmatic profiles similar to those of children with ASD who exhibit

a PLD. Method: The examiner administered the Test of Pragmatic Language 2nd ed. (TOPL-2) to 30 children, ages 6 and 7 years. In addition, the ADHDT-2 screening was completed by the classroom teacher or parent. Comparison of the children's pragmatic language assessment standard score with their attention-deficit hyperactivity screening standard score was completed to differentially identify ADHD. Results: Results indicated that the TOPL-2 (M=86.3, SD=11.43, N=30) was better at predicting ADHD than the ADHDT-2 (M= 70.83, SD=18.74, N=30). Conclusion: The researcher concluded that when educators or SLPs desire to implement a test to identify ADHD in children, the TOPL-2 was the more reliable of the two tests.

RAN and Reading: Examining Correlations Between Rapid Automatized Naming Skills, Reading Accuracy, and Reading Speed

Presenter: Marissa Butner
Project Advisor: Dr. Suzanne Swift

Reading success at the primary grade level can be attributed to intact foundational skills including phonemic awareness, phonics, fluency and more. Without these skills, children often fall behind in multiple aspects of literacy. In addition to the aforementioned skills, research has found that other factors may come into play when it comes to success in literacy. Rapid automatized naming (RAN) skills are defined as the ability to quickly name aloud a series of familiar items. Much research has been done in order to support whether RAN should be considered an important factor when it comes to success in reading tasks. The purpose of this study is to examine the correlation between RAN skills of third graders and sixth graders in the area of Southern California and their corresponding abilities in reading accuracy and reading speed. Furthermore, the study will explore whether students have higher RAN when being presented language based vs. non-language based stimuli.

The Oral Reading Comprehension Outcome of an Adolescent in Speech and Language Therapy Using Miscue Analysis: An Ex Post Facto Study

Presenter: Sonny Militante
Project Advisor: Dr. Adrienne Bratcher

Research on miscue analysis continues to grow to this date. This terminology became a popular component of research, especially to those that cater to its applications in the context of educational instruction. Previous case

studies provided excellent sources of information regarding the different aspects of the method. The purpose of this study was two-folds: to investigate whether miscue analysis was beneficial in facilitating positive attitude towards oral reading, and to determine whether there was a significant correlation between the scores in identifying miscues and the scores in oral reading comprehension tasks. This study focused on a 10th-grade boy who exhibited limited verbal expression and poor oral reading comprehension skills. The materials used in this quantitative ex post facto study were the Burke Reading Interview (BRI) and the clinic treatment logs. The responses from the BRI were reviewed to determine if there was a change in attitude towards oral reading, and the data from the treatment logs were analyzed using the Pearson r test of correlation. The responses from the BRI at the first and last therapy sessions indicated that there was a positive change in attitude towards oral reading. There was no correlation, however, between scores in identifying miscues and scores in oral reading comprehension tasks (Answering WH-Questions and Answering WHY Questions).

Poster/Display Presentation Group 7

The Effects of Background Music on Memory

Presenter: Kelli James
Project Advisor: Ms. Nicole Bougie

This study investigated the effects that background music has on a student's ability to retain information. Forty-five college students participated this study in order to determine if background music has an effect on the ability to recall learned information. A control group, pre-test post-test design with background music used as the intervention. Participants were randomly assigned to one of the three groups. The results were collected in order to determine a correlation between background music and the scores and analyzed using an analysis of variance. The results of this study indicated that background music played by Michael Bublé has no direct effect on the ability to retain learned information.

Can You Hear Me Now? The Effects of Vocal Hygiene on Preschool Teachers

Presenter: Tricia Poindexter
Project Advisor: Dr. Karen Copple

The practice of assigning various reading materials is very common in school settings across all grade level. Reading comprehension plays a crucial role in a person's life experiences and academic/professional successes. Students who cannot comprehend what they read are at risk for failure and are typically identified for remedial instruction and/or intervention. The purpose of this study was to examine the effectiveness of one such intervention in facilitating increased reading success.

"Disturbances and abnormalities in the voice are frequently found in professional voices like teachers. The importance of vocal hygiene on an individual who used their voice regularly was critical to continuing their career. This researcher wanted to understand the degree to which teachers in the school system are educated and/or understood the importance of vocal hygiene. This study was a mixed quantitative and qualitative, group pretest-posttest, quasi-experimental design. The participants completed a Voice Handicapped Index (VHI) for both pretest and posttest. The VHI was a well-respected, self-reporting inventory of questions that evaluated the participant's perception of the degree to which their voice presented a handicap in their daily life. Quantitative scores rendered from the VHI allowed for statistical analysis. The participant's documented their vocal hygiene behaviors using a voice diary for two weeks. This form was on an Excel sheet that contained a water log schedule, caffeine log schedule, throat clearing schedule, and coughing schedule. Results compared the pre and post standard scores on the two VHI administrations. The data was computed using a t-test for repeated measures. The results indicated there was no significant difference between vocal hygiene education and vocal quality in preschool teachers, $t(14)= 0.41$, $p=0.689$, $r^2=0.59$.

Vocal Hygiene is Next to Godliness: An Acoustic Measures Analysis on Occupational Voice Health in Clergy

Presenter: Bridget Mooney
Project Advisor: Ms. Stephanie Lebsack

Professional clergy use their voices frequently in their occupation, yet are seldom the subject of academic research on vocal abuse. Vocal abuse is when a person misuses their voice to the extent that it causes overt symptoms such as hoarseness, pitch changes, or pain. Acoustic measures are norm-referenced, and applied to detect vocal pathology. The purpose of this study is to measure the impact of a self-implemented vocal hygiene education program clergy's voice health as informed by acoustic measures derived from short voice recordings. 20 clergy participated in this research, with 15 completing the entire study. Participants were required to be between the ages 18-65, and be full-time

pastors who preached weekly. Clergy completed a brief questionnaire on their demographic and health data. Participants recorded four voice samples across on two different Sundays; with a week-long vocal hygiene treatment program in between. The recordings were examined for significant difference in four acoustic measures, using PRAAT, a voice analysis software. Clergy did not demonstrate higher-than-average signs of vocal abuse when compared to the general population. There was a very weak positive correlation between participant health factors and acoustic measures. There was no significant difference in acoustic measures before and after voice hygiene treatment. Further research with longer treatment phases, and larger samples is suggested to expand the research base on clergy as occupational voice users.

Is This Thing On? Perception of Vocal Loudness Following Lee Silverman Voice Treatment in a Patient with Parkinson's Disease

Presenter: Kelsey Ray
Project Advisor: Dr. Adrienne Bratcher

For patients with Parkinson's disease (PD), communication is an area most likely to be impacted. These deficits have a profound impact on their daily lives, with vocal loudness being one of the largest deficits. The purpose of this study was to investigate if there is a difference between familiar and unfamiliar listeners' perception of vocal loudness, before and after Lee Silverman Voice Treatment (LSVT), in a patient with PD. A quantitative correlational study design that compared two groups (familiar and unfamiliar listeners) across two listening modalities (story telling and reading) with a single subject (patient with PD) was used. The two groups participated by watching pretreatment and post treatment videos of the patient with PD. An independent measures ANOVA was used to analyze the data. The results showed no significant difference amongst the two groups or the two listening modalities.

Accent Modification Via Teletherapy: A Quantitative Single Subject Study with an Adult Male who Speaks Argentinian Spanish

Presenter: Mariah Hartzell
Project Advisor: Dr. Suzanne Swift

There is a large population of nonnative speakers in the United States that have been unable to access services to reduce their accent and further

communication skills in daily and professional lives. Teletherapy is a new tool to treat clients unable to get in-person therapy. During this study, accent modification therapy was delivered via teletherapy to explore the efficacy of using this intervention platform. Using a quantitative single-subject A-B-A withdraw design, the participant was pretested and posted. The intervention lasted 12 weeks with two 50-minute sessions per week and a t-score was used to compare gain scores. The goal of this research was to create a base for accent modification via teletherapy evidence-based practice, enhance future results and generalization of this intervention. Results of the repeated measures 1-tailed t-tests revealed two indications: intelligibility rating showed no significance between pretest and posttest data ($t(5) = -1.91$, $p = .057$), and percent of correct consonant rating showed significance between pretest and posttest data (, $t(5) = -6.62$, $p = .00059$) with a variance of 89.5%. More research is needed to definitively answer whether teletherapy increases the intelligibility of a non-native English speaker.

Common Syntactical Variations of Elementary Aged Chinese English Language Learners in Response to an Expressive Language Test

Presenter: Tiffany Cheung
Project Advisor: Dr. Suzanne Swift
Award Winner

With the rise in the number of immigrant families moving to the US, the public schools' system has been encountering a lack of training when it comes to dealing with an influx of multicultural diversity. Many teachers and SLPs are not properly trained in recognizing whether children have speech and language difficulties or should be receiving English language development services (ELD). This study analyzed third through sixth grade Chinese English Language Learners (ELLs) and the responses they gave when administered three expressive, syntactic portions of the Comprehensive Assessment of Spoken Language (CASL) and the Carrow Elicited Language Inventory (CELI). Any common syntactical variations that were exhibited were compared to generate plausible appropriate syntactical responses. Results for any significant differences between the ELLs and the normative group were tested using a t-test for established means; results for significant difference between the ELL groups were tested using t-test for independent samples. The overall purpose of this study was to find whether there were significant differences when evaluating the responses that Chinese ELLs might give on expressive portions of standardized speech assessments when compared to the normative group of children considering experimental variables such as age, private tutoring, and gender. Results from the t-test demonstrated

that there was significant difference between the tutoring and non-tutoring group – further analysis demonstrated that while the tutoring group was not significantly different from the norm, results of the non-tutoring group and results of all the participants demonstrated significant difference when compared to the norm.

Interpretation of Figurative Language: A Comparison Between Bilingual, Spanish-English Speakers and Monolingual, English Speakers

Presenter: Cinthya Torres
Project Advisor: Dr. Karen Copple

This study examined the differences in interpretation of figurative language between adult bilingual, Spanish-English speakers and adult monolingual, English speakers. Figurative Language is considered a linguistically complex fragment of an already multifaceted language as a whole (Palmer et al., 2008) and is defined as a group of words used in an imaginative sense that convey information that is not meant for literal interpretation and may include; idioms, metaphors, similes, proverbs, and sarcasm (Owens, 2012). This study compared the performance between two groups of bilingual speakers; those who acquired English language before the age of twelve and those who were exposed after twelve. In addition, their performance was compared to monolingual English speakers. An independent measures t-Test was used to compare monolingual to combined bilingual group and an analysis of variance (ANOVA) was conducted to compare results across all three groups and identify statistical significance. The results indicated a significant difference between English monolinguals and Spanish-English bilinguals with the use of an independent measures t-test [(t (137, n=139)= +2.96, p=.00363, two-tailed)] and a one-way ANOVA [(F (1, 37) = 8.79, p= 0.00356, η=.060]. An independent measures ANOVA was computed to test for significance between (1) monolingual, (2) bilingual before 12, and (3) bilingual after 12 groups. The results indicated significance [(F (2, 136) =10.19, p<.001, η=.130)] and a Tukey post-hoc test located significance (HSD [.01] = 0.43) between the performance of groups 1 and 3 and 2 and 3.

Speech Jammin: A study on the effects of delayed auditory feedback on the fluency of typical speakers

Presenter: Christina Johnstone
Project Advisor: Ms. Nicole Bougie

Delayed Auditory Feedback, DAF, is used as a technique in stuttering therapy to help make individuals with a stutter more fluent. The purpose of this study was to determine the effects of alterations in auditory feedback on the frequency of disfluencies in typical speakers. In order to measure this, a speech jammer application was used to provide delayed auditory feedback. Delayed Auditory Feedback, or DAF, was presented to the experimental group of participants in order to examine the effect it has on their fluency. A qualitative research design was used to conduct this study. An experimental design methodology was utilized in which a pre-test and post-test were collected to compare the fluency of participants in the experimental group and control group. A nonrandomized convenience sample was used to select participants for the study. The participants in this study were comprised of 100 typical speaking adults, male and female. Each participant read The Grandfather Passage and recited the Pledge of Allegiance and the Happy Birthday song, with the experimental group being exposed to alterations in auditory feedback. The results indicated that there was significant difference present between the control group post-test data collected and the experimental post-test data collected. The subjects that were exposed to the delayed auditory feedback had a much more significant amount of dysfluencies during the post-test tasks than the control group. The experimental group's rate of speech, slowed down significantly during the post-test tasks than it did when completing the pre-test tasks.

Poster/Display Presentation Group 8

The Effect of Sleep Deprivation on the Voice

Presenter: Taylor Alig
Project Advisor: Dr. Karen Copple

Sleep deprivation and sleep disorders are among the most common ailments in modern society and have various impacts on day-to-day activities. This study attempted to identify if a lack of sleep influenced vocal quality. To establish this, 18 graduate students from the Communication Disorders program at Eastern New Mexico University were asked to sustain /a/ and /i/ vowels as well as orally read a short passage called The Rainbow Passage. They were audio recorded, and the recordings were analyzed using the PRAAT voice analysis computer program. The participants were split into two equal groups to compare the data from the vocal analysis based on the number of hours of sleep received in the 48 hours prior to the study. The data was compared across four acoustic measures: fundamental frequency, jitter, shimmer, and harmonics-to-noise ratio.

The results from four one-way ANOVAs indicated no significant differences between the group with the healthy amount of sleep compared to the group with less than the recommended amount of sleep at an alpha level of 0.05.

The Effects of Sleep Deprivation on Vocal Quality in Healthy College-Aged Adults

Presenter: Lisa Reed
Project Advisor: Dr. Karen Copple
Award Winner

Vocal quality was affected by many variables and often maintained by proper vocal hygiene. It has been proposed that sleep recommendations should be added to vocal hygiene recommendations. Decreased vocal quality may have a detrimental effect on people's livelihood and quality of life who rely on their voice as a profession such as singers, announcers, or educators. This study is designed to analyze the effects of sleep deprivation of 1 to 6 hours of sleep during a 48 hour time period. Participants included healthy male and female college aged adult's 18 to 25 years old. Sleep and vocal hygiene in the previous 48 hours was measured by participant report on a questionnaire prior to acoustic analysis. Vocal quality was measured by acoustic analysis of sustained /a/ sound using Praat. Acoustic measures included shimmer, jitter, and harmonic-to- noise ratio, fundamental frequency, and amplitude. Significance of vocal quality between sleep deprivation and adequate sleep was analyzed using an independent t-test of acoustic quality measurements. Results revealed there was not a significant difference in vocal quality between sleep deprived (SD) and non-sleep deprived (NSD) college age adults. The null hypothesis was accepted.

Tough to swallow: The correlation between chronic obstructive pulmonary disease and swallowing disruption in patients over age 45

Presenter: Jamie Gonnerman
Project Advisor: Dr. Adrienne Bratcher

Swallowing, breathing, and phonation all occur in the same area of the body; the upper digestive tract and any interruption in the swallow and respiration sequence can result in the penetration or aspiration of a bolus into the airway. A few possible causes of dysphagia may be gastroesophageal reflux disease (GERD) or disorganized timing of the swallowing and respiration sequence. Being aware of the signs of swallowing impairment, dysphagia, is especially important for those who have chronic obstructive pulmonary disease

(COPD) or other respiration disorders. A quantitative, correlation design was used, with a Pearson product-moment correlation coefficient to determine if there is a correlation of a diagnosis of COPD and an increase in dysphagia related symptoms on 30 participants who were divided into two groups: one with COPD and one without. These two groups participated in a semi-structured interview process with a questionnaire from which both the exclusion and investigated data were collected. The data collected indicated that there is a moderate positive correlation between COPD and an increase in dysphagia symptoms; however, as this is a pilot study, more research should be completed to control for confounding variables and reliability.

The Effects of Smoking on Cognition in Typical Healthy Adults

Presenter: Augustus Gray
Project Advisor: Dr. Adrienne Bratcher

The effects of smoking on cognition in healthy adults is limited in published research. The side effects of smoking are universally known especially regarding lung cancer, chronic obstructive pulmonary disorder (COPD), and increased risk of mortality. Smoking's effects on cognition have been limited in research and offer conflicting results. The purpose of this study is to investigate the effects of smoking on cognition in order to add further reinforcement for the advocacy of smoking cessation. A minimum of 30 total male and/or female participants between the ages of 18 and 65 years, classified as smokers and non-smokers will be used. The Montreal Cognitive Assessment (MoCA) will be administered to determine cognitive status of each subject. The results will be compared between a smoking and non-smoking group to determine potential differences among scores.

Concussion Knowledge Proficiency and Related Attitudes Regarding Symptom Reporting of High School Football Players

Presenter: Kayla Wright
Project Advisor: Dr. Adrienne Bratcher

This study was conducted to evaluate the knowledge of and attitudes surrounding concussion in high school football players. Previous studies have demonstrated that decreased knowledge about concussion symptoms leads to an increase of unreported concussions, which may potentially cause devastating secondary injuries. The purpose of this investigation was to determine the degree

of accuracy regarding concussion symptoms possessed by high school football players from twenty schools and comparing it with their attitudes concerning the reporting of concussion symptoms in a correlational approach through the administration of the Rosenbaum Concussion Knowledge and Attitudes Survey – Student Variation (RoCKAS-ST). This information will be used with the intention of providing a basis to implement a new concussion education program, modifying an existing program, or investigating a successful program for use in other schools for more widespread benefit.

Assessment of Multiple Concussive Athletes with Dual Task Triple STROOP and Aerobic Exercise

Presenter: Sierra Duran
Collaborators: Sarah Massey, Ariel Gomez
Project Advisor: Dr. Matthew Barlow

Athletic concussion testing often relies on a sedentary computer neurocognitive test battery called the Immediate Post-Concussion Assessment and Cognitive Testing (ImPACT). In previous studies from our lab in these populations we concluded that the combination of a physical neural impediment with cognitive tests (dual-task with balance impairment) created a greater degree of impairment not observed in the sedentary ImPACT test. However, changes in the Post-concussed group were negative but not statistically different in the participants with 5 or more concussions. We hypothesized that increasing the degree of neural impediment with exercise at a moderate workload during treadmill exercise while completing a neurocognitive test (Triple Stroop) would show a higher cognitive impairment in the Post-concussed participants. 9 non-concussed and 7 multi-concussed participants completed the battery of Triple Stroop while on a treadmill at 60% of heart rate reserve. They were given a random sequence from the 4 possible patterns of the Triple Stroop 120 question cognitive test. These is significant differences in the cognitive deficits between the two groups of non-concussed and multi-concussed including a time deficit on average in the multi-concussed group (108 sec) compared to the non-concussed (84 sec). In addition the number of correct per minute was higher in the control than the multi-concussed group. The ultimate concern associated with these deficits include athletic trainers and coaches are allowing their athletes to participate with a greater risk for additional head injury.

Cognitive Effects of Multiple Untreated Concussions in Rodeo Athletes

Presenter: Calli Bane
Project Advisor: Dr. Adrienne Bratcher

Traumatic brain injuries, or TBIs, and mild traumatic brain injuries, mTBI, are steadily increasing in incidence each year. Contact sports, car accidents, and blows to the head are currently, the most common cause of TBIs. This article reviews literature and conducts a research study to measure the severity and observe the long- and short- term effects of multiple untreated concussions in the non-traditional, contact sport of rodeo. The research includes informal observations and formal testing of cognitive function post-TBI or mTBI in rough stock contestants. The Hopkin's Verbal Learning Test-Revised edition and the Trail Making: Part A and Part B were used for quantitative data in this study. Multiple ANOVA statistics were used to determine the significance of occurrence, severity of impact, and deficits, across three rough stock events including bull riding, bareback riding, and saddle bronc riding. Observational results indicate similar cognitive effects across disciplines, such as eye twitching, attentional deficits and poor emotional regulation; however, quantitatively, there was no significant difference across the participants in the three rough stock events. Despite the confounding variables present in this study, additional research is recommended.

An Inferential Analysis of Reading Comprehension of Expository Text in Adults with TBI

Presenter: Andrea Ciro
Project Advisor: Dr. Adrienne Bratcher

A growing number TBI survivors face reading problems that complicate meeting the demands of the workplace, keeping positions they held prior to their accident, and seeking degrees and job training in order to remain productive members of our society. This replication research study (Sohlberg et al., 2014) was conducted to gain information about the reading deficits of adults with TBI who have been diagnosed with mild-to-moderate cognitive impairments, are currently attending or pursuing work or a postsecondary education, and what response they will have to the use of reading strategies prompts. Participants from 2 groups, adults with TBI (n=15) and matched controls (n=15) read 4 different 500-word expository earth science passages given in either strategy or no-strategy conditions. Participants were evaluated using sentence verification and free recall tasks. The TBI and control groups demonstrated significant

differences on 3 of 5 comprehension reading measures: inferential statements on the sentence verification tasks and communication units and type-token-ratios on the free recall task. Differences exhibited in the participants' prerequisite reading skills were unexpected. For the within group comparison, participants showed increases in 4 of 5 reading comprehension measures but differences were not significant. The results contribute to clarifying the nature of reading comprehension in adults with TBI with mild to moderate cognitive impairments. Future research is necessary to determine more accurate target levels of understanding and how heterogeneity of individuals will influence their reading and response to strategy intervention.

Poster/Display Presentation Group 9

Do You Know Your Stroke Quotient?

Presenter: Whitnee Wade
Project Advisor: Mr. Jesse Martin

This research study was initiated to assess the knowledge of two groups on the causes, symptoms, and side effects of acquired aphasia from stroke. Group one consisted of individuals ranging from ages 20 to 59-years-old. Group two consisted of individuals over the age of 60-years-old. The groups scores were compared using an independent t-test to determine if there was significant difference of knowledge between the age groups. A survey methodology was used. This study was completed because there is not a lot of research on how informed males and females are on stroke consequences. The more knowledgeable people are about these factors, the quicker they can potentially seek medical attention. There are multiple causes of stroke including poor diet, lack of exercise, and excessive weight. The symptoms of stroke an individual could experience include facial weakness, limb weakness, difficulty speaking or swallowing, blurred vision, and diminished ambulation. Aphasia is one common consequence a survivor of stroke could acquire. There are multiple cognitive factors aphasia can affect, including expressive/receptive language needs, auditory comprehension, reasoning, abstract thinking, problem solving, attention, memory, reading, writing, and visuospatial abilities. It was found that there was no significant difference between the two groups in this study. Further research is warranted.

Understanding the Utilization of Assistants in Audiological Practice

Presenter: Hannah Floyd
Project Advisor: Dr. Rachel Lingnau
Award Winner

With increasing pressure for productivity and current trends leaning toward the use of assistants in the medical disciplines, there is a need for clarification of an important role in the field of audiology. Audiology assistants' roles are loosely defined by major organizations and stakeholders such as The American Academy of Audiology and The American Speech-Language-Hearing Association, which leads to confusion at best, and at worst, serious ramifications of assistants operating out of their scope of practice. This nationwide survey of audiologists was conducted to gain a concise and comprehensive understanding of the current role of audiology assistants in clinical practice. Survey questions were designed to elicit information regarding education and training, current roles, and the supervision of assistants. Additionally, respondents were requested to provide information regarding components they felt should be included in a standardized audiology assistant training program. The results indicate that the length of time as a practicing audiologist and the length of time using assistants do not significantly affect how assistants are used. Results also indicate the need for further clarification and requirements of the assistant role by overseeing organizations of audiology.

Are, SLP provided, Cognitive Therapy Services Really Understood?

Presenter: Jamie Webb
Project Advisor: Dr. Adrienne Bratcher

It is believed that staff members and family members who have loved ones living in an assisted living facility are unaware of the benefits of speech language therapy services for those living in such facilities. Research was done to provide evidence supporting the claim that it is beneficial for elderly to receive speech language therapy services. To validate the claim that staff members and loved ones are unaware of these benefits and the role of a Speech Language Pathologist (SLP), a study was done within local personal living facilities. The focus of the study was to determine if staff members and family members of loved ones living at the facility were aware of the role of the SLP in an assisted living setting and the benefits of receiving these services. The prediction is that the staff members and loved ones are unaware of the benefits of speech language therapy services. To test this theory, a group of staff members and loved ones were asked to

complete a brief questionnaire addressing their understanding of the role of a SLP. After the completion of the questionnaire a brief presentation began, which highlighted the roles and benefits of speech language therapy services. A post-questionnaire was given after the completion of the presentation to compare their knowledge prior and current understanding.

Mal de Debarquement Syndrome Adaptations

Presenter: Christine McFall
Project Advisor: Dr. Susan Bassett

The topic of research interest is to discern the adaptation efforts exhibited by persons diagnosed with Mal de Debarquement Syndrome (MdDS), a rare neurological condition with a wide variety of disequilibrium-based symptoms. Persons with MdDS are frequently misunderstood and misdiagnosed. They may seek several medical options and try numerous therapies before getting a specific diagnosis. While MdDS is considered incurable, there are medical therapies, modifications, adaptations, and a few medications which may improve the quality of life in the face of this disabling condition. Utilizing Sister Calista Roy's Nursing Model of Adaptation, these experiences of adaptation to symptoms of MdDS will be explored. This case study of the lifestyle adaptation efforts by 3-4 persons diagnosed with MdDS, will establish a baseline for development of further strategies of nursing care.

ABA intervention: Do we have parental support?

Presenter: Erin Bishop
Project Advisor: Dr. Karen Copple

This research was a one group pretest-posttest design investigating the degree of change of opinions in parents of children with autism before and after watching an informational video on Applied Behavior Analysis (ABA) techniques. Parents had not used ABA techniques prior to the study. Research was conducted online with a pretest questionnaire, video treatment, and posttest questionnaire. Results from this study showed that parental attitudes toward ABA significantly improved after watching the video, and that parents were significantly better informed about how ABA techniques work. These findings suggest that watching a video demonstration of ABA techniques may be an effective way to inform and increase willingness to use these techniques in parents of children with autism.

Practicum Makes Perfect

Presenter: Karah Tooley
Project Advisor: Mr. Dwayne Wilkerson

This continuation comparative study of first semester graduate students' clinical competency in speech-language pathology at Eastern New Mexico University (ENMU). Fifteen graduate clinician's initial and final sessions were recorded at the ENMU Speech and Hearing Outreach Rehabilitation Center to identify clinician's strengths and weaknesses. A rubric previously created by Gabriel Ayala, was designed to provide an alternative measurement of clinical productivity and effectiveness in the clinical areas: time management, client engagement, session management, and clinician skills. The researcher rated the student's clinical performance using the rubric developed to identify gain scores in clinical areas. While there were specific gains in all areas, the results indicated clinical growth in all areas, the clinicians all grew differently in the four clinical competencies. The rubric did not account for personal clinical differences (i.e. client absences, supervisor differences, amount of sessions, etc.). The clinician's rubric scoring is not a formal measurement, it was the researcher's opinion that the instrument could potentially offer an alternative to productivity ratings and clinical effectiveness.

Temperament and Personality Types: Factors of Gender Imbalance in Speech Pathology

Presenter: Gregory Code
Project Advisor: Dr. Suzanne Swift

The purpose of this research is to help aid policy development, to encourage appropriate male populations to enter gender-atypical occupations and to determine if personality and temperament types play a factor in the gender imbalance, in the field of Speech and Language Pathology. This study used a quantitative survey design which contained demographic questions and a personality test from David Kersey's book (1984), "Please Understand Me: Character and Temperament Types", with 70 forced questions which determined the participant's personality and temperament types. The survey was sent to 200 Speech Pathology academic programs throughout the US, social media sites such as Facebook and LinkedIn, and the National Students Speech-Language-Hearing Association's (NSSLHA) forum on the American Speech-Language Hearing Association's (ASHA) website. There were 782 participants which included males and females with sub-categories being both male and female dominated

occupations and the academic fields associated with them and academic and professional fields that had an even ratio of men to women. Results were analyzed using descriptive statistics and multi-factor ANOVAs and indicated that the only significant difference in personality characteristics were between Female SLPs and males in a male dominated field $F(3,2276) =. 2.60$, $p = .02$, $\eta p2 = .14$. Based on the data it can be inferred that male SLPs have similar personality characteristics to female SLPs prior to entering the field of Speech Language Pathology. Data from Keirsey's book (1984) shows that SLPs, both male and female differ with several of the general populations percentages regarding individual personality characteristics.

From Hip Checks to Conflict Resolution: Do Rollerderby as a Team Sport build Female Communication Skills?

Presenter: Allison Brault
Project Advisor: Dr. Suzanne Swift

Effective communication skills are essential in successful personal and career relationships. Language development in females differs from that of males in that females use inclusive speech and more polite words. (Fahey, Howard, and Hulit, 2011) This trend continues into adulthood, and gives the perception that females tend to either avoid conflicts or are not taken seriously in attempts to resolve them. It has been suggested that participation in sports helps females to be more successful and build confidence in their conflict resolution and other communication skills in the workplace and in relationships. Roller derby is a female sport that values these skills in collaboration with team members. The purpose of this study was to explore the idea that roller derby helps females to find their voice outside of the sport and that sports can be used as an appropriate therapy option for female adults who wish to work on communication, especially conflict resolution. The study used a non-experimental, correlation design to survey a sample of active and former female skaters, ages 18+. Participants were solicited through roller derby leagues across the country via an email list serve, and volunteers were directed to an online survey that was completed at their convenience. Results concluded that there was significant difference in the positive affect of roller derby on communication skills between skaters that have a diagnosis of a communication disorder and those that do not.

Poster/Display Presentation Group 10

Dual Axis Solar Tracker

Presenter: Tristan White
Collaborators: Davi Mondragon, Jesus Sanchez
Project Advisor: Dr. Hamid Allamehzadeh

Solar energy technology is discussed briefly in this overview. Maximum power output is sought out to increase the efficiency of a solar array. The two approaches for amplifying power extraction are sun tracking and maximum power point tracking, although a combination of both can yield better results. A sun-tracking design operates at higher efficiency, as it can increase energy yield up to 50% compared to the fixed-array design over the course of year compared to a fixed-designed array. To further increase efficiency, tracking the sun movement from North to South over the period of a year will follow seasonal changes in the position of the sun. The purpose of this paper is to present a dual-axis sun tracker motor to accomplish the efficiency gains. To ensure both motors are not activated simultaneously, a logic circuit is created to allow voltage and current flow to one motor until it is in a preset efficiency range and then it adjusts the other motor into its efficiency range, completely through switch controls. Finally, the design circuits are implemented in laboratory and the overall performance of the composite system are evaluated.

Wireless Power Transfer through Inductive Coupling

Presenter: Jose Mondragon
Project Advisor: Dr. Hamid Allamehzadeh

Wireless Power Transfer (WPT) is the efficient transmission of electric power through a medium to a remote system for the purposes of charging or powering the system. The type of wireless power transfer is dependent on the application for near or far field uses. A major form of WPT through inductive coupling of a transmitter and receiver circuit through an inductive coil. Applying an electrical current through an inductive coil forms a magnetic field around the coil and ultimately run through another coil that is resonant to the same frequency as the generated frequency. The networks that create and receive inductively coupled energy are introduced and analyzed. WPT can be applied to various real-world applications including powering electrical vehicles, mobile devices, biomedical devices, the Internet of Things (IoTs), and many more. The

IoTs is the connection of the internet with electrical devices for sending and receiving information. Analysis is provided on an application of WPT for the use on an electrical vehicle, biomedical device, and the IoTs. With the growth of WPT technologies there is a growing concern of the health effect posed on humans with the use of this technology. Different modes of achieving WPT has different environmental effects. The effects on environment and humans are addressed.

Voice Activated Solar Powered Golf Cart

Presenters: Karen Gutierrez, Adrian Munoz
Collaborator: Dana Arnold
Project Advisor: Dr. Hamid Allamehzadeh
Award Winner (Tie)

In this report, we document the research and engineering practices that were used to design and implement a solar powered golf cart with speech recognition. We also discuss the construction of the solar panels on the golf cart, as well as the software involved in speech recognition design. We used some circuitry techniques to do some basic functions including, turning on the lights, starting the golf cart, and raising and lowering the solar panels for optimal efficiency. The main components of the system include a speech recognition board that was programmed to recognize individual voices and phrases. A circuit network was systematically designed so we could implement multiple functions at once, simply and safely.

Bird repelling system

Presenters: Alejandro Munoz, Jesus Sanchez
Collaborators: Davi Mondragon, Tristan White
Project Advisor: Dr. Hamid Allamehzadeh

Some birds are major threats to the field of agriculture, airport control operation, power lines, and serenity of the environment. Most common pest birds in many countries are house crows, common myna, jungle myna, white-cheeked bulbul, grackle, etc. In order to distract these birds away, many traditional methods such as scarecrow models, sound blasters, hawk kites, flashes, lasers, and colored lights were used. One major pest bird on ENMU campus in grackle. in this project, an effective bird repellent is designed based on high power electronic signals with audible sounds. The generated frequency sounds can deter bird that are able to hear the range of frequency tones. A research study on the range

of frequencies that various birds can hear is also conducted. Different sounds for deterring different species of birds is generated through variable electronic components of the circuit. Finally, to evaluate the performance of the device, the designated bird repellent will be tested on ENMU campus grackles population.

Laboratory Proof of Fourier Series for Periodic Non-Sinusoidal Signals

Presenter: Davi Mondragon
Project Advisor: Dr. Hamid Allamehzadeh
Award Winner (Tie)

In this research, we study the mathematical representation of common periodic non-sinusoidal signals in terms of their harmonic components using Fourier series. Then, we synthesize each non-sinusoidal periodic signal by adding appropriate numbers of harmonic components in its spectrum. To implement the synthesis of each signal in the laboratory, we tune several function generators to appropriate frequencies and amplitudes and combine their output signals via a voltage summing amplifier circuit. Several low-pass and band-pass analog active filters are designed using principles of filter theory and Laplace Transforms. The designed analog filters are built in the laboratory using op-amps, capacitors, and resistors; to verify the filters' cutoff frequencies, the designed analog filters are simulated on computer using Pspice software. To verify the Fourier series predicted frequencies, students apply periodic square waves to the input of the designed filters and observe the filtered harmonics on the oscilloscope. MATLAB software is also used to synthesize a square wave from its spectral harmonic components.

Poster/Display Presentation Group 11

Investigating Hardware Offloading for Reed-Solomon Encoding

Presenter: John Dermer
Collaborators: Gustovo De Leon, Tyler Rau
Project Advisor: Ms. Amanda Bonnie
Award Winner

Reed-Solomon (RS) encoding is a storage scheme which offers better scalability, but requires heavier computation, compared to other storage models. This presents a problem as it requires users to purchase brawnier CPUs than

would be otherwise necessitated. However, Mellanox's ConnectX-4 Infiniband cards have the capability to perform RS encoding on the HCA hardware; removing the need for powerful CPUs to calculate it. We investigated the performance, measured in throughput, between these cards and Intel's ISA-Library, with regard to various block sizes and concurrency. We conclude that the MLX cards encoded faster and more consistently than ISA-L. Furthermore, the ConnectX-5 cards support the Galois Field (GF) 2^8, this grants compatibility with data encoded by any system using GF(2^8) or less, including ISA-L which only uses GF(2^8). These cards enable users to substantially increase encoding and decoding throughput by using more cards; additionally enabling the use of less powerful CPUs and one card to achieve similar performance.

Cognitive Companions

Presenter: David Contreras
Project Advisor: Ms. Audra Brown

This research project will focus on a problem many gamers would argue to be one of the most crucial components in a 'Great' game, companions and pets. Companions have long been a staple of gaming across many genre's, and while they have brought a great level of joy to gamers; They have also delivered a veritable host of issues. The same issues that have always been a constraint to advancements in the field remain. Computation and memory are limited, often spent on graphics and physics, leaving little for NPC's. Companions should NOT be treated as simple NPC's for they are intrinsically NOT like other NPC's, they are subject to more scrutiny and relied on for many aspects of gameplay. This, in turn, has led to a love-hate relationship with users. Well-developed and endearing companions must be weighed against the trouble they inevitably bring. Issues such as: poor pathing, faulty logic, bugs, unexplained actions, lack of customization, and plain repetitiveness… By using a Knowledge-based AI, and cognitive learning---especially in-game learning guided by users---this project hopes to address several key issues in the status quo for companions. Using this method of approach, we hope to achieve a much more interactive companion, one that can learn to adapt to a user's play-style and preferences. Being able to custom build a companion, and then refine it over the course of play will bring a paradigm shift to gaming, one where your constant companion is infinitely more valuable, personalized, and companionable.

Houdini's Math Was Magical

Presenter: Charles Murray
Project Advisor: Dr. Brian Pasko

Houdini's Escape is well-known to be a suspenseful magic trick. Calculus comes to the aid of the study of his masterful trick in so far as it allows us to examine the variable or constant rate of flow of water as it enters a variable-sized tank. Houdini, ever the man of dramatic flair, would time his escape to be as suspenseful and dramatic as possible. It is the endeavor of this study to show that calculus can help maximize the suspense! We consider how the size and shape of the tank and the in-flow rate of the water affects the drama of the trick.

Given a tank of a certain size and shape we consider the in-flow rate of water upon reaching a dramatic plane and also to derive a general equation to be utilized for any tank of any size or for any rate of water in-flow.

To conduct the study, integration of volumes of solids of revolution will be considered in regards to the given tank. Differential equations will be used alongside multivariable calculus to determine the related function of the water's height and the in-flow rate of the encroaching water. Lastly, through the use of a computer algebra system, visualization of the mathematics and solutions involved will be more easily obtained and subsequently displayed for the excitement of all.

Smoking Attributable Mortality vs. Drug Poisoning Mortality

Presenter: Eduardo Garcia
Project Advisor: Dr. Weizhong Tian

For this project, I've done research on the topic how many people decease due to tobacco related illnesses compared to how many people decease due to drug poisoning. I chose to analyze data corresponding to two variables: tobacco mortality and drug poisoning, and all the data is obtained through data.gov. I will choose regression analysis method to formulate a conclusion and interpret the results.

Does salary buy player performance and results in soccer?

Presenter: Ryan McManus
Project Advisor: Dr. Matthew Haney

There are many factors that are analyzed as to why a team or franchise is successful in terms of win percentage however none have looked at the direct link between soccer and salary as a motivating factor that leads to team performance. The operant expectant theory and the expectancy violations theory were applied as sports is a game of expectations where we can monitor expected behaviors and then compare these to what actually happens at clubs who are performing well and clubs who don't. Salary was found to be a key factor in teams winning percentages across all five major leagues in Europe. There was a positive correlation between total team salary, and winning percentage. That being said, if multiple players are not performing, as they should, then it can be deduced that there are other underlying factors other than salary that are affecting performance such as the manager, team environment, distance run in a game, team discipline, squad-rotation and other important factors.

Poster/Display Presentation Group 12

Changes in Alimental Worldviews through Childrens' Exposure to Healthy Choices

Presenter: Estephanie Mendes
Project Advisor: Dr. Charles Broz

Purpose/Introduction - Overweight and obesity in children is a serious concern in the United States and worldwide. Early childhood is a critical time to establish nutrition habits to prevent obesity. Caregivers have been found to influence children's dietary behaviors through role modeling. Therefore, obesity prevention interventions should target multiple settings, including child care settings and home settings. The primary goal of this pilot study is to improve dietary intake among children ages 3 – 5 years and among their family members. Design/methodology/approach – Children at a childcare facility were methodically exposed to nutrient-dense "superfoods" over the course of three months of lunch service. Foods that were accepted by the participants were served with increasing regularity. At the end of the exposure period, parents of the children then will take part in an online training and take-home-meal program. Finally the parents will be given post-tests to determine the validity of the experiment.

Exploring State Testing Results of Elementary Students who receive Behavioral Interventions from School Counselors

Presenters: Ashley Ray, Kris-Ann Walters
Project Advisor: Dr. ShinHwa Lee

Behavioral issues tend to interfere with teaching and learning. This problem affects the whole classroom. Behavioral problems distract other students from learning and require teachers to spend precious instruction time on discipline and behavior management. Teachers are committed to helping all their students succeed, including those with behavioral issues. However, teachers report that they do not have adequate resources such as school counselors to assist with behavior management. This research will explore the effects, if any, of student productivity in the classroom when provided with behavioral modifications and interventions from a mental health provider (school counselor).

Emotional costs and benefits override use of deception

Presenters: Mary Trujillo, Troy Sanders
Collaborators: René Smith, Courtney Spencer, Paige Burnes, Sasha Mejia, Haley Gore
Project Advisor: Dr. Leslie Gill
Award Winner

Previous research assessing college students' reactions to research involving direct deception indicates some adverse reactions to deception involving false, particularly negative, feedback on task performance, with little or no effects of indirect deception (Epley & Huff, 1998; Boynton, Portnoy, & Johnson, 2013). However, these studies have focused more on emotional reactivity and have not addressed participant evaluation of the costs and benefits of the research as part of debriefing. The purpose of the present study was to assess participant reactions using the Reactions to Research Participation Questionnaire (RRPQ) when the participation involved deception compared to non-deception research. Oneway ANOVA was used to compare RRPQ scores among three groups: Deception-values-affirmation (N1=31), Deception-control (N2=18), No-Deception (N3=31). Results were statistically significant for Emotional Reactions and Perceived Drawbacks, $F(2, 78) = 3.32$, $p < .04$ and $F(2, 78) = 6.55$, $p < .001$, respectively. Post hoc Tukey's HSD indicated significantly higher ratings of Emotional Reactions and Perceived Drawbacks for Deception-values-affirmation subjects compared to No-deception subjects. Additionally, a trend (Tukey's HSD $p = .07$) toward higher ratings of Personal Benefits in Deception-values-affirmation subjects compared to No-deception subjects. Results suggests that

the self-affirmation bias (Deception-values-affirmation) condition resulted in subjects experiencing stronger emotions and benefits from their participation, and experienced more fatigue compared to subjects in the non-deception study. Subjects' views of their research participation centered on the activities the research involved more than issues of deception.

Gender and Self-Affirmation Bias in Reducing Cisgenderism

Presenters: Paige Burnes, Courtney Spencer
Collaborators: Tyler Bock, Mary Trujillo, Troy Sanders, René Smith, Sonya Wagner, Sasha Mejia
Project Advisor: Dr. Leslie Gill

Transgender and gender non-conforming (TGNC) people are particularly marginalized in terms of gender discrimination, prejudice, employment and socioeconomic status, and violent hate crimes. Previous research has shown benefits associated with self-affirmation, including greater open-mindedness, fewer averting biases, and decreased feelings of stress (Lehmiller, Law, & Tormala, 2009).Gill et al. (2017) showed that empathy evoking information predicted decreased cisgenderist attitudes in people with higher emotionality and that higher openness predicted increased cisgenderist attitudes after exposure to more academic and impersonal information. In the present study, the aim was to explore the efficacy of values affirmation in influencing attitudes towards TGNC individuals. Fifty-five participants completed a values affirmation or control writing task, after which they completed a survey under the pretense of being a separate study investigating opinions and risk. The Attitudes Towards Transgender Individuals (ATTI) scale was embedded in the survey on "opinions and risk." ATTI scores were entered into a twoway ANOVA comparing the values condition (Self-Affirming vs Control) and participant gender. Overall, participants identifying as women had significantly lower transphobia scores (M = 43.29, SD = 11.89) than those identifying as men (M = 51.88, SD = 12.21). It is possible that the effect of gender outweighed any effect of the self-affirmation bias; however, it is also likely that the women in the study were higher in emotionality and were therefore more influenced by the self-affirmation bias condition than the men, as results from Gill et al. (2017) suggest.

Human Rights in Russia Under Vladimir Putin

Presenter: Lori Coerber
Project Advisor: Dr. Daniel Acheson-Brown

The question this project focuses on is Human Rights in Russia under the Vladimir Putin regime. I examine cases wherein individuals have challenged the Putin regime and allegedly have been assassinated for their opposition to the regime. Putin has long enemy list and a number of them have been murdered under suspicious circumstances. Alexander Litvenenko, Mikhail Lesin, Anna Politkovskaya, and Natalia Estemirova are a few of the relevant cases. I will focus on these four intensive cases in my paper/poster.

Poster/Display Presentation Group 13

Is it a Broom

Presenters: Tyler Bock, Kekoa Von Schriltz
Collaborator: Kaitlyn Rael
Project Advisor: Dr. Gary Bond

Signal Detection Theory (SDT) has been used to examine yes/no, and other binary decisions in psychology and in other disciplines (Bond, Malloy, & Thompson, 2005). One can think of a search and rescue mission anywhere in the world, where a searcher determines if there is wreckage present or absent. If the searcher says “yes” it is wreckage, and there is wreckage present, that is called a “hit” in SDT. Three other possible actual condition/human decision outcomes in SDT are miss, false alarm, and correct rejections. We conducted a simple SDT experiment to model people’s decisions based on 12 signal present and 12 signal absent trials. Our stimuli were cropped photos of various brooms, and cropped photos showing wheat in a field. There were 14 participants (10 females and 4 males) who responded yes or no to the question, ‘is this a broom?’ We tallied hits, misses, false alarms, and correct rejections, and then calculated hit rate and false alarm rate in order to determine two SDT statistics, discriminability (d prime) and criterion (beta). Discriminability was poor at d’ = 1.617, and criterion was +0.07, indicating a conservative decision making bias. Results indicate that the perception of material textures at close range is limited without shape perspective.

Signal Detection Theory

Presenters: Elijah Meddleton, Tonya Chairez
Collaborators: Patricia Dower, Julissa Aguilera
Project Advisor: Dr. Gary Bond

Signal Detection Theory (SDT) is used to analyze binary data. People make everyday decisions based on whether a signal is presented or not (Verghese, 2001). Four decision possibilities in SDT based on actual and human decisional information are hits, misses, false alarms, and correct rejections. Hits and correct rejections are correct decisions, and misses and false alarms are incorrect decisions (Parasuraman, Massalonis, & Hancock, 2000). There were 14 participants (3 men, 11 women) ages 18-33, who were shown 24 stimuli. Twelve stimuli represented the signal, which was a lady on a horse hidden in a larger image, and 12 stimuli did not have the lady on a horse in a larger image. Each slide was presented for 5 sec. Participants answered yes or no if they thought the lady on the horse was present. Hits, misses, false alarms and correct rejections were tabulated from the decision data, and hit and false alarm rates were established. Discriminability, which represents the decisions maker's sensitivity to the signal, was d' = 2.23, which was very good, indicating that the stimuli were easily detectable. The criterion that participants set was calculated as $\beta = -0.53$, which was a liberal bias in decision making. Results indicate that people are highly aware of easily detectable stimuli in their environment.

Working Memory on Stroop Effect

Presenters: Amanda Garcia, Angelica Enriquez
Project Advisor: Dr. Gary Bond

The Stroop Effect is a test of attention that has been used frequently to examine attentional interference. In this research, the Stroop Effect will be examined in relation to working memory to test whether people who score higher on working memory as measured by the Wechsler Digit Span Backward test are not as vulnerable to the interference condition in the Stroop test as people who score lower on working memory. The Stroop test (Stroop, 1935) will be modified slightly and administered. The Stroop test will allow us to use a baseline time and compare it to an interference time. The Digit Span Backward will be given to the same participants following guidelines for administration of the test, a subscale of the Wechsler Adult Intelligence Scale (Wechsler, 1955). A median split of participants' scores on the Digit Span Backward will be taken. An independent variable will be formed: participants scoring above the median will be categorized as a "high working memory" group, and participants scoring below the median will be in a "low working memory" group. Changes in the dependent variable, difference score on the Stroop Test (absolute value of Baseline – Interference times), will be assessed in an independent samples t-test to determine if mean difference scores on the Stroop test will be lower in the high working memory group and higher in the low working memory group. The result should support the

hypothesis that people with high working memory will be less vulnerable to the Stroop Effect.

Reaction Times for Depression Words and Neutral Words in the Emotional Stroop Test

Presenters: Kenneth Lloyd, Sonya Wagner
Collaborator: Timothy Gettle
Project Advisor: Dr. Gary Bond

R. Stroop (1935) published his dissertation results on what later became widely known as the Stroop Effect. Stroop's tests included presenting words of colors (e.g., blue, yellow, red, etc.) in black and white, and in congruent or incongruent colors. Naming the color of the word rather than reading the word on incongruent trials presented interference, and time taken on the trials was the dependent variable. In the 1980s and 1990s, scholars began noting that people who suffered from psychological disorders, such as anxiety and depression, had longer reaction times to anxious and depressive words on Emotional Stroop tests. We intend to replicate the results in the studies of depression, where we predict that there will be longer reaction times on words that are gloomy or sad when compared to neutral words for people who score high in depressive symptoms as shown on the Beck Depression Inventory (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961).

Attitudes Toward Transgender People

Presenters: Darien Sturtevant, Michayla Ainsworth
Project Advisor: Dr. Gary Bond
Award Winner

Heterosexuals' negative attitudes regarding transgender people are associated with a binary approach to understanding gender (Norton & Herek, 2013). However, a recent study indicated that as people become more informed about transgender people they change their attitudes to be more supportive (Flores, 2015). Although self-reported empathy also has long been a predictor of less bias toward sexual minorities (Johnson, Brems, & Alford-Keating, 1997), experimental studies have not been completed that prime participants with 'dry' academic information and empathy. Research was conducted with 55 participants who were randomly assigned to two information conditions: a condition that primed people to be empathetic toward transgender people, and a second condition that presented academic material on transgender people. Participants

were asked five questions after they were presented with the information, including “What was the most important thing you got out of the information?,” and “What new information did you learn?” The language that participants wrote in response to the questions was coded by a software program called Linguistic Inquiry and Word Count (LIWC; Pennebaker et al., 2015). In the Empathy condition, function words, adverbs, negative emotion words, discrepancy words, feel words, and affiliation words were used significantly more often, while in the Academic condition, sexual words were used more often. Implications of the results will be discussed in our presentation as they relate to attitude change toward transgender people.

Poster/Display Presentation Group 14

Publication of King Arthur

Presenter: Nathalia Loya Marquez
Project Advisor: Ms. Maureen Muhlbauer

My work consists of illustrations based on the novel of King Arthur and his knights alongside with the design of the text of the first chapter. I constructed the illustrations by hand and rendered them using programs such as Adobe Illustrator and InDesign.

Oil Paintings

Presenter: Vanessa Miranda
Project Advisor: Ms. Maureen Muhlbauer

I would like to show my work, while also breaking it down not only symbolically but technically. I would like to show my process step by step. I would also like to show other how hard visual art students work, and hope to dismiss the myths that visual arts is an “easy” major.

Acceptance of Self #1

Presenter: Jessielorenza Ramirez
Project Advisor: Ms. Maureen Muhlbauer

My work is about self acceptance, focusing closely on the female breast which is something I find that many women struggle with. With mine it was to accept my gender identity, my sexuality, and my body. Through this piece I find the beauty in which my body has become. I wish to help other people who struggle with gender idendity, sexual orientation, and overall acceptance of who they are.

Momma and Me

Presenter: Angela Sanchez
Project Advisor: Ms. Maureen Muhlbauer
Award Winner

For this piece I explored a bit more into the medium of watercolor, hoping to give a softer edge or "feeling" to my portrait work. Working from a photo of my mother and myself, I started painting in thin, subtle layers, bringing the image up very slowly. Over 100+ layers of paint were eventually added to this piece as the previous ones dried and set. Reds, yellows, and subtle blues were mixed and overlapped to bring this image to completion.

This painting is roughly 5" by 7", done on Arches watercolor paper.

Caution Tape

Presenter: Raven Lente
Project Advisor: Dr. Jeffery Gentry

In our society, labels are used for everything be is simply naming an object or making a human being into an one. My artist piece, visual represents how some people choose to label others purely off of appearance to the point that one can't even see the person who lies underneath them any more. Labels are constricting and people use them like caution tape to avoid what they fear the most...the unknown.

Confronting One's Film

Presenter: Kyree Mackey
Project Advisor: Mr. Rick Shepardson

Turning a screenplay into a motion picture has its own plot just like any other storyline. Creating a psychologically thrilling short film involves more than just “lights, cameras and action”. What goes into a film beyond just what you see on a screen? This presentation is on how I’ve extracted an idea from my mind and transformed it into a 10-minute visual piece that places a character into his own head.

Stage Management: The Key to a Successful Show

Presenter: Alexander Bizon
Project Advisor: Dr. Anne Beck

I will be presenting a poster on the many varied duties of a theatre production’s stage manager (SM). This person is, second to the director, key to a successful show. Although the stage manager is invisible to the audience his/her work is the one of the most prominent parts of a production that they see. Why is this relevant to our SRCC Conference? It gives the general population a better idea of the ingredients of a theatre production.

I propose to share the many different tools and techniques that go into being a successful SM, which include my promptbooks for the musical The 25th Annual Putnam County Spelling Bee and Antigone. In a promptbook an SM includes blocking notes of the director; rehearsal schedules; and the light, sound, and special effects cues for “calling a show.” Finally, after a director leaves a production, it is up to the SM to keep things ship-shape ensuring the actors can perform to the best of their abilities.

My instructors are Janeice Scarborough, and Anne Beck

Paper/Performance Presentation Abstracts

Paper/Performance Presentation Group 1

Growing Ewe-Lambs Fed a Wheat Hay Versus Peanut Hull Based Diet

Presenter: Janay Blevins
Collaborator: Laura Grube
Project Advisor: Dr. Darron Smith

This is a growth and feed efficiency experiment to promote peanut hulls as a valuable byproduct as a sheep feed. Animals (N=8) were housed in climate-controlled 10 x 10 foot pens with a minimum of 2 animals per pen. Animals were randomly assigned to one of two treatments; wheat hay control (C), and peanut hulls (P). Two different diets were prepared that are isocaloric and isonutritious using two different main feed ingredients (Wheat Hay and Peanut Hulls). The rations were formulated by Dr. Harold Harpster, Professor Emeritus, Pennsylvania State University. In addition, feed particle size will be a factor. Animals had ad libitum access to both feed and water over the course of the experiments. Animals were weighed and feed efficiency calculated every week during the course of the experiment. No invasive procedures were performed on the animals. There is no perceivable stress associated with this experiment. Mean separation of the data was done using SPSS ANOVA test. There was no difference in the amount of feed consumed in grams between (C) 1647.4 ±. 78.1, and (P) 1609.5 ± 77.7 resulting in ($P > .05$). The data concluded that there was no difference in weight gained between (C) and (P), average daily gain in pounds was (C) .1875 ± .1055 and (P) .4554 ± .1025 with a result of ($P > .05$). This suggests that peanut hulls are a viable choice of sheep feed as compared to wheat hay.

Effect of Water-Absorbent Crystals During Drought Conditions on Plant Growth of Several Vegetable Species

Presenter: Erwin Fuentes
Project Advisor: Dr. Lesley Judd

Agriculture in southwestern U.S. faces many issues, particularly drought and water conservation. As a way to aid greenhouses around eastern New Mexico, we have compared the addition of two different types of water-absorbent crystals into potting mix to measure the effect on plant growth when subjected to

drought conditions. Using either tomato (Solanum lycopersicum) or pepper plants (Capsicum annuum); RainGel® crystals or Soil Moist™ crystals were incorporated into the potting mix. These transplanted vegetable plants were grown out for four weeks and grouped into two water schedules: either watered once a week or twice a week. In these drought-like conditions, we found that the growth index of both tomatoes and peppers were similar between the two irrigation groups, but tomatoes grew better in potting soil without crystals and potting soil with Soil Moist™ crystals compared to growing in potting soil with RainGel® crystals. Pepper plants showed no difference in growth index when watered once a week, but when watered twice a week the growth index increased in pepper plants grown in substrate with RainGel® crystals. These differences between plants could be due to the shape and structure of the crystals; it was noted that the Soil Moist™ crystals maintained their shape and structure throughout the study but RainGel® crystals quickly disintegrated inside the substrate.

Effects of Flooring Types and Feed for Cecotrophy in Rabbits

Presenters: Vanessa Garcia, Konsuelo Vaipan
Project Advisor: Dr. Darron Smith

In rabbit farming, growth rate may be affected by feed types and flooring types. Flooring types may affect a rabbit's ability to practice cecotrophy which m ay limit access to nutrients. The objectives of this experiment are to compare two types of feed 1) commercial rabbit chow (C) and a balanced ration consisting of garden vegetables (G), on rabbit growth rates. Three types of flooring will also be studied bedding (B), artificial flooring (A), and wire (W). Rabbits will be randomly stratified in a 2X3 factorial into six groups, each group assigned to a different flooring type (N=3) and a different feed type for each flooring. The rabbits will be weighed weekly for the length of the experiment and average daily gain and feed efficiency will be calculated.

Development of A New Method for Root Induction in Branch Cuttings of Rose of Sharon (Hibiscus syriacus)

Presenter: Garrett Meyer
Collaborator: Sanjib Sapkota
Project Advisors: Dr. Zhiming Liu, Dr. Kenwyn Cradock

Rose of Sharon (Hibiscus syriacus) is a popular garden tree with a variety of beautiful flowers. The prices for Rose of Sharon on the market in the United

States are expensive due to the lengthy processes of propagation and cultivation of the young trees. In this project a new method was developed for mass production of Rose of Sharon saplings. Old branch cuttings from three different colors of Rose of Sharon trees were obtained and placed into nine separate flasks containing tap water in a green house. After the initial rooting in these old branch cuttings was observed the branch cuttings were co-cultured with freshwater algae, either Scenedesmus alone or in combination with Haematococcus pluvialis. Experiments are currently in progress. It is expected that the auxins secreted from the algae would stimulate a rapid growth of adventitious roots in these branch cuttings. Our knowledge of using phytohormones secreted from freshwater algae is a brand new idea and will also lead us on a new path to designing rooting methods for many other flowering plants in the near future.

Social Support and its Relevance for Sheep Welfare

Presenter: Julia Montoya
Project Advisor: Dr. Darron Smith

This experiment was designed to explore the well-known gregarious behavior of sheep. Sheep were housed in climate-controlled 10x10 foot pens where 9 yearling sheep were randomly assigned to one of two treatments. Treatment one (T1) consisted of two sheep placed together in each of three pens. Treatment 2 (T2) consisted of a single animal placed in each of three pens. Each T2 animal was penned next to a T1 pen. Sheep were allowed access to feed and water ad libitum. Throughout the experiment the only stressor placed on the animals was pen separation. During all other times animals were provided food, water, and were cared for at the highest possible magnitude. Video surveillance recorded the behavior of the animals for twenty-four hours a day over fourteen days. Behavior indicators (i.e. lying down, standing, pacing, and eating) were observed form the video and classified in order to determine social preference of a gregarious specie. In essence, determination that the sheep penned together exhibited less stressed than the individually penned animal, even though the pens were together. Results indicate that sheep penned in pairs were less stressed than ($P<0.05$) than individual sheep. Even though the animals could see and touch each other through the pen, animals still felt isolated by pen.

Insect Conservation in The United States

Presenter: Colton Stewart
Project Advisor: Dr. Kenwyn Cradock

There are many ways in which insect conservation can be tackled by environmental managers and entomologists. These approaches include habitat suitability and conservation of habitats, ecological relationships between organisms, and many other environmental managing approaches to conserve insects. Habitat suitability is extremely important for many species of insects including the Karner Blue Butterfly. The larvae of Karner Blue Butterflies only feed on wild blue lupines and due to this food specificity, Karner Blue Butterflies are on the endangered species list posted by the U.S. Fish and Wildlife Service. Insect conversation is important in an ecological and biodiversity stand point. The conservation of biodiversity in the United States needs to be focused on insects because of their impact on the environment and the roles they play within the ecosystem.

Effect of Castration Day on Weight Gain in Piglets

Presenter: Konsuelo Vaipan
Collaborators: Jamie Smylie, Vanessa Garcia
Project Advisor: Dr. Darron Smith
Award Winner

The castration of pigs is a common management practice in agriculture, performed to limit boar aggression towards humans and other pigs, and to prevent "boar taint" in meat. Overall weight gain is an important factor for farmers to consider while deciding when to castrate their animals. The objective of this experiment is to determine the differences in weight gain of piglets surgically castrated at day 7 or day 21. A total of 52 male piglets from 14 litters were randomly assigned to treatment group 1 or 2. Piglets in treatment group 1 were castrated at day 7, and piglets in treatment group 2 were castrated at day 21. Growth was measured by recording the body weights of piglets in both treatment groups at days 3, 7, 21, and 28. All piglets were introduced to solid food at day 7 and had free access to water throughout the experiment. The results show that piglets in treatment group 1 did not have significantly different final weights than piglets in treatment group 2. However, it was noted that treatment group 1 seemed to show quicker wound healing after being castrated than did treatment group 2; this may be appropriate for further research. Based on the results, we conclude that overall weight gain should not be a primary factor of consideration for pig farmers deciding when to castrate their animals.

Paper/Performance Presentation Group 2

Ballistic Encounters of the Cervid Kind: Analysis of Semi-Automatic Caliber Ballistic Damage to Thoracic Hard Tissues

Presenter: Megan Anderson
Project Advisor: Dr. Kerriann Marden

Considering the common use of handguns for self-defense, this study will determine which caliber of semi-automatic, hollow-point ammunition leaves the most forensically diagnostic damage to the bones of the thorax, especially the anterior surface of the ribs. The investigation of ballistic damage to human bone has predominantly focused on cranial trauma, although the torso is the center of mass and presents a larger target area in personal assault situations. This study complements previous research by specifically focusing on ballistic damage to the hard tissues of the chest, a less commonly researched region. This project will also include analysis for the presence of gunshot residue (GSR) on fleshed and macerated rib bones. Since human cadaveric material is not available in the context of this project, the sample in this study will be Odicoileus virginianus (White-tailed deer). Although domestic pig is most commonly used in forensic research, deer ribs are a better analog for adult human ribs in relative bone thickness, overlying soft tissue, and epiphyseal fusion. Rib slabs with a uniform number of bones in each sample will be shot from a distance of five feet, using handgun calibers ranging from .380ACP to 45 Automatic. This research will present a controlled assessment of damage to the ribs caused by various hollow-point rounds, and the amount GSR left in the wound channel and on the bone. The results will provide essential information about the type and degree of damage to the torso caused by specific calibers often encountered in self-defense situations.

Evaluation of the Process of Repatriation of Human Skeletal Remains in Compliance with the Native American Graves Protection and Repatriation Act of 1990

Presenter: Cheyanne Aumiller
Project Advisor: Dr. Kerriann Marden

There is a long history of disturbance of pre-contact and historical Native American ancestral landmarks and grave sites for the aesthetic, financial, and scientific value of their contents. The Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) is an important piece of legislation that affords indigenous Native American groups the ability to recover the ritual and funerary

objects—including human remains—that have been removed from their ancestral lands. The process of preparing collections for NAGPRA compliance is complex and lengthy, and must address not only the cultural importance of the artifacts, but also their scientific significance. This paper outlines the history of the acquisition of Native American artifacts by museums, universities, and private collectors, and describes the role of NAGPRA in returning culturally significant artifacts to descendant Native American populations. This presentation explores the cultural and scientific responsibilities of NAGPRA compliance, including the drawbacks presented by the repatriation of ancient and historic Native American artifacts. Using a small, overlooked assemblage of human skeletal remains as a case study, this presentation details the best practices for biological anthropologists in preparing skeletal collections for NAGPRA compliance, and reevaluates established procedures in the implementation of this important law.

Macroscopic Lithic Research from Northeastern New Mexico

Presenter: Michael Merritt
Project Advisor: Dr. John Montgomery
Award Winner

In 2006, during the course of development on deeded land near Ute Dam and Reservoir, located on the Canadian River in Northeastern New Mexico, twenty-one archaeological sites were surveyed and recorded. Archaeological resources from six of these sites (LA 54329, LA 140312, LA 140343, LA 14042, LA 149043, and LA 149044) were surveyed, recorded, and collected. The materials collected from LA 54329 and LA 149043 were transferred to Eastern New Mexico University for curation. This thesis research is a macroscopic lithic analysis of the artifacts curated from these two sites – mainly their lithic debitage. The goal of this thesis research is to determine whether or not interpretations regarding the lithic assemblages of LA 54329 and LA 149043 correspond to collector/forager models of hunter-gatherer subsistence and technological organization strategies. Archaeological sites reflective of residential base camps should be generalized, thereby displaying a wide range of artifact variation. Sites characteristic of logistical forays should be specialized, thereby displaying a narrower range of artifact variation. Hypotheses regarding the inter-site variability between these two contexts will be tested. It is hoped that the description and analyses of these collections will add to a greater understanding of how prehistoric hunter-gatherers once lived in Northeastern New Mexico.

Determination of Hispanic Ancestry

Presenter: Malikah Rashid
Project Advisor: Dr. Kerriann Marden

One of the primary roles of forensic anthropology is to develop a biological profile for unidentified human remains, including age, sex, stature, and ancestral origins. Among the most challenging components of this profile is ancestry, particularly the poorly-defined classification of "Hispanic." Hispanic is an overly broad and vaguely defined term applied to groups with origins in Mexico, Central America, and South America, as well as other populations, like those from Cuba and Puerto Rico. Moreover, "Hispanic" encompasses a broad temporal range, including populations with long-standing roots in North America as well as recent arrivals, and can involve any degree of admixture between European, African, and indigenous populations. The classification of Hispanic often leaves more questions than answers.

Forensic anthropologists use both craniometrics (measurements) and nonmetric methods to help discern ancestry from the skull, including dozens of nonmetric traits developed over decades of observation (Rhine 1990). Recent research (Hefner 2009) has determined that Hispanic ancestry can be accurately determined using only eight of these nonmetric cranial traits. The present study compares the relative effectiveness of Hefner's simpler nonmetric method with the more traditional nonmetric method for determination of Hispanic ancestry and compares both nonmetric methods to metric classification for a sample of 18 modern, New Mexican crania of known ancestry. Results suggest that Hefner's abridged method is not as accurate when applied to New Mexican populations, and indicate that use of the longer, more detailed inventory of nonmetric cranial traits is advised for human remains found in this region.

Raw Material Procurement at Mesa Portales, LA145165 and LA145166

Presenter: Nathan Shelley
Project Advisor: Dr. Heather Smith

Gallina and Chacoan people are two Puebloan groups that occupied the Northwestern corner of New Mexico. The Gallina phase spans between 1200-1300 A.D. with evidence of a violent end. Chacoan occupations span between 850 through 1275 A.D. Cross-cultural interaction between Gallina and Chacoans has been characterized as minimal, with extensive evidence that the Gallina had hostile relations with outside groups. Eastern New Mexico University's 2003 and 2005 excavations at Mesa Portales provided evidence of both Gallina and Chacoan

occupations. The Mesa Portales excavations more importantly also demonstrated the potential for cross-cultural interactions at the site between these two groups. This study explores the mobility patterns of the people who lived at Mesa Portales. This is accomplished by identifying the size and type of raw material prehistoric people at Mesa Portales utilized for stone tools. The size and type of raw material will indicate whether people at Mesa Portales procured their resources locally or from distant sources and may potentially reveal the extent of cross-cultural interaction between these two peoples.

Paper/Performance Presentation Group 3

Ginger as an inhibitor of the multidrug efflux pump LmrS from Staphylococcus aureus and the synergistic effects of ginger with selected antimicrobial agent

Presenter: Jones Ampadu Adjei
Collaborator: Upender Rao Cheeti
Project Advisor: Dr. Manuel Varela

Staphylococcus aureus is an important pathogen of infectious disease. Multidrug-resistant strains such as methicillin-resistant S. aureus (MRSA) is resistant to many different antibiotics which makes this bacterium difficult to treat. Methicillin-resistant S. aureus infections occur in health care settings and also in the wider community. The bacterium is responsible for several difficult-to-treat infections in humans. The multidrug efflux pump LmrS from MRSA which confers resistance to the bacterium is known to actively extrude different antibiotics. To reverse antimicrobial resistance, inhibition of the multidrug efflux pump LmrS will be a good target candidate. Natural plant products are potential candidates for LmrS inhibition. The antimicrobial activity of ginger behind drug resistance inhibition is poorly understood. We explored the hypothesis that ginger extract possess antimicrobial properties and is capable of inhibiting the multidrug efflux pump LmrS and that ginger extract acts in synergy with selected antimicrobial agent/modulator (garlic). We found that ginger inhibited bacterial growth and also worked in synergy with the selected antimicrobial agent/modulator (garlic). We conclude that ginger extract inhibits LmrS and works synergistically with selected antimicrobial agent/modulator (garlic).

Fermentation of Wastewater-grown Algae through Saccharomyces Cervisiae for Bioethanol Production

Presenter: David Arellano
Project Advisor: Dr. Juchao Yan

Utilizing a wastewater resource, cattle waste liquid, to effectively cultivate algal biomass is an extensively explored third-generation biofuel technique; the produced biomass could then be processed for fermentation to produce bioethanol. This bioremediation/cultivation pathway shows potential for a post third-generation bioethanol fuel source. Through experimentation and research this study hopes to prove the viability and potential of this post third-generation bioethanol fuel source. Algal biomass would be obtained from the Algal Turf Scrubber (ATS) system at Eastern New Mexico University in Portales, NM. The ATS operates with an indigenous algal community. Biomass is thoroughly lysed by using a combination of sonication and heat as proven by literature. Resulting slurry is actively saccharified using mild acid and heat during the lysing process to hydrolyze available carbohydrates for Saccharomyces cerevisiae fermentation under established conditions. Analysis of products of lysing and saccharification process, and of ultimate fermentation products will be done on a Focus Gas Chromatograph and an ISQ-Mass Spectrometer, equipped with an AI 3000 Auto Injector and a TG-WAXMS 30m x 0.25mm x 0.50µm column.

Factorial design approach to probe cation and anion effect for Abp1 SH3 domain

Presenter: Thomas Germain
Project Advisor: Mr. Matthew Dominguez

Proteins can vary in stability due to environment factors such as temperature, salt concentrations and cation and anion ionic radii. Understanding the buffer conditions that provide optimal results is crucial for structural studies. Our lab previously found NaCl increases melting temperature for the Abp1 SH3 domain. To further probe this stability effect, we used a factorial design approach using NaCl, NaF, KF, and KCl to determine the effect of the cation and anion. Using circular dichroism (CD) spectroscopy temperature melts, we found Abp1 SH3 domain increased in stability with all four salts. For our domain-peptide hybrid, the radius of the smaller anion, fluoride, had the greatest effect of protein stability increasing melting temperature by an average of 1.78 . To develop more conclusive results, we plan to continue this experiment by expanding on the proteins used and collecting NMR data to help determine cation and anion effect.

The use of high-throughput stability screening for the optimization of protein crystallization

Presenter: Benjamin Lantz
Collaborators: Rebecca Rhode, Valeria Jaramillo-Martinez
Project Advisor: Mr. Matthew Dominguez

Proteins can vary in their stability due to environmental factors such as pH, temperature and salt concentrations, which affects protein activity. The exploration of protein buffer conditions is crucial for understanding protein structures. To thoroughly explore buffer conditions a high-throughput stability assay was used. With the optimized protein conditions, our goal is to solve the first domain-peptide hybrid structure. In this research, optimum buffer conditions for multiple domains and domain-peptide hybrids were found with a high-throughput equilibrium assay which screened varying salt conditions using two denaturants. The optimum conditions found were used in the initial crystallization trials for select proteins. We found protein stability in different salt concentrations was affected by different denaturants. Domains were more stable in higher salt concentrations, while domain-peptide hybrids were found to be less stable. Chemical denaturant screening with guanidine and urea revealed the negatively charged domain was most stable in high salt. The domain-peptide hybrid was found to be most stable in high salt with guanidine, but the most stable condition in urea was with no salt. We believe the high ionic strength of guanidine has already disrupted the favorable electrostatic interactions and allows salt to show a net positive effect due to improved hydrophobic interactions. In the neutral denaturant urea, high salt decreases domain-peptide hybrid stability due to the screening of the charges between the peptide and domain. Our high-throughput methods have determined optimal conditions for our domain and domain-peptide hybrid for future structural and functional studies that will characterize novel binding peptides.

Synthesizing Nitrile-Functionalized Ladder-Type Oligo(p-phenylene)s to Study the Effects of Electron Delocalization on Infrared vibrations and Redox Potentials

Presenter: Vance Miller
Project Advisor: Dr. Juchao Yan

The search for cheap, efficient superconducting materials made of widely available and nontoxic substances has caused an increase in the research and development of organic superconductors. Two types of organic superconducting materials are poly-phenylenes and fluorenes. These two types of compounds have

been discovered to possess chemical characteristics such as high pi-electron delocalization and structural stability that make them ideal candidates for use in organic electronics and photovoltaics. The research that is being conducted at ENMU consists of the synthesis and characterization of a new ladder-type nitrile-substituted oligo(para-poly-phenylene) compound, titled L5PCN. Of great importance towards determining the usefulness of L5PCN as a superconducting material is its characterization via time-resolved infrared pulse-radiolysis and cyclic voltammetry. Both the synthesis and analytical analyses of L5PCN are expected to be concluded by the beginning of the fall semester of 2018.

Characterization of the Yeast SH3 Domain Family

Presenter: Rebecca Rhode
Project Advisor: Mr. Matthew Dominguez

The SH3 domain family is a group of proteins with key parts in protein-protein interactions. There are 28 Domains in the Yeast SH3 domain family, which is a good model for the approximately 300 human SH3 domains. In order to characterize the domains, we will first express all 28 domains and compare the lysis supernatant and pellet to determine solubility. From there the soluble proteins can be purified natively and examined further using thermal melts and chemical denaturation equilibrium assays. Melting temperatures and ΔG values from their respective assays will be used to characterize the stabilities of the domains in various denaturing conditions. Preliminary results show a variety of melting temperatures and denaturant stabilities. Combining melting temperature and stability data will help in determining the ideal conditions to study each domain.

Antimicrobial Effects of Tannic Acid on Multi-drug Resistant Vibrio cholerae

Presenter: Leslie Sanford
Project Advisor: Dr. Manuel Varela
Award Winner

Due to the overuse of antibiotics, bacteria have developed multi-drug resistance. Unfortunately, it is very time consuming and costly to develop antimicrobials from scratch. Vibrio cholerae, the causative agent of cholera is rampant throughout third-world countries and is one of many species of pathogenic bacteria that have developed resistance. In this study, I examine the effects of tannic acid, a plant polyphenol, on drug resistant Vibrio cholerae.

Tannic acid is thought to be a microbial defense mechanism for plants and is common in many of the foods and beverages that we consume, including coffee, grapes, and tea. During the study, tannic acid demonstrated growth inhibition as well as potential synergistic and antagonistic behaviors when tested in combination with known antibiotics. Further studies could include invivo testing to determine whether tannic acid could be used as an enhancer to drugs currently on the market.

The effect of high concentration viviessential essential amino acids sports drink ingestion on Delayed Onset Muscle Soreness

Presenter: Klaudia Szych
Collaborators: Andi Johnson, Ariel Gomez, Lorenzo Juarez, Abraham Gomez
Project Advisor:: Dr. Matthew Barlow

Studies have consistently demonstrated the benefits of protein supplementation on post-exercise muscle anabolism, which facilitates the recovery of muscle function and performance. The aim of this study was to implement a specific blend of essential amino acid supplements, combined with an exercise routine and quantify the difference in strength, endurance and flexibility, during the time commonly associated with delayed onset muscle soreness, between the first and third day of exercise. Twenty-seven participants (13 EAA and 14 Controls) completed an exercise routine (sit and reach, shoulder flexibility distance, Maximum Voluntary Contraction Isometric Handgrip, 20 meters sprint, push-ups, chin-ups or flexed arm hang, dips, and a 1.5 mile run) for three consecutive days. They consumed a Gatorade drink with or without the amino acid blend during the breaks between exercises. At the end of first and last exercise visit, a venipuncture was performed to collect plasma for later measurement of Creatine Kinase levels. Participants were randomly assigned to either group. This was a double blind study (neither the recording researchers nor study participants were aware of the assigned group). The EAA group improved over the three day period in the repetitions for push-ups and dips compared to the controls. The EAA group was faster in the 20-meter sprint and 1.5 mile run on the last day of exercise compared to the first while the control group was slower; however, both group's changes were not significant. Research reported in this publication was supported by a research contract with Calwood Nutritionals.

Paper/Performance Presentation Group 4

Influence of cover crops on soil properties and sorghum yield in a winter wheat-sorghum-fallow rotation system

Presenter: Pramod Acharya
Project Advisor: Dr. Youngkoo Cho

Eastern New Mexico has hot, dry semi-arid climate with an annual precipitation of 470 mm and 15ºC annual temperature. Ogallala aquifer is the main source of irrigation for irrigated crop production. The water level in Ogallala aquifer is going down and dryland cropping is increased each year in this region including American Great Plains. Winter wheat - sorghum - fallow (WSF) crop rotation system is common in this area which uses extended fallow period, up to 9 months. But, the practice of fallowing cultivable land is not only reducing the soil moisture but also, promoting the wind and water erosion which has made useful nutrients to leach off from the soil profile. Also, studies show that the water-use efficiency of this practice is very low. Among different practices for conserving soil water, as sustainable agricultural practice, use of cover crops is being studied in this region which has several benefits for crop production in dry semi-arid region. A research will be conducted in New Mexico State University Agriculture Science Center in Clovis to study the influence of cover crops in WSF crop rotation system. The objectives of my research are to find the changes in soil physical and chemical properties, soil water content in soil profile, potential carbon-nitrogen mineralization, weed suppression and crop yield done by use of cover crops in between 2016-18. I have hypothesized that there will be significant change in soil properties along with increased carbon-nitrogen mineralization, crop yield and ecosystem services as weed suppression.

Life cycle determination of Dermestes maculatus (Coleoptera: Dermestidae) in a controlled environment

Presenter: Elyssa Cox
Project Advisor: Dr. Kenwyn Cradock

Forensic entomology involves the utilization of the knowledge of the life cycle of arthropods to aid in the estimation of the time since death, or the post mortem interval, which can be an important factor when investigating the events that may have led to the death of an animal or human. Dermestes maculatus are scavenger beetles that feed on dried organic matter including corpses, and

therefore are important in forensic investigations. This analysis focuses on the characteristics of D. maculatus and monitors the life cycle of these beetles, as well as the methodology and difficulties involved in determining the life cycle. Out of 52 eggs, 28 made it to the first instar, and only 4 made it to pupation and adulthood after six instars. This study was performed in a controlled environment with the temperature held constant between 22 and 25 degrees Celsius. This study provides a better understanding of the life cycle of D. maculatus in unexplored conditions and can greatly improve post mortem interval estimation in forensic investigations.

Effects of Environmental Enrichment on Aggression in Captive Mosquitofish

Presenter: Rachael Keeney
Project Advisor: Dr. Darren Pollock

Environmental enrichment is any increase in habitat complexity to reduce stress in captive populations and prevent evolution of maladaptive traits relative to natural habitats. In fishes, environmental enrichment has been proposed to improve the welfare of captive populations used for research, produced in hatcheries for conservation efforts, and reared for private and public display. In this study, I tested the effects of ceramic shelters on Western Mosquitofish (Gambusia affinis) chase-and-flee behavioral sequences in three 76L glass tanks with gravel substrates with eight fish per tank. Chase-and-flee sequences are discrete behaviors that I used as a proxy for general activity and aggression levels. I hypothesized that providing shelters in tanks would decrease the frequency of chase-and-flee sequences by providing hiding refuges for less aggressive individuals. In random order, I recorded 6 videos/tank with shelters (1 shelter/tank), and 6 videos/tank without shelters (36 videos in total). I recorded videos for 10 minutes without humans present in the Dr. Anthony "Tony" Gennaro Natural History Museum. The results of this study will add to our understanding of the effects of environmental enrichment on fish behaviors. The video recordings are currently under analysis, but show anecdotal evidence of decreased chase-and-flee sequences in the presence of a shelter.

Dietary habits of Rio Grande cooter, Pseudemys gorzugi, within Black River Drainage, Eddy County, New Mexico

Presenter: Andrew Letter
Collaborator: Korry Waldon
Project Advisor: Dr. Ivana Mali
Award Winner

The Rio Grande Cooter (Pseudemys gorzugi) is a large riverine turtle native to the Lower Rio Grande River Basin and its tributaries. Rio Grande Cooter is listed as a state threatened species in New Mexico. In fact, the United States Fish and Wildlife Service is currently reviewing its status for federal protection under U.S. Endangered Species Act. There is a paucity of information concerning the species' population status, biology, ecology, and natural history. Our objective was to determine P. gorzugi diet on the Black River in Eddy County, New Mexico. In summer 2017, we surveyed the upper and lower stretch of the river and collected 78 fecal samples: 24 males, 16 females, and 36 juveniles. Overall, dietary composition was primarily dicot and monocot vegetation, filamentous algae, and arthropods. Adult diet was primarily composed of dicot vegetation and arthropods at the upper stretch and monocot vegetation and filamentous algae at the lower stretch. Juvenile diet contained primarily monocot vegetation and Class Insecta at both sites. We investigated ontogenetic shift in diet because other Pseudemys species are known to be omnivorous as juveniles but strictly herbivorous as adults. We only found significant ontogenetic shift in relation to filamentous algae consumption, but there was no significant shift in diet regarding arthropod and vegetation consumption. Our research furthers our understanding of P. gorzugi ecology which can be useful to natural resource management agencies. It also creates opportunities for future studies, such as dietary comparisons of P. gorzugi between different river systems.

Status of Jujube (Ziziphus jujuba) Cultivation in the United States and New Methods for Sapling Production

Presenter: Sanjib Sapkota
Collaborator: Garrett Meyer
Project Advisor: Dr. Zhiming Liu

Jujubes (Ziziphus jujuba) belong to family Rhamnaceae and are distributed in over 30 countries. China is the major commercial jujube growing country. The factors that restrict the jujube cultivation in the United States are difficulties in sapling propagation, limited cultivars, and poor marketing. Jujube trees can be adapted in a semi-arid region/Southern High Plains of the United States because they tolerate drought, frost, and salty soils. The objective of the present research is to investigate the root induction effectiveness under different concentrations of hormone treatment. Jujubes can be propagated by two different methods: seed/sexual propagation and asexual/vegetative propagation. Asexual propagation includes tree branch cuttings, sucker propagation, root cuttings, and grafting. In this project, effects of different rooting media and different dipping time of indole butyric acid (IBA) on the adventitious root formation in tender branch cuttings

will be examined. A complete randomized block design with three different types of rooting media (water, sand, and soil), and three different dipping time (30 seconds, 90 seconds, and 270 seconds) of tender branch cuttings in IBA hormone will be performed. The parameters such as number of roots, root diameter, and root length will be recorded. The development of new methods for propagation of jujubes is expected to help increase the possibility of growing jujubes in the semi-arid regions of the United States so that jujubes will become a valuable fruit crop in this country.

Validity of computer-assisted software for analyzing natural markings in the Rio Grande cooter (Pseudemys gorzugi)

Presenter: Thanchira Suriyamongkol
Project Advisor: Dr. Ivana Mali

Mark-recapture methods used in population demography studies involve marking of animals. Marking techniques such as tagging, notching, and tattooing are invasive and potentially stressful to the animals. However, non-invasive techniques such as photo-identification using animal natural marks have become frequently used for a wide range of taxa including invertebrates, fish, reptiles, amphibians, and mammals. In freshwater turtles, shell notching is one of the most commonly used technique, but this may increase the risk of infection and shell deformity in juveniles and hatchlings. Here, we tested the efficiency of using computer-assisted software (I3S Pattern+ and WILD-ID) for individual identification of the Rio Grande cooter (Pseudemys gorzugi) using plastron pattern. Matching results of the program were generated into ranks ranging from 1–50 for I3S Pattern+ and from 1–20 for WILD-ID, with the 1st rank being the most likely match. Within the top 5 ranked images, WILD-ID yielded higher correct matches (83.9%), while I3S Pattern+ yielded 50% correct matches. We also found the quality of photos significantly contributed to a reduction in the software effectiveness. Additionally, we noticed that plastron pattern faded in larger turtles (i.e., >110 mm straight line carapace length); however, this did not affect the accuracy of the program. Overall, photo identification using computer-assisted software can be used as a non-invasive recognition technique for P. gorzugi, especially for juveniles and hatchlings. This is helpful given that the photo-identification process of small unmarked hatchlings using 'naked-eye' technique can be time-consuming.

Paper/Performance Presentation Group 5

The Positive Impact of Graphic Design in the Marketing World

Presenter: David Aguirre
Collaborators: Jennifer Bodley, Kendall Schneider, Samantha Smith, Jennifer Salomon, Nicholas Volker, Ashley Galloway, Reggie Moore
Project Advisor: Dr. Patricia Dobson

This is a newsletter for the Department of Communication at Eastern New Mexico University. My fellow classmates in COMM 460 Public Relations Cases and Campaigns contributed in this project during fall semester of 2017. There are three important characteristics that highlight this presentation which are journalism, photography, and graphic design. This project captures all that happened during the 2016-2017 semester for the COMM Department. There are features of nearly every of student in this department like journalism, public relations, broadcast journalism, broadcast production, undergraduate and graduate students. Although I did not contribute to the writing portion except for proofreading the material, I focused on the design and photograph elements within the newsletter. Design is probably the most important part of this project because without it readers would lose interest. Graphic design revolves around, font type, color choice, shapes, and placement. Another helpful tool to keep readers to remain reading is the photographs of students. This makes the content real and personal. All in all, being in charge of the design and photograph portion, I had the opportunity to delegate and communicate with my fellow classmates to work together and accomplish a unifying goal of this newsletter. Each with their set of skills of writing, designing and photography contributed to this project.

Portales House Fire

Presenter: Kaitlin McKay
Collaborator: KyAnna Walton
Project Advisor: Mr. Allan Crawford

This is a local story about a house fire that could have turned deadly due to an egg roll. The grease became too hot once the woman left. Her husband was saved by neighbors in his sleep. In this package, KyAnna interviews Mike Inge, the Fire Marshal of Portales. The footage was used by Albuquerque news station, KRQE. This package was shot and edited by Kaitlin McKay and reported on by KyAnna Walton.

Kawaika: Our Stories of Jackpile

Presenter: Abigail Pino
Project Advisor: Dr. Patricia Dobson

During the decades before mining, the Pueblo of Laguna thrived on traditional ways of farming, arts, and ceremony. In 1942, the United States began production on the first atomic bomb which would serve as nuclear weapons for the war. After the discovery of uranium in the southwestern region, including the Navajo and Laguna reservations, the Atomic Energy Commission began excavating and mining on tribal lands. To provide for their families, community members worked in the mines where they were exposed to dangerously high levels of radiation through yellow cake. Today, the lasting effects of the mine continue to plague the communities in the form of health and environmental disparities—cancer, infections in the blood, and death. Though the government afforded some coverage, many workers were not compensated and died as a result. Concentrating primarily on the narratives of Pueblo communities and the evolution of storytelling, I will be creating a documentary regarding the Jackpile Uranium Mine which was located on the Laguna reservation from 1953-1982.

Portales Shooting

Presenter: Spencer Purcell
Collaborator: Kaitlin McKay
Project Advisor: Mr. Allan Crawford

This is a local story about the shooting that took place at the beginning of January. A man was driving a front-end loader recklessly down the streets of 18th and Kilgore. At one point the man drove the front-end loader into his year destructing and flipping a jeep. The scene ended with police surrounding the front-end loader and shots were fired sending one to the hospital. This footage was used by KRQE and KOB.

Scandal

Presenter: David Rogers
Project Advisor: Dr. Darrell Roe
Award Winner

“Scandal” is a popular ABC television suspense drama that makes particular use of camera shots, visual distortions, and fast-paced cinematography

to create powerful, and perhaps even remotely subliminal symbolism for the viewing audience. This research analyzes the final two episodes of the 2017 season with particular focus on the use, effect, and meanings of this unique cinematography.

Santa Cop Program

Presenter: KyAnna Walton
Collaborator: Spencer Purcell
Project Advisor: Mr. Allan Crawford

This was a live remote stand-up that was done in downtown Portales during a broadcast for News 3 New Mexico. Kyanna interviewed Sgt. Eric Mueller who heads the program that gives children less fortunate a chance to enjoy Christmas. Donations are received from the community and given to children at the annual event. At this event, families can enjoy food, gifts, and Santa! Gifts that are left over from the event are given to local churches and children's homes.

Paper/Performance Presentation Group 6

Is CEO Compensation Reflected by Company Performance

Presenter: Michael Giannini
Project Advisor: Dr. David Hemley

This study will look to analyze the factors that influence total compensation packages for chief executive officers in publicly traded American companies; specifically, if there is a relationship between CEO compensation and company performance. Company performance will be measured by the change in share price over the given period. The data regarding compensation will be provided by historical filings collected through the SEC, while the data regarding share price will be provided by the Wall Street Journal. The study will be based upon a twenty-five-company sample pool that will be selected at random from the S&P500.

A total of five variables will be used for the analysis: share price at the end of the year, change in share price, experience (number of years as a CEO), length of service within the company, and age. A statistical regression analysis will then be used to show if there is enough evidence to show a significant relationship between compensation and the factors listed. The first test will be conducted

using information from 2006. A second test will also be performed using data from 2016. The outputs from the two data sets will then be analyzed to show any consistent relationships through time. Upon completion of this study sufficient statistical evidence will be provided to make an inference as to whether there is a relationship between compensation and performance, or if compensation holds a stronger relationship to the other factors listed.

Determining the Relationship between Delinquency Rates and Chapter 7, 11, 12, & 13 Bankruptcy Rates

Presenter: Aaron Hernandez Flores
Project Advisor: Dr. David Hemley

The purpose of this paper is to determine if there is a relationship between U.S. delinquency rates and bankruptcy filings. The primary research question is: do changes in the delinquency rates result in changes in bankruptcy filings? The period covered in the paper is from 2001 to 2016. The delinquency rates data will come from the Federal Reserve of Economic Data (FRED) while the bankruptcy filings data will come from the United States Courts website. The types of bankruptcy filings being examine include chapter 7, the firm enters the liquidation phase, chapter 11, the firm enters the reorganization phase, chapter 12, adjustment of debt of a "family farmer" or a "family fisherman", and chapter 13, that allows a debtor to hold property and pay debts over time.

The results of the study will determine whether there is a clear relationship between delinquency rates and bankruptcy filings. The relationship will be using a regression analysis. In addition, these results will outline whether the relationship is strong, or weak, as well as the advantages and disadvantages of each type of bankruptcy filing. Firms could apply these results when determining their outlook as to which bankruptcy filing to choose, chapter 7 or chapter 11.

Determinants of Business Bankruptcies

Presenter: Chelsea Muncy
Project Advisor: Dr. David Hemley

I am performing research on the four forms of business bankruptcies, Chapter 7, Chapter 11, Chapter 12, and Chapter 13, and the determinants of each over 20 years. The determinants that I am using in my investigation are the annual U.S. Real GDP Growth Rates, Inflation Rates, Unemployment Rates and a

time trend. The purpose of my research is to see what economic factors cause US businesses to file bankruptcy and potentially shut down business operations.

I am exploring how each determinant may impact the number of bankruptcies filed each year. The number of bankruptcies filed by chapter are influenced by the type of businesses filing bankruptcy. I hypothesize the determinants described above impact the number of chapter bankruptcies filed per year. Using regression analysis, I can determine the impact these variables have on the different types of bankruptcies.

Running with the Dogs: Testing the Validity of the "Dogs of the Dow" Investment Strategy

Presenter: Morgen Nations
Project Advisor: Dr. David Hemley

The "Dogs of the Dow" theory is an investment strategy that suggests that by investing in the 10 Dow 30 stocks which had the highest dividend yields at the end of the previous year, the investor can expect a higher return compared to the market average. This study investigates the validity of the "Dogs of the Dow" investing theory by measuring the return using this method, against the S&P 500 market return over several years, in order to determine if there is sufficient evidence to conclude that the "Dogs of the Dow" theory consistently performs above the average market return. In order to effectively determine the results, this study will measure the correlation and standard deviation between the two returns. While previous research on this topic suggests that the "Dogs of the Dow" theory can create inconsistent results for investors, by measuring the theory in this manner researchers can better grasp the true trends, and effectiveness, of the theory compared to the average market return.

The Hardest Task in Sports: Variables that Influence the Valuation of Major League Baseball Franchises

Presenter: Enrique Perez
Project Advisor: Dr. David Hemley

Professional American baseball franchises are some of the largest and well-known organizations. Therefore, it is important to define the variables and determinants of the value of these franchises, which have sold for over $2 billion recently. There are numerous variables that influence and determine the value of a Major League Baseball (MLB) Franchise. The elements that most

impact the value of MLB franchises are ownership status of the stadium the team plays in (public versus privately owned stadiums), age of the stadium, age of the franchise, the status of their television contract and other revenue streams, american or national league and teams winning history. All thirty MLB franchises are evaluated by the same variables. Data collected is retrieved from recent literature, Statista, Forbes, Fangraphs, Baseball Reference and the Major League Baseball website which are all dedicated to such studies and information. The methodology used will be regression equations, which will evaluate the relationship between the value of MLB franchises and aforementioned variables.

The Super Bowl Market Indicator

Presenter: Javier Villela
Project Advisor: Dr. David Hemley
Award Winner

The Super Bowl Theory was first introduced in 1978 by Leonard Koppett, a sportswriter for the New York Times. The theory suggests that the outcome of the National Football League's (NFL) Super Bowl annual championship game can suggest whether the S&P 500 Index will rise or fall. The NFL's original franchises consist of two original leagues, the National Football League (NFL) and the American Football League (AFL). The Super Bowl Theory suggests if a team from the original AFL wins the Super Bowl at the end of the season then the S&P 500 Index will fall that year, if a team from the original NFL wins the Super Bowl then the S&P 500 Index will rise in that year. This research paper will evaluate the theory in order to determine whether it is a relevant method to make investment decisions or if it is simply a random event. Extensive research, and regression analysis is used to evaluate the data to find the relationship, if any, between the Super Bowl victor and the S&P 500 Index behavior.

Paper/Performance Presentation Group 7

RAN and Reading: Examining Correlations Between Rapid Automatized Naming Skills, Reading Accuracy, and Reading Speed

Presenter: Marissa Butner
Project Advisor: Dr. Suzanne Swift

Reading success at the primary grade level can be attributed to intact foundational skills including phonemic awareness, phonics, fluency and more.

Without these skills, children often fall behind in multiple aspects of literacy. In addition to the aforementioned skills, research has found that other factors may come into play when it comes to success in literacy. Rapid automatized naming (RAN) skills are defined as the ability to quickly name aloud a series of familiar items. Much research has been done in order to support whether RAN should be considered an important factor when it comes to success in reading tasks. The purpose of this study is to examine the correlation between RAN skills of third graders and sixth graders in the area of Southern California and their corresponding abilities in reading accuracy and reading speed. Furthermore, the study will explore whether students have higher RAN when being presented language based vs. non-language based stimuli.

The Effects of Preferred Music on Reading Comprehension Performance of 9th Grade Students

Presenter: Danielle Chatham
Project Advisor: Dr. Karen Copple

With the increased availability of personal devices and increased need for standardized testing, school districts have regulated the use of personal devices in the classroom for the purpose of attaining higher levels of concentration and higher performance outcomes. Research on the effects of background music on educational performance has produced inconsistent findings across studies. This study sought to determine the effect of preferred, personal device music on reading comprehension tasks as measured by the State of Texas Assessments of Academic Readiness (STAAR) test for 9th grade students. Students in the experimental group (n=16) received a 15-20 minute version of the STAAR test while listening to one of four preferred genres of music: country, contemporary, hip-hop/rap, or classical presented through headphones. Students in the control group (n=15) completed the test with headphones without musical stimuli. Results were compared between groups revealing no significant difference on performance outcomes for students listening to music and those without music.

Common Syntactical Variations of Elementary Aged Chinese English Language Learners in Response to an Expressive Language Test

Presenter: Tiffany Cheung
Project Advisor: Dr. Suzanne Swift

With the rise in the number of immigrant families moving to the US, the public schools' system has been encountering a lack of training when it comes

to dealing with an influx of multicultural diversity. Many teachers and SLPs are not properly trained in recognizing whether children have speech and language difficulties or should be receiving English language development services (ELD). This study analyzed third through sixth grade Chinese English Language Learners (ELLs) and the responses they gave when administered three expressive, syntactic portions of the Comprehensive Assessment of Spoken Language (CASL) and the Carrow Elicited Language Inventory (CELI). Any common syntactical variations that were exhibited were compared to generate plausible appropriate syntactical responses. Results for any significant differences between the ELLs and the normative group were tested using a t-test for established means; results for significant difference between the ELL groups were tested using t-test for independent samples. The overall purpose of this study was to find whether there were significant differences when evaluating the responses that Chinese ELLs might give on expressive portions of standardized speech assessments when compared to the normative group of children considering experimental variables such as age, private tutoring, and gender. Results from the t-test demonstrated that there was significant difference between the tutoring and non-tutoring group – further analysis demonstrated that while the tutoring group was not significantly different from the norm, results of the non-tutoring group and results of all the participants demonstrated significant difference when compared to the norm.

An Inferential Analysis of Reading Comprehension of Expository Text in Adults with TBI

Presenter: Andrea Ciro
Project Advisor: Dr. Adrienne Bratcher

A growing number TBI survivors face reading problems that complicate meeting the demands of the workplace, keeping positions they held prior to their accident, and seeking degrees and job training in order to remain productive members of our society. This replication research study (Sohlberg et al., 2014) was conducted to gain information about the reading deficits of adults with TBI who have been diagnosed with mild-to-moderate cognitive impairments, are currently attending or pursuing work or a postsecondary education, and what response they will have to the use of reading strategies prompts. Participants from 2 groups, adults with TBI (n=15) and matched controls (n=15) read 4 different 500-word expository earth science passages given in either strategy or no-strategy conditions. Participants were evaluated using sentence verification and free recall tasks. The TBI and control groups demonstrated significant differences on 3 of 5 comprehension reading measures: inferential statements on

the sentence verification tasks and communication units and type-token-ratios on the free recall task. Differences exhibited in the participants' prerequisite reading skills were unexpected. For the within group comparison, participants showed increases in 4 of 5 reading comprehension measures but differences were not significant. The results contribute to clarifying the nature of reading comprehension in adults with TBI with mild to moderate cognitive impairments. Future research is necessary to determine more accurate target levels of understanding and how heterogeneity of individuals will influence their reading and response to strategy intervention.

The Oral Reading Comprehension Outcome of an Adolescent in Speech and Language Therapy Using Miscue Analysis: An Ex Post Facto Study

Presenter: Sonny Militante
Project Advisor: Dr. Adrienne Bratcher

Research on miscue analysis continues to grow to this date. This terminology became a popular component of research, especially to those that cater to its applications in the context of educational instruction. Previous case studies provided excellent sources of information regarding the different aspects of the method. The purpose of this study was two-folds: to investigate whether miscue analysis was beneficial in facilitating positive attitude towards oral reading, and to determine whether there was a significant correlation between the scores in identifying miscues and the scores in oral reading comprehension tasks. This study focused on a 10th-grade boy who exhibited limited verbal expression and poor oral reading comprehension skills. The materials used in this quantitative ex post facto study were the Burke Reading Interview (BRI) and the clinic treatment logs. The responses from the BRI were reviewed to determine if there was a change in attitude towards oral reading, and the data from the treatment logs were analyzed using the Pearson r test of correlation. The responses from the BRI at the first and last therapy sessions indicated that there was a positive change in attitude towards oral reading. There was no correlation, however, between scores in identifying miscues and scores in oral reading comprehension tasks (Answering WH-Questions and Answering WHY Questions).

A Tradition as Old as Time: How Storytelling Affects College Students' Story Recall When Compared to Video and Print Presentation Modalities

Presenter: Halley Paris
Project Advisor: Dr. Suzanne Swift

This study explores how story recall is affected when a story is presented through live-dramatic storytelling, video, and print presentation modalities. Previous research suggests that print modalities result in higher recall scores for adults when compared to video conditions; however, no study on the effects of presentation modality has considered how storytelling might influence recall. Participants were assigned to one of three groups: a live-dramatic storytelling condition, a print condition, or a video condition. Each group was presented the same story, and after the presentations, each took a story recall test. Significant differences between the raw scores of the three groups were analyzed using an analysis of variance. No significant difference was found between the three groups. Individual analysis of questions determined that questions with more concrete answers were more likely to result in significant differences between the groups compared to abstract questions. Wide variance of recall scores within groups suggests that individual learning styles may affect recall ability within the different presentation modalities.

Interpretation of Figurative Language: A Comparison Between Bilingual, Spanish-English Speakers and Monolingual, English Speakers

Presenter: Cinthya Torres
Project Advisor: Dr. Karen Copple
Award Winner

This study examined the differences in interpretation of figurative language between adult bilingual, Spanish-English speakers and adult monolingual, English speakers. Figurative Language is considered a linguistically complex fragment of an already multifaceted language as a whole (Palmer et al., 2008) and is defined as a group of words used in an imaginative sense that convey information that is not meant for literal interpretation and may include; idioms, metaphors, similes, proverbs, and sarcasm (Owens, 2012). This study compared the performance between two groups of bilingual speakers; those who acquired English language before the age of twelve and those who were exposed after twelve. In addition, their performance was compared to monolingual English speakers. An independent measures t-Test was used to compare monolingual to combined bilingual group and an analysis of variance (ANOVA) was conducted to compare results across all three groups and identify statistical significance. The results indicated a significant difference between English monolinguals and Spanish-English bilinguals with the use of an independent measures t-test [(t (137, n=139)= +2.96, p=.00363, two-tailed)] and a one-way ANOVA [(F (1, 37) = 8.79, p= 0.00356, η=.060]. An independent measures ANOVA was computed to test for significance between (1) monolingual, (2) bilingual before 12, and (3) bilingual

after 12 groups. The results indicated significance [(F (2, 136) =10.19, p<.001, η=.130)] and a Tukey post-hoc test located significance (HSD [.01] = 0.43) between the performance of groups 1 and 3 and 2 and 3.

Paper/Performance Presentation Group 8

Writing vs. Typing for Optimized Learning in a Classroom Setting

Presenter: Emily Davis
Project Advisor: Dr. Adrienne Bratcher

The purpose of this study was to investigate the effectiveness of writing as a note taking technique and the effectiveness of typing as a note taking technique. Thirty-four students were selected for participation in this research. The participants were first semester undergraduate students at Eastern New Mexico University, and were enrolled in a Freshman Seminar class. This research compared the two note taking techniques and determined which, if any, was more beneficial when used in a classroom setting. Participants in this study were instructed to watch a brief lecture during which half took notes manually, while the other half typed their notes. The participants were allowed access to their notes while taking a brief test. The participants were also instructed to complete a pre-experiment questionnaire at the start and a post-experiment questionnaire at the end of the research. Test results were compared to determine the more effective note taking strategy, and questionnaire responses were compared to determine if the participants' perceptions matched up with their performance.

Do Standardized Pragmatic Language Tests Differentially Identify Disorders of ADHD?

Presenter: Christine Lopez
Project Advisor: Dr. Karen Copple

Objective: Clinicians continue to administer standardized screenings and formal language assessments to diagnose a Pragmatic Language Disorder (PLD) in children. The purpose of the study was to determine whether or not a previously used standardized pragmatic language assessment and or a new attention-deficit/hyperactivity screening instrument was better at differentially identifying ADHD in children. Previous research has documented that children with ADHD present with pragmatic profiles similar to those of children with ASD who exhibit a PLD. Method: The examiner administered the Test of Pragmatic Language

2nd ed. (TOPL-2) to 30 children, ages 6 and 7 years. In addition, the ADHDT-2 screening was completed by the classroom teacher or parent. Comparison of the children's pragmatic language assessment standard score with their attention-deficit hyperactivity screening standard score was completed to differentially identify ADHD. Results: Results indicated that the TOPL-2 (M=86.3, SD=11.43, N=30) was better at predicting ADHD than the ADHDT-2 (M= 70.83, SD=18.74, N=30). Conclusion: The researcher concluded that when educators or SLPs desire to implement a test to identify ADHD in children, the TOPL-2 was the more reliable of the two tests.

The Effectiveness of Augmentative and Alternative Communication Education on Students in Rehabilitation Majors

Presenter: Casey McAtee
Project Advisor: Dr. Karen Copple

A large percentage of individuals in an acute medical setting have some communication impairment that affects how they communicate with their health care professionals. In the acute setting they may receive augmentative and alternative communication (AAC) devices or use AAC strategies. An AAC team in an acute setting is made up of speech and language pathologists (SLP), physical therapists (PT), occupational therapists (OT), and nurses. This study examined student's knowledge of AAC devices and simple intervention techniques in the fields of physical therapy (PT), occupational therapy (OT), speech and language pathology (SLP), and nursing programs. A one group pretest posttest design was chosen to evaluate the knowledge of graduate students in these four majors at universities across the country. A total of 121 graduate students participated. They received a link with the pretest, posttest, and watch a PowerPoint presentation. The results indicated that the students had an increase in knowledge of AAC devices after watching a presentation.

Can You Hear Me Now? The Effects of Vocal Hygiene on Preschool Teachers

Presenter: Tricia Poindexter
Project Advisor: Dr. Karen Copple

Disturbances and abnormalities in the voice are frequently found in professional voices like teachers. The importance of vocal hygiene on an individual who used their voice regularly was critical to continuing their career. This researcher wanted to understand the degree to which teachers in the school system are educated and/or understood the importance of vocal hygiene. This

study was a mixed quantitative and qualitative, group pretest-posttest, quasi-experimental design. The participants completed a Voice Handicapped Index (VHI) for both pretest and posttest. The VHI was a well-respected, self-reporting inventory of questions that evaluated the participant's perception of the degree to which their voice presented a handicap in their daily life. Quantitative scores rendered from the VHI allowed for statistical analysis. The participant's documented their vocal hygiene behaviors using a voice diary for two weeks. This form was on an Excel sheet that contained a water log schedule, caffeine log schedule, throat clearing schedule, and coughing schedule. Results compared the pre and post standard scores on the two VHI administrations. The data was computed using a t-test for repeated measures. The results indicated there was no significant difference between vocal hygiene education and vocal quality in preschool teachers, $t(14)= 0.41$, $p=0.689$, $r^2=0.59$.

Practicum Makes Perfect

Presenter: Karah Tooley
Project Advisor: Mr. Dwayne Wilkerson
Award Winner (Tie)

This continuation comparative study of first semester graduate students' clinical competency in speech-language pathology at Eastern New Mexico University (ENMU). Fifteen graduate clinician's initial and final sessions were recorded at the ENMU Speech and Hearing Outreach Rehabilitation Center to identify clinician's strengths and weaknesses. A rubric previously created by Gabriel Ayala, was designed to provide an alternative measurement of clinical productivity and effectiveness in the clinical areas: time management, client engagement, session management, and clinician skills. The researcher rated the student's clinical performance using the rubric developed to identify gain scores in clinical areas. While there were specific gains in all areas, the results indicated clinical growth in all areas, the clinicians all grew differently in the four clinical competencies. The rubric did not account for personal clinical differences (i.e. client absences, supervisor differences, amount of sessions, etc.). The clinician's rubric scoring is not a formal measurement, it was the researcher's opinion that the instrument could potentially offer an alternative to productivity ratings and clinical effectiveness.

Are, SLP provided, Cognitive Therapy Services Really Understood?

Presenter: Jamie Webb
Project Advisor: Dr. Adrienne Bratcher
Award Winner (Tie)

It is believed that staff members and family members who have loved ones living in an assisted living facility are unaware of the benefits of speech language therapy services for those living in such facilities. Research was done to provide evidence supporting the claim that it is beneficial for elderly to receive speech language therapy services. To validate the claim that staff members and loved ones are unaware of these benefits and the role of a Speech Language Pathologist (SLP), a study was done within local personal living facilities. The focus of the study was to determine if staff members and family members of loved ones living at the facility were aware of the role of the SLP in an assisted living setting and the benefits of receiving these services. The prediction is that the staff members and loved ones are unaware of the benefits of speech language therapy services. To test this theory, a group of staff members and loved ones were asked to complete a brief questionnaire addressing their understanding of the role of a SLP. After the completion of the questionnaire a brief presentation began, which highlighted the roles and benefits of speech language therapy services. A post-questionnaire was given after the completion of the presentation to compare their knowledge prior and current understanding.

Concussion Knowledge Proficiency and Related Attitudes Regarding Symptom Reporting of High School Football Players

Presenter: Kayla Wright
Project Advisor: Dr. Adrienne Bratcher

This study was conducted to evaluate the knowledge of and attitudes surrounding concussion in high school football players. Previous studies have demonstrated that decreased knowledge about concussion symptoms leads to an increase of unreported concussions, which may potentially cause devastating secondary injuries. The purpose of this investigation was to determine the degree of accuracy regarding concussion symptoms possessed by high school football players from twenty schools and comparing it with their attitudes concerning the reporting of concussion symptoms in a correlational approach through the administration of the Rosenbaum Concussion Knowledge and Attitudes Survey – Student Variation (RoCKAS-ST). This information will be used with the intention of providing a basis to implement a new concussion education program,

modifying an existing program, or investigating a successful program for use in other schools for more widespread benefit.

Paper/Performance Presentation Group 9

Riding for Recall: Horse Riding and the Effects on Adult Memory in a Single Subject Design

Presenter: Chelsi Arnold
Project Advisor: Dr. Suzanne Swift

Animal assisted therapy is becoming more popular in the therapeutic world; however, the research surrounding animal assisted therapy is still developing. Instead of receiving speech services solely in a clinic room, clients can now use the movements of a horse, (hippotherapy and therapeutic riding). Several conducted studies have shown the positive aspects of horse riding; however, the research remains limited.

To better understand the benefits of animal assisted therapy, this study investigated the speed and accuracy of an adult's memory recall after riding a horse. A single-subject quantitative study was conducted in July of 2017. A female subject over the age of fifty participated in the thirty-one day study.

To determine whether riding a horse had an effect on the subject's memory recall, the subject performed three days of pretesting in a quiet room. The subject was presented two, fifteen word lists and was asked to recall as many words from the list as she could. The subject's recall time was also timed. Following the pretests, the subject spent the next twenty-five days riding a horse for fifteen minutes. The subject then completed her three days of post testing in the same room used during the pretests.

The study's results indicated a significant difference in the adult's ability to accurately recall words after riding a horse; however, the results also concluded the subject required longer time to recall the words. In order to increase the study's reliability and validity, it was recommended for further research to be conducted.

Improving Memory Recall: Does the Use of Visual and Aural Presentation of Information Improve One's Memory Recall in College Students Ages 22 to 55?

Presenter: Hope Douglas
Project Advisor: Dr. Adrienne Bratcher

Differences in learning styles have been a topic of interest in the research world for many years. These differences can affect memory recall. This study analyzes whether or not combining two learning styles, visual and aural, increases an individual's ability to recall information. It takes into consideration additional variables such as the duration of exposure, and type and number of stimuli used. The study will be conducted through the use of a quasi-experimental method. The goal is to increase the amount of knowledge regarding the simultaneous use of visual and aural mediums when presenting material and its effects on memory recall in order to aid in the improvement of education and therapy procedures.

Tough to swallow: The correlation between chronic obstructive pulmonary disease and swallowing disruption in patients over age 45

Presenter: Jamie Gonnerman
Project Advisor: Dr. Adrienne Bratcher
Award Winner

Swallowing, breathing, and phonation all occur in the same area of the body; the upper digestive tract and any interruption in the swallow and respiration sequence can result in the penetration or aspiration of a bolus into the airway. A few possible causes of dysphagia may be gastroesophageal reflux disease (GERD) or disorganized timing of the swallowing and respiration sequence. Being aware of the signs of swallowing impairment, dysphagia, is especially important for those who have chronic obstructive pulmonary disease (COPD) or other respiration disorders. A quantitative, correlation design was used, with a Pearson product-moment correlation coefficient to determine if there is a correlation of a diagnosis of COPD and an increase in dysphagia related symptoms on 30 participants who were divided into two groups: one with COPD and one without. These two groups participated in a semi-structured interview process with a questionnaire from which both the exclusion and investigated data were collected. The data collected indicated that there is a moderate positive correlation between COPD and an increase in dysphagia symptoms; however, as this is a pilot study, more research should be completed to control for confounding variables and reliability.

The Impact of Multitasking During Lectures on Academic Performance

Presenter: Victoria Montoya
Project Advisor: Mr. Jesse Martin

Multitasking is a common occurrence in today's learning experience. People perform significantly worse when they work simultaneously on tasks than when they work sequentially on tasks (Buser & Peter, 2012). This research examined how multitasking during an online lecture impacted the academic performance of distance education students. The alternative hypothesis was that the subjects' comprehension of an online lecture would be significantly worse while multitasking on the Internet than when performing a single task. The null hypothesis was that there would be no difference in the comprehension of the online lectures during the two treatments. Data collection for this project was done using a repeated measures design with counterbalancing from one setting in four different sessions, with a total of 49 subjects. All sessions were administered in person by the primary investigator.
Descriptive and inferential statistics were used to analyze the data; inferential statistics included an Independent Measures T-test, and Cohen's d effect size. When the subjects provided their full attention to listening to the audio lecture they answered more questions correctly (M = 5.16, SD = 1.01) than when they were asked to pay attention to the audio lecture while completing the five-minute personality quiz (M= 3.71, SD = 1.41). The results of the Independent Measures T-Test were significant, t (96) = 5.84, p = .00001, d= 1.18. The null hypothesis was rejected; when the subjects provided their full attention to the audio lecture they answered significantly more questions correct.

Is This Thing On? Perception of Vocal Loudness Following Lee Silverman Voice Treatment in a Patient with Parkinson's Disease

Presenter: Kelsey Ray
Project Advisor: Dr. Adrienne Bratcher

For patients with Parkinson's disease (PD), communication is an area most likely to be impacted. These deficits have a profound impact on their daily lives, with vocal loudness being one of the largest deficits. The purpose of this study was to investigate if there is a difference between familiar and unfamiliar listeners' perception of vocal loudness, before and after Lee Silverman Voice Treatment (LSVT), in a patient with PD. A quantitative correlational study design that compared two groups (familiar and unfamiliar listeners) across two listening modalities (story telling and reading) with a single subject (patient with PD) was used. The two groups participated by watching pretreatment and post treatment videos of the patient with PD. An independent measures ANOVA was used to analyze the data. The results showed no significant difference amongst the two groups or the two listening modalities.

The Effect of Having Siblings on the Theory of Mind Development in Deaf Children

Presenter: Lauren Salazar
Project Advisor: Mr. Dwayne Wilkerson

This research was conducted to determine whether having siblings close in age can promote Theory of Mind (ToM) Development in deaf and hard of hearing children, whose primary language is American Sign Language (ASL). Theory of mind is defined as the ability to understand that others have beliefs, perceptions, desires and intents that may differ from one's own. The participants of this experiment were separated into two groups, which are children with siblings and children with no siblings or siblings not within 3 years of age in the home. Participants were tested first using a non-verbal intelligence test. Based on those scores and chronological ages, participants were matched into pairs, one subject with a sibling and one without. The matched subjects were then given a task battery to assess their ToM development. Scores for each group on the ToM task battery were analyzed using a t-test for independent measures and cohen's d, with scores, $t(28)= 2.55$, $p= .017$, $d=.93$, indicating significant difference between the groups. The group with siblings scored significantly higher in ToM than the group who did not have siblings. These findings encourage parents and educators to increase peer social interaction. Consistent social interaction for young children enhances their ability to view situations from another's point of view. This ability can make children more socially accepted by their peers, enhance their academic performance, and boost their self-esteem.

Just Dance into Language: The Effects of Simultaneous Song and Dance on Language in Preschool Children with Autism

Presenter: Dana Simon
Project Advisor: Dr. Suzanne Swift

Language skills are especially important for children diagnosed with autism. Previous studies suggest music is one modality that increases age appropriate skills in language and social development; however, no study has been published that targets simultaneous song and dance. This study explored the effects of simultaneous song and dance on language development and social skills in preschool students diagnosed with autism. ¬¬¬Five preschoolers were encouraged to engage in the treatment along with provided models through YouTube videos. Statistical significance was analyzed using four 2-factor ANOVAs with repeated measures on both factors and a repeated measures t-test. All students showed improvement in areas being observed through length and

frequency of variables with statistical significance seen in both expressive and social language.

Do You Know Your Stroke Quotient?

Presenter: Whitnee Wade
Project Advisor: Mr. Jesse Martin

This research study was initiated to assess the knowledge of two groups on the causes, symptoms, and side effects of acquired aphasia from stroke. Group one consisted of individuals ranging from ages 20 to 59-years-old. Group two consisted of individuals over the age of 60-years-old. The groups scores were compared using an independent t-test to determine if there was significant difference of knowledge between the age groups. A survey methodology was used. This study was completed because there is not a lot of research on how informed males and females are on stroke consequences. The more knowledgeable people are about these factors, the quicker they can potentially seek medical attention. There are multiple causes of stroke including poor diet, lack of exercise, and excessive weight. The symptoms of stroke an individual could experience include facial weakness, limb weakness, difficulty speaking or swallowing, blurred vision, and diminished ambulation. Aphasia is one common consequence a survivor of stroke could acquire. There are multiple cognitive factors aphasia can affect, including expressive/receptive language needs, auditory comprehension, reasoning, abstract thinking, problem solving, attention, memory, reading, writing, and visuospatial abilities. It was found that there was no significant difference between the two groups in this study. Further research is warranted.

Paper/Performance Presentation Group 10

The Mozart Effect and Its Use as A Language Therapy Tool with Elementary Aged Children: A Pilot Study

Presenter: Amy Braddock
Project Advisor: Dr. Karen Copple

The ability for elementary age children to maintain their focus, attention and behavior while participating in language therapy services is a concern of most speech language pathologists (SLPs). The use of background Mozart music (the Mozart Effect) may decrease negative behaviors, increase attention and

productivity, and result in outcomes during therapy activities. The Mozart Effect has been studied with college students, but it has not been studied extensively with children. Purposeful random sampling was used to choose participants. A total of 30 children were used to examine the use of background Mozart instrumental music during language intervention to determine its effect on auditory comprehension. This study will follow a true experimental design with a control group in which children were presented with passages and asked to answer corresponding "wh" questions while hearing background Mozart music. A t-test for independent means revealed that the presence of background Mozart music does not appear to have a significant effect on the ability to answer "wh" questions (t= (28, n=30)= -0.42, p=0.34) in elementary aged children.

From Hip Checks to Conflict Resolution: Do Rollerderby as a Team Sport build Female Communication Skills?

Presenter: Allison Brault
Project Advisor: Dr. Suzanne Swift

Effective communication skills are essential in successful personal and career relationships. Language development in females differs from that of males in that females use inclusive speech and more polite words. (Fahey, Howard, and Hulit, 2011) This trend continues into adulthood, and gives the perception that females tend to either avoid conflicts or are not taken seriously in attempts to resolve them. It has been suggested that participation in sports helps females to be more successful and build confidence in their conflict resolution and other communication skills in the workplace and in relationships. Roller derby is a female sport that values these skills in collaboration with team members. The purpose of this study is to explore the idea that roller derby helps females to find their voice outside of the sport and that sports can be used as an appropriate therapy option for female adults who wish to work on communication, especially conflict resolution. The study used a non-experimental, correlation design to survey a sample of active and former female skaters, ages 18+. Participants were solicited through roller derby leagues across the country via an email list serve, and volunteers were directed to an online survey that was completed at their convenience. Results concluded that there was significant difference in the positive affect of roller derby on communication skills between skaters that have a diagnosis of a communication disorder and those that do not.

Effects of Binaural Beats on Memory

Presenter: Lauren Gamble
Project Advisor: Dr. Adrienne Bratcher

This study aims to figure out if the use of binaural beats will enhance memory. Binaural beats are when two frequencies of tones are presented individually, one to each ear. Once the tones are heard the brain begins to respond causing brain entrainment. Subjects include 34 ENMU CDIS graduate students, who were randomly assigned to experimental and control groups. The experimental group listened to binaural beats, while the control group listened to no auditory stimulus. The dependent variable (memory) was examined by having the experimental group subjects listen to binaural beats and then complete a memorization task.

The Effects of Background Music on Memory

Presenter: Kelli James
Project Advisor: Ms. Nicole Bougie

This study investigated the effects that background music has on a student's ability to retain information. Forty-five college students participated this study in order to determine if background music has an effect on the ability to recall learned information. A control group, pre-test post-test design with background music used as the intervention. Participants were randomly assigned to one of the three groups. The results were collected in order to determine a correlation between background music and the scores and analyzed using an analysis of variance. The results of this study indicated that background music played by Michael Bublé has no direct effect on the ability to retain learned information.

Speech Jammin: A study on the effects of delayed auditory feedback on the fluency of typical speakers

Presenter: Christina Johnstone
Project Advisor: Ms. Nicole Bougie

Delayed Auditory Feedback, DAF, is used as a technique in stuttering therapy to help make individuals with a stutter more fluent. The purpose of this study was to determine the effects of alterations in auditory feedback on

the frequency of disfluencies in typical speakers. In order to measure this, a speech jammer application was used to provide delayed auditory feedback. Delayed Auditory Feedback, or DAF, was presented to the experimental group of participants in order to examine the effect it has on their fluency. A qualitative research design was used to conduct this study. An experimental design methodology was utilized in which a pre-test and post-test were collected to compare the fluency of participants in the experimental group and control group. A nonrandomized convenience sample was used to select participants for the study. The participants in this study were comprised of 100 typical speaking adults, male and female. Each participant read The Grandfather Passage and recited the Pledge of Allegiance and the Happy Birthday song, with the experimental group being exposed to alterations in auditory feedback. The results indicated that there was significant difference present between the control group post-test data collected and the experimental post-test data collected. The subjects that were exposed to the delayed auditory feedback had a much more significant amount of dysfluencies during the post-test tasks than the control group. The experimental group's rate of speech, slowed down significantly during the post-test tasks than it did when completing the pre-test tasks.

Auditory Recognition of Words Pronounced Correctly vs. Incorrectly in Kindergarteners

Presenter: Megan Ratzlaff
Project Advisor: Dr. Adrienne Bratcher

A study with 120 kindergarten-aged participants was conducted to analyze if they have developed the necessary word recognition skills needed to identify a correctly pronounced word or an incorrectly pronounced word. Investigation of this question consisted of a presentation of 30 pictures with 30 correctly and incorrectly pronounced words that differed by one segment. The errors in these words were spread evenly across the initial, medial and final positions and in blends. The children had to identify whether, the words were pronounced correctly or incorrectly by pressing a red button for incorrect and a green button for correct pronunciation.

The Effects of Sleep Deprivation on Vocal Quality in Healthy College-Aged Adults

Presenter: Lisa Reed
Project Advisor: Dr. Karen Copple

Vocal quality was affected by many variables and often maintained by proper vocal hygiene. It has been proposed that sleep recommendations should

be added to vocal hygiene recommendations. Decreased vocal quality may have a detrimental effect on people's livelihood and quality of life who rely on their voice as a profession such as singers, announcers, or educators. This study is designed to analyze the effects of sleep deprivation of 1 to 6 hours of sleep during a 48 hour time period. Participants included healthy male and female college aged adult's 18 to 25 years old. Sleep and vocal hygiene in the previous 48 hours was measured by participant report on a questionnaire prior to acoustic analysis. Vocal quality was measured by acoustic analysis of sustained /a/ sound using Praat. Acoustic measures included shimmer, jitter, and harmonic-to- noise ratio, fundamental frequency, and amplitude. Significance of vocal quality between sleep deprivation and adequate sleep was analyzed using an independent t-test of acoustic quality measurements. Results revealed there was not a significant difference in vocal quality between sleep deprived (SD) and non-sleep deprived (NSD) college age adults. The null hypothesis was accepted.

Effects of a Speech Sound Disorder on Phonological Awareness Skills in Kindergarteners

Presenter: Tessa Schmidt
Project Advisor: Dr. Suzanne Swift
Award Winner

There are similar processes of linguistic knowledge used for both reading and speaking/listening. If there are deficits in speech then there is a good chance there may be deficits in other areas, such as literacy. Literacy is an important skill taught early on and several skills are needed to obtain successful literacy; phonological awareness being one of them. This current study looked at the effects of a speech sound disorder (SSD) on early literacy skills to answer the question of, "Do kindergarten children's emergent literacy skills differ based on phonological awareness when a speech sound disorder is present?"

Data collection consisted of 100 kindergarteners' responses recorded on the appropriate assessment protocol during the administration of the "Sounds in Words" section of the Goldman-Fristoe Test of Articulation 3 (GFTA-3) and the "Phonological Awareness Composite Score" (PACS) subtests from the Comprehensive Test of Phonological Processes-2 (CTOPP-2). Raw scores were converted to standard scores and calculated through inferential t-test statistics and Pearson correlation coefficients to compare results.

CTOPP-2 t-test for independent measures scores showed statistically significant difference of $t(98)=2.43$, $p<.05$, $d= 0.56$, between those without a SSD verses those with a SSD. Pearson r correlations of various comparisons of GFTA-3 to CTOPP-2 showed positive, but weak correlations, signifying that SSD is one factor to consider.

There was a large enough difference between CTOPP-2 scores for those without a SSD compared to those with a SSD, indicating that a SSD may play a role on phonological awareness development and understanding.

Paper/Performance Presentation Group 11

The Effect of Sleep Deprivation on the Voice

Presenter: Taylor Alig
Project Advisor: Dr. Karen Copple

Sleep deprivation and sleep disorders are among the most common ailments in modern society and have various impacts on day-to-day activities. This study attempted to identify if a lack of sleep influenced vocal quality. To establish this, 18 graduate students from the Communication Disorders program at Eastern New Mexico University were asked to sustain /a/ and /i/ vowels as well as orally read a short passage called The Rainbow Passage. They were audio recorded, and the recordings were analyzed using the PRAAT voice analysis computer program. The participants were split into two equal groups to compare the data from the vocal analysis based on the number of hours of sleep received in the 48 hours prior to the study. The data was compared across four acoustic measures: fundamental frequency, jitter, shimmer, and harmonics-to-noise ratio. The results from four one-way ANOVAs indicated no significant differences between the group with the healthy amount of sleep compared to the group with less than the recommended amount of sleep at an alpha level of 0.05.

On-campus Versus Distance Education Students' Perceptions about Speakers' Characteristics

Presenter: Mojgan Allamehzadeh
Project Advisor: Dr. Suzanne Swift

The influence of speaker characteristics on teaching and learning is not well established. Perceptions of these characteristics may influence the culture of a classroom. With the recent explosion of distance education, how do educators adapt when teaching on campus and distance education students in the same course section? Student perceptions of these environments may be critical to beginning a reasonable investigation of this question.

Student perceptions of instruction typically focus on course evaluations

and other institutionalized measures. Instructors' speaking characteristics and interaction styles while teaching are not currently well researched. This study used a purposeful convenience sample drawn from 189 students to compare 99 on-campus and 90 online students' perceptions of faculty speaking and interaction characteristics. Seventeen Likert scale and four open-ended questions asked students to rate their current class instructor's language, organization, voice, gestures, accent, knowledge, familiarity with students, and approachability.

Results showed significant difference between distance education and on-campus students' perceptions of instructors' characteristics ($p=0.031492$), especially in "familiarity with students" ($p = 0.028380$) and "approachability" ($p = 0.001863$). Interestingly, significant difference was also between females' vs. males' perceptions, with male responses noted as markedly more positive and less critical than female respondents in several areas ($p=0.000246$). Significant difference was also recorded between different age groups. Qualitative responses also showed distinct thematic differences in student perceptions in several delineated areas, with students providing clear trends regarding advantages and disadvantages of on campus vs. distance education learning.

ABA intervention: Do we have parental support?

Presenter: Erin Bishop
Project Advisor: Dr. Karen Copple

This research was a one group pretest-posttest design investigating the degree of change of opinions in parents of children with autism before and after watching an informational video on Applied Behavior Analysis (ABA) techniques. Parents had not used ABA techniques prior to the study. Research was conducted online with a pretest questionnaire, video treatment, and posttest questionnaire. Results from this study showed that parental attitudes toward ABA significantly improved after watching the video, and that parents were significantly better informed about how ABA techniques work. These findings suggest that watching a video demonstration of ABA techniques may be an effective way to inform and increase willingness to use these techniques in parents of children with autism.

The Impact of Multi-Sensory Stimulation on Working Memory

Presenter: Robert Chaires
Project Advisor: Ms. Nicole Bougie

The purpose of this study was to examine the impact simultaneously stimulating multiple aspects of the sensory system has o working memory. Working memory is a combination of simultaneous storage and processing of information, which is necessary for successful language comprehension and production (Just & Carpenter, 1992). The research will use a between group design (consisting of 80 college aged students) to investigate if multiple sensory stimulation will have a greater positive effect on working memory than no stimulation or single sensory stimulation.

Impact of Restrictive and Repetitive Behaviors

Presenter: Ileana Dennis
Project Advisor: Dr. Suzanne Swift

Restrictive and repetitive behaviors are characterized as actions performed by an individual that do not serve a specific purpose. These physical behaviors are often considered stereotypical and can be seen in individuals with Autism Spectrum Disorder (ASD), Intellectual Disorders (ID), and other Developmental Disorders (DD). These behaviors can include hand clapping/flapping, finger snapping, body swaying/rocking, head movements, and vocalizations/jargons. Speech Language Pathologists (SLPs) work regularly with children who display these types of behaviors. It is not uncommon to find varying viewpoints among therapists regarding the most appropriate response when a patient engages in restrictive and repetitive movements during therapy. Depending on epistemological background and clinical experience, restrictive and repetitive behaviors are either extinguished with operant conditioning or are ignored and "worked around." This research aims to determine whether these "extra" behaviors impact social communication. This study seeks to determine the impact of interacting with a person engaging in restrictive and repetitive behaviors on the attention and efficiency of typical adults completing tasks involving multi-step complex directions. With these results, both new and experienced therapists may be provided with evidence based data that will allow them to practice intervention with these special populations more effectively.

Understanding the Utilization of Assistants in Audiological Practice

Presenter: Hannah Floyd
Project Advisor: Dr. Rachel Lingnau
Award Winner

With increasing pressure for productivity and current trends leaning toward the use of assistants in the medical disciplines, there is a need for clarification of an important role in the field of audiology. Audiology assistants' roles are loosely defined by major organizations and stakeholders such as The American Academy of Audiology and The American Speech-Language-Hearing Association, which leads to confusion at best, and at worst, serious ramifications of assistants operating out of their scope of practice. This nationwide survey of audiologists was conducted to gain a concise and comprehensive understanding of the current role of audiology assistants in clinical practice. Survey questions were designed to elicit information regarding education and training, current roles, and the supervision of assistants. Additionally, respondents were requested to provide information regarding components they felt should be included in a standardized audiology assistant training program. The results indicate that the length of time as a practicing audiologist and the length of time using assistants do not significantly affect how assistants are used. Results also indicate the need for further clarification and requirements of the assistant role by overseeing organizations of audiology.

Vocal Hygiene is Next to Godliness: An Acoustic Measures Analysis on Occupational Voice Health in Clergy

Presenter: Bridget Mooney
Project Advisor: Ms. Stephanie Lebsack

Professional clergy use their voices frequently in their occupation, yet are seldom the subject of academic research on vocal abuse. Vocal abuse is when a person misuses their voice to the extent that it causes overt symptoms such as hoarseness, pitch changes, or pain. Acoustic measures are norm-referenced, and applied to detect vocal pathology. The purpose of this study is to measure the impact of a self-implemented vocal hygiene education program clergy's voice health as informed by acoustic measures derived from short voice recordings. 20 clergy participated in this research, with 15 completing the entire study. Participants were required to be between the ages 18-65, and be full-time pastors who preached weekly. Clergy completed a brief questionnaire on their demographic and health data. Participants recorded four voice samples across on two different Sundays; with a week-long vocal hygiene treatment program in between. The recordings were examined for significant difference in four acoustic measures, using PRAAT, a voice analysis software. Clergy did not demonstrate higher-than-average signs of vocal abuse when compared to the general population. There was a very weak positive correlation between participant health factors and acoustic measures. There was no significant difference in

acoustic measures before and after voice hygiene treatment. Further research with longer treatment phases, and larger samples is suggested to expand the research base on clergy as occupational voice users.

The Correlation Between Sensory Processing and Articulation Performance in Toddlers

Presenter: Jennifer Williams
Project Advisor: Dr. Suzanne Swift

Many children experience articulation delays or disorders and sensory disorders but limited research has discussed any correlation. Spoken language involves highly coordinated speech movements of the articulators (e.g., tongue, lips, teeth) that involve the sensory-motor system. Sensory processing patterns can involve hyperresponsiveness, hyporesponsiveness, and sensory seeking factors, each of which can account for variability in social and communicative abilities (Watson et al., 2011). The sensory process involved in perceiving spoken language and the articulatory processes involved in manipulating speech sounds are essential for developing intelligible speech productions. The purpose of this study is to identify a correlation between articulation delays/disorders and sensory disorders in young children aged 2 to 5 years. A standardized articulation screening tool, the Goldman Fristoe Test of Articulation-3rd Edition (GFTA-3) and a standardized questionnaire, the Sensory Profile 2 will be used to obtain information on articulation and sensory in the participants. Findings were analyzed using a Pearson's 'r' to determine correlation. Identifying these relationships and analyzing specific correlations will allow therapists to further improve intervention efficacy.

Paper/Performance Presentation Group 12

Is the introduction of an aided high-tech AAC device effective in initiating language acquisition for an adult male with a cognitive communication disorder?

Presenter: Emill Ajilat
Project Advisor: Dr. Karen Copple

Effects of early augmented and alternative communication intervention on Down syndrome children and adolescence have been well researched in the past, as well as, similar intervention on those with other cognitive disorders, non-verbal limitations and/or other severe communication difficulties. There

is very little research catered specifically to intervention amongst adults with a cognitive disorder, who acquire high-tech devices after establishing years of non-verbal means of communication. Many advancements in the past 25 years with technology (i.e. high-tech devices) were obviously not yet made available for early intervention, it only makes sense to measure the effectiveness, if any, on those acquiring the devices after the age of 21. A single subject design research was used to isolate the effects, usage, and support of intervention with a cognitive disorder. A one way ANOVA was used to test for differences amongst each questions asked in each setting during baseline and intervention (Gravetter & Wallnau, (2017). The results concluded that there was a significant difference between using the device for language acquisition versus non-verbal communication.

Socioeconomic status effects on vocabulary in kindergartners

Presenter: Raveena Bains
Project Advisor: Ms. Laura Bucknell
Award Winner

Socioeconomic status (SES) is one of the most widely studied constructs. SES is measured by a quantification of family income, parental education, and occupational status. Research has shown that SES is associated with vocabulary development. This study is a non-experimental correlation design that looks at the effects of socioeconomic status on receptive and expressive vocabulary in kindergartners. A socioeconomic status survey was given to parents or guardians. The SES survey was created using the Hollingshead four-factor survey. It measured 4 domains: marital status, occupational prestige, educational attainment, and retired/employed status. The Receptive One-Word Picture Vocabulary Test (ROWPVT-4) and Expressive One-Word Picture Vocabulary Test (EOWPVT-4) were used to compare the high and low SES vocabulary. A Pearson r correlation and independent measures t-test were used to analyze data. There was a significant difference between socioeconomic status and receptive/expressive vocabulary. There was a weak significant relationship between low socioeconomic status and ROWPVT-4 scores. There was no significant relationship between high SES and EOWPVT-4/ROWPVT-4 scores and low SES and EOWPVT-4 scores.

Cognitive Effects of Multiple Untreated Concussions in Rodeo Athletes

Presenter: Calli Bane
Project Advisor: Dr. Adrienne Bratcher

Traumatic brain injuries, or TBIs, and mild traumatic brain injuries, mTBI, are steadily increasing in incidence each year. Contact sports, car accidents, and blows to the head are currently, the most common cause of TBIs. This article reviews literature and conducts a research study to measure the severity and observe the long- and short- term effects of multiple untreated concussions in the non-traditional, contact sport of rodeo. The research includes informal observations and formal testing of cognitive function post-TBI or mTBI in rough stock contestants. The Hopkin's Verbal Learning Test-Revised edition and the Trail Making: Part A and Part B were used for quantitative data in this study. Multiple ANOVA statistics were used to determine the significance of occurrence, severity of impact, and deficits, across three rough stock events including bull riding, bareback riding, and saddle bronc riding. Observational results indicate similar cognitive effects across disciplines, such as eye twitching, attentional deficits and poor emotional regulation; however, quantitatively, there was no significant difference across the participants in the three rough stock events. Despite the confounding variables present in this study, additional research is recommended.

Temperament and Personality Types: Factors of Gender Imbalance in Speech Pathology

Presenter: Gregory Code
Project Advisor: Dr. Suzanne Swift

The purpose of this research is to help aid policy development, to encourage appropriate male populations to enter gender-atypical occupations and to determine if personality and temperament types play a factor in the gender imbalance, in the field of Speech and Language Pathology. This study used a quantitative survey design which contained demographic questions and a personality test from David Kersey's book (1984), "Please Understand Me: Character and Temperament Types", with 70 forced questions which determined the participant's personality and temperament types. The survey was sent to 200 Speech Pathology academic programs throughout the US, social media sites such as Facebook and LinkedIn, and the National Students Speech-Language-Hearing Association's (NSSLHA) forum on the American Speech-Language Hearing Association's (ASHA) website. There were 782 participants which included males and females with sub-categories being both male and female dominated occupations and the academic fields associated with them and academic and professional fields that had an even ratio of men to women. Results were analyzed using descriptive statistics and multi-factor ANOVAs and indicated that the only

significant difference in personality characteristics were between Female SLPs and males in a male dominated field F(3,2276) =. 2.60, p = .02, ηp2 = .14. Based on the data it can be inferred that male SLPs have similar personality characteristics to female SLPs prior to entering the field of Speech Language Pathology. Data from Keirsey's book (1984) shows that SLPs, both male and female differ with several of the general populations percentages regarding individual personality characteristics.

Preferred Communication Methods of Adolescents with Complex Communication Needs and Their Applications for Peer to Peer Communication

Presenter: Katelyn Ferguson
Project Advisor: Ms. Laura Bucknell

The time of adolescents is marked by a period of great growth for young people. Communication with peers is an important staple within this period of time. Often, adolescents use modalities other than face to face communication to keep in touch with their peers. Adolescents who have complex communication needs (CCN) may need to use supplemental communication devices in order to communicate with their peers. Alternative and augmentative communication devices (AAC) can help a person with complex communication needs (CCN) to communicate their thoughts, needs, and ideas. Little research had been conducted comparing new forms of AAC devices such as cellular phones to tradition AAC devices such as digitized speech devices. Ten adolescents were randomly selected and were asked to communicate with one another using an AAC device and SMS texting with emojis. The subjects used each device three times in order to ensure user reliability. After the subjects had used each device three times they were asked to fill out a survey. The results of the study indicated that there was a significant difference between the preference of the two devices. Qualitative data also indicated that the adolescents did not enjoy using the AAC device to communicate with a peer.

The Effects of Essential Oils on Delayed Memory in Female Adults

Presenter: Courtni Fontenot
Project Advisor: Ms. Nicole Bougie

This study investigated the effects of peppermint essential oils on delayed memory in female adults ages 18-40. While small amounts of anxiety may serve as motivation, a negative correlation exists between higher levels of anxiety

and academic performance scores, further suggesting that individuals with high levels of anxiety should seek alternative methods for managing stress and anxiety. In previous studies, peppermint essential oils were found to reduce stress levels and increase skill performance, memory, and alertness. The Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) was used in a control group post-test only design to assess the memory of 30 female adults, 15 in the control group and 15 in the presence of peppermint-diffused essential oil. Statistical results were analyzed through use of an independent measures t-test with alpha set at .05 and a critical value of 1.701. When comparing delayed memory between the control and experimental groups, a t-score of 1.08 indicated no significant increase in delayed memory scores while in the presence of peppermint-diffused essential oils.

The Effects of Smoking on Cognition in Typical Healthy Adults

Presenter: Agustus Gray
Project Advisor: Dr. Adrienne Bratcher

The effects of smoking on cognition in healthy adults is limited in published research. The side effects of smoking are universally known especially regarding lung cancer, chronic obstructive pulmonary disorder (COPD), and increased risk of mortality. Smoking's effects on cognition have been limited in research and offer conflicting results. The purpose of this study is to investigate the effects of smoking on cognition in order to add further reinforcement for the advocacy of smoking cessation. A minimum of 30 total male and/or female participants between the ages of 18 and 65 years, classified as smokers and non-smokers will be used. The Montreal Cognitive Assessment (MoCA) will be administered to determine cognitive status of each subject. The results will be compared between a smoking and non-smoking group to determine potential differences among scores.

Accent Modification Via Teletherapy: A Quantitative Single Subject Study with an Adult Male who Speaks Argentinian Spanish

Presenter: Mariah Hartzell
Project Advisor: Dr. Suzanne Swift

There is a large population of nonnative speakers in the United States that have been unable to access services to reduce their accent and further communication skills in daily and professional lives. Teletherapy is a new

tool to treat clients unable to get in-person therapy. During this study, accent modification therapy was delivered via teletherapy to explore the efficacy of using this intervention platform. Using a quantitative single-subject A-B-A withdraw design, the participant was pretested and posted. The intervention lasted 12 weeks with two 50-minute sessions per week and a t-score was used to compare gain scores. The goal of this research was to create a base for accent modification via teletherapy evidence-based practice, enhance future results and generalization of this intervention. Results of the repeated measures 1-tailed t-tests revealed two indications: intelligibility rating showed no significance between pretest and posttest data ($t(5) = -1.91$, $p = .057$), and percent of correct consonant rating showed significance between pretest and posttest data (, $t(5) = -6.62$, $p = .00059$) with a variance of 89.5%. More research is needed to definitively answer whether teletherapy increases the intelligibility of a non-native English speaker.

Paper/Performance Presentation Group 13

A Forever Developing Theory: The Historic Truth of Technological Determinism

Presenter: Alisa Boswell-Gore
Project Advisor: Dr. Darrell Roe
Award Winner (Tie)

After decades of being introduced into United States society, Americans continue to debate the positives and negatives of television, with social media joining the debate in the 21st Century, as Facebook, Twitter, Snap Chat and more have become social trends.

The impacts technology has on our beliefs, values, behaviors and mind frames has been the subject of much debate in the last 75 years with endless studies researching and examining its effects (Adler, 2006). Studies have been conducted linking television to the rise in violence and obesity and the deterioration of moral values, while social media has been blamed for a rise in depression and suicide rates in young adults.

The most simplistic definition of technological determinism is that technology has important effects on our lives. While technology represents the possibility of freedom from the burdens of life for some, for others, such as technological determinists, it represents a loss of humanity by alienating people (Adler, 2006).

Due to the continuous changes and developments of technology, the TD debate is continuously changing with arguments as to TD's impacts and validity being questioned.

Throughout the years of studies using technology-based theories, one consistent pattern has remained among the various technology-based communication theorists: The more technology advances, the more dangerous the consequences to human communication and behavior become.
This paper illustrates this phenomenon by looking at the history of technological determinism, the studies and debates surrounding it and studies done through other technology-based theories.

Subversion of Gender Norms in "Sir Launfal"

Presenter: Jessica Entwistle
Project Advisor: Dr. David Sweeten

In the Middle English romance poem "Sir Launfal" translated to Modern English by Thomas Chestre, the expected gender roles are subverted by the ways in which Sir Launfal acts around women, namely Gwennere and Tryamour. The way that Sir Launfal is used in the poem is more in the vein of that of a woman than a man and this is what will be analyzed. His submission to them is a departure from the norms of the day and signals a point of entry into studying the poem for the subversion of gender norms. Using the frame of Judith Butler's Gender Trouble and Clare Lees Medieval Masculinities gender norms and the subversion of masculinity in the poem will be analyzed.

Panels and Bubbles : An Comic Exploration of Death Worlds

Presenter: Anna George
Project Advisor: Dr. David Sweeten
Award Winner (Tie)

Boom. Smash. Pow. Crash. Telling stories through comic books is a difficult mixture of visual and literary storytelling. It is a complex world of over dedicated fans, always changing but also always exploring the tough topics of the times. This paper explores the ever changing topics of the comic book world and how Rebecca's story, depicted in this literary work, is a prime example of comic book culture in this day and age.

Smoke and Mirrors: The use of costume and theatrics to challenge the domestic patriarchy in Louisa May Alcott's Behind a Mask

Presenter: Jessica Gilmore
Project Advisor: Dr. Carol Erwin

The second half of the nineteenth century was a "point of preeminence" for the theatre, and women were behind many of the changes, as well as its rise in popularity. At the same time, costume and performances were not confined only to the stage. I would argue that, regardless of professional training, women were performing on a daily basis, within the walls of their own homes. During this time, women were viewed mainly as passive creatures. As such, the patriarchal society influenced what women wore, as well as the positions they held, ultimately deciding that a woman's social image is the face seen by the world. In Alcott's works, she uses the idea of image and dress to push her characters – in this case, the governess Jean Muir – against the constraints of society. Muir's usage of costume and theatrics allows her to take on a dual nature, thus upsetting the patriarchy within the domestic sphere.

Yakanal Social Media Strategy

Presenter: Abigail Pino
Project Advisor: Dr. Imran Mazid

Beginning in 2011, colleagues Shelly Valdez and Isabel Hawking sought to bring together multi-generational youth from across the world including Mesoamerica and South America. Today, they have begun a non-profit organization (Yakanal) which recruits volunteers and participants of Indigenous lineage to share in the experience of culture and values. For the course (COMM 593), we will be developing a social media strategy for our chosen organization. As a whole, this project seeks to diversify the organization's existing social media presence through extensive research and develop a strategy which aligns with their missions/goals.

Advertising's Portrayal of Women

Presenter: David Rogers
Project Advisor: Dr. Patricia Dobson

Advertising, in its many forms, is ubiquitous, always selling something, and always conveying multiple messages simultaneously. To this end, the scope

of advertising's message is often not limited to the explicit product sold by the advertisement. Advertising also helps shape perceptions, defines how people think about, and engage the world, as well as how people understand their place in the world. This paper focuses on the history of print advertising and some of the particularly negative, pejorative, and discriminatory images it has, in some cases, historically portrayed regarding women. Using contemporary research, visual examples, and case studies, this paper explores the often dangerous and devastating impact of certain aspects of print advertising and the negative effect it can have on women, women's place in society, women's self-esteem, and contributions to the abuse of women.

Cognitive Dissonance Theory: Uses and Developments from 1957 to 2016

Presenter: Marissa Tijerina
Project Advisor: Dr. Darrell Roe

Cognitive dissonance theory was first introduced in 1957 by Leon Festinger. Primary tenets of this theory include the need to reduce dissonance, justification for dissonance, justification for reducing dissonance, and decision-making process that causes or reduces dissonance. There have been numerous studies using cognitive dissonance theory since its original publication. Over five decades of research using cognitive dissonance theory as a theoretical framework were reviewed in this paper to see how the theory has been developed or modified. There have been few changes made to cognitive dissonance theory over five decades. Patterns from the studies reviewed in this paper emerged. One of the main patterns found when reviewing studies that used cognitive dissonance theory include the fields that the studies were published in. Marketing studies, communication studies, political studies, and technology studies tend to use cognitive dissonance theory. Another pattern found was the preservation of the four primary tenets from Festinger's original use of the theory throughout the decades of the theory's use. Cognitive dissonance theory could be used as a tool or a lens in communication research based on the fact that it sheds light on the inner contradictions that people face in everyday situations.

Paper/Performance Presentation Group 14

Cognitive Companions

Presenter: David Contreras
Project Advisor: Ms. Audra Brown

This research project will focus on a problem many gamers would argue to be one of the most crucial components in a 'Great' game, companions and pets. Companions have long been a staple of gaming across many genre's, and while they have brought a great level of joy to gamers; They have also delivered a veritable host of issues. The same issues that have always been a constraint to advancements in the field remain. Computation and memory are limited, often spent on graphics and physics, leaving little for NPC's. Companions should NOT be treated as simple NPC's for they are intrinsically NOT like other NPC's, they are subject to more scrutiny and relied on for many aspects of gameplay. This, in turn, has led to a love-hate relationship with users. Well-developed and endearing companions must be weighed against the trouble they inevitably bring. Issues such as: poor pathing, faulty logic, bugs, unexplained actions, lack of customization, and plain repetitiveness… By using a Knowledge-based AI, and cognitive learning---especially in-game learning guided by users---this project hopes to address several key issues in the status quo for companions. Using this method of approach, we hope to achieve a much more interactive companion, one that can learn to adapt to a user's play-style and preferences. Being able to custom build a companion, and then refine it over the course of play will bring a paradigm shift to gaming, one where your constant companion is infinitely more valuable, personalized, and companionable.

Voice Activated Solar Powered Golf Cart

Presenters: Karen Gutierrez, Dana Arnold
Collaborator: Adrian Munoz
Project Advisor: Dr. Hamid Allamehzadeh

In this report, we document the research and engineering practices that were used to design and implement a solar powered golf cart with speech recognition. We also discuss the construction of the solar panels on the golf cart, as well as the software involved in speech recognition design. We used some circuitry techniques to do some basic functions including, turning on the lights, starting the golf cart, and raising and lowering the solar panels for optimal efficiency. The main components of the system include a speech recognition board that was programmed to recognize individual voices and phrases. A circuit network was systematically designed so we could implement multiple functions at once, simply and safely.

Wireless Power Transfer through Inductive Coupling

Presenter: Jose Mondragon
Project Advisor: Dr. Hamid Allamehzadeh

Wireless Power Transfer (WPT) is the efficient transmission of electric power through a medium to a remote system for the purposes of charging or powering the system. The type of wireless power transfer is dependent on the application for near or far field uses. A major form of WPT through inductive coupling of a transmitter and receiver circuit through an inductive coil. Applying an electrical current through an inductive coil forms a magnetic field around the coil and ultimately run through another coil that is resonant to the same frequency as the generated frequency. The networks that create and receive inductively coupled energy are introduced and analyzed. WPT can be applied to various real-world applications including powering electrical vehicles, mobile devices, biomedical devices, the Internet of Things (IoTs), and many more. The IoTs is the connection of the internet with electrical devices for sending and receiving information. Analysis is provided on an application of WPT for the use on an electrical vehicle, biomedical device, and the IoTs. With the growth of WPT technologies there is a growing concern of the health effect posed on humans with the use of this technology. Different modes of achieving WPT has different environmental effects. The effects on environment and humans are addressed.

Laboratory Proof of Fourier Series for Periodic Non-Sinusoidal Signals

Presenter: Davi Mondragon
Project Advisor: Dr. Hamid Allamehzadeh

In this research, we study the mathematical representation of common periodic non-sinusoidal signals in terms of their harmonic components using Fourier series. Then, we synthesize each non-sinusoidal periodic signal by adding appropriate numbers of harmonic components in its spectrum. To implement the synthesis of each signal in the laboratory, we tune several function generators to appropriate frequencies and amplitudes and combine their output signals via a voltage summing amplifier circuit. Several low-pass and band-pass analog active filters are designed using principles of filter theory and Laplace Transforms. The designed analog filters are built in the laboratory using op-amps, capacitors, and resistors; to verify the filters' cutoff frequencies, the designed analog filters are simulated on computer using Pspice software. To verify the Fourier series predicted frequencies, students apply periodic square waves to the input of the designed filters and observe the filtered harmonics on the oscilloscope. MATLAB

software is also used to synthesize a square wave from its spectral harmonic components.

Bird repelling system

Presenters: Alejandro Munoz, Jesus Sanchez
Collaborators: Davi Mondragon, Tristan White
Project Advisor: Dr. Hamid Allamehzadeh

Some birds are major threats to the field of agriculture, airport control operation, power lines, and serenity of the environment. Most common pest birds in many countries are house crows, common myna, jungle myna, white-cheeked bulbul, grackle, etc. In order to distract these birds away, many traditional methods such as scarecrow models, sound blasters, hawk kites, flashes, lasers, and colored lights were used. One major pest bird on ENMU campus in grackle. in this project, an effective bird repellent is designed based on high power electronic signals with audible sounds. The generated frequency sounds can deter bird that are able to hear the range of frequency tones. A research study on the range of frequencies that various birds can hear is also conducted. Different sounds for deterring different species of birds is generated through variable electronic components of the circuit. Finally, to evaluate the performance of the device, the designated bird repellent will be tested on ENMU campus grackles population.

Solving the Magic Triangle

Presenter: Edward Newell
Collaborator: Elijah Lucero
Project Advisor: Dr. Thomas Brown
Award Winner

The magic triangle is a number puzzle that involves a series of numbers arranged to form a triangle such each number is used only once, and all the side lengths sum to a specific number. When you have a triangle of side length 4, you use the numbers 1 – 9, and you can get the side lengths to sum to 17,19,20,21, or 23.

The purpose of this project is to develop ever more efficient algorithms to solve these puzzles entirely. To work out the total number of solutions for a triangle of arbitrary size. This appears to be an NP problem as every algorithm tested so far has been an improvement on n! complexity.

Dual Axis Solar Tracker

Presenter: Tristan White
Collaborators: Jesus Sanchez, Davi Mondragon
Project Advisor: Dr. Hamid Allamehzadeh

Solar energy technology is discussed briefly in this overview. Maximum power output is sought out to increase the efficiency of a solar array. The two approaches for amplifying power extraction are sun tracking and maximum power point tracking, although a combination of both can yield better results. A sun-tracking design operates at higher efficiency, as it can increase energy yield up to 50% compared to the fixed-array design over the course of year compared to a fixed-designed array. To further increase efficiency, tracking the sun movement from North to South over the period of a year will follow seasonal changes in the position of the sun. The purpose of this paper is to present a dual-axis sun tracker motor to accomplish the efficiency gains. To ensure both motors are not activated simultaneously, a logic circuit is created to allow voltage and current flow to one motor until it is in a preset efficiency range and then it adjusts the other motor into its efficiency range, completely through switch controls. Finally, the design circuits are implemented in laboratory and the overall performance of the composite system are evaluated.

Paper/Performance Presentation Group 15

The Feeling of Light

Presenter: Lane Castro
Project Advisor: Mr. Rick Shepardson

What does light look like? We have all seen light but have we all experienced light? The way light falls onto a subject can emote a certain feelings based on the type of light and the temperature. Cool blue light is a mellow, soft, almost somber feeling; while orange light is more warm and happy. Over several weeks I have abstracted and observed light through the lens of the motion picture camera. This piece that I ended up with is not just a study of light, but what great filmmaker Stan Brakhage would call, “An adventure in perception.

Second Hand Experience

Presenter: Anna George
Project Advisor: Mr. Jonathan Barr

Have you ever watched a film that matches your experience and thought to yourself, 'I've done that, and that's not how it works.' The burden of being a screenwriter, or a writer of any type, is that you must mimic experiences that do not always mirror your own to get to a larger point. In this presentation, it will be explored how a screenwriter writes experiences and traumas that are not their own and gives them justice.

"Keep Talking" Production Book

Presenter: Joseph Miller
Project Advisor: Mr. Jonathan Barr
Award Winner

Race has always been an ongoing in our society, and it seems to be extremely prevalent today. Everybody seems to have an opinion about it or they simply pretend it's not as big an issue as some make it seem to be. The big problem is that no one is listening to each other. People feel how they feel and are unwilling to listen to the opposition. That is what my next short film is about. ""Keep Talking"" is a short drama about race with an experimental twist.

The film follows two stereotypical characters, one black, one white, and what happens when the two meet in a confrontation. However, before the two get in a fight, it is revealed that they are actually actors in a movie. The rest of the film is candid behind the scenes footage of the film crew and their thoughts about what is happening in the film and racism between the people actually on set.

My presentation will be about my production book for the film. The production book contains all of the information, legal documents, and scheduling involved in making this film from start to finish. It contains visual looks and elements, budgets, scripts, crew and actor pledges, and shooting schedules for when we will be actually filming principle photography. The film is to not push an agenda, but instead to inspire people to keep talking.

Creating a One Man Show through Personal Essay

Presenter: Brendan Moore
Project Advisor: Mr. Jonathan Barr

In an increasingly absurd world, every person is bound to have their own unique perspective on how to navigate that world. As an aspiring comedic writer/ stand-up I intend to present a 10 minute "One Man Show" about a variety of topics, including coping with the death of a loved one. I will also leave five minutes open for discussion about the process of making the show and to answer any questions that may be asked.

Topic in Latin America: Guillermo Del Toro

Presenter: Colton Parish
Project Advisor: Mr. Jonathan Barr

The impact that Latin American director, Guillermo Del Toro and his impact on Latin American culture and Hollywood.

Gender on Stage: Elastic Casting in a 10-minute Play

Presenter: Kendall Romero
Project Advisor: Dr. Anne Beck

In this presentation I will be showing the gender fluidity in my 10-minute play, "Promise? Promise." Performed by ENMU students in selected scenes, we will see the dynamics of a variety of gender pairings: male-male; female-male; and female-female. Initially I wrote it for two actors, not gender specific, and I discovered immediately that depending on the casting, an audience would view the life journeys of the characters quite differently. The purpose of my presentation is to expand the imagination of my audience; to interrogate our preconceptions of gender and to question our assumptions.

My presentation will be done in three parts:

I will introduce the actors and scenes excerpted.
We will watch the scenes
The audience will then join with the actors in a discussion.

Reflections of Reality

Presenter: Allen Valdez
Project Advisor: Mr. Jonathan Barr

An analysis of The Spirit of the Beehive highlighting the plot's relationship with art and reality through political, economical, and social aspects reflecting

Spain in 1973. The dissection of the film's analysis will contribute to relationship of the attitudes of Spain from the post civil war era and modern day.

Paper/Performance Presentation Group 16

Political intervention of the United States in Mexican Government after the 1968 Student Movement in Mexico City. Research advancements and considerations

Presenter: Marisol Ayala Escalante
Project Advisor: Dr. Maria Duarte

In 1968, Mexico saw the uprise of social mobilization in students and professors from different educational institutes, laborers, housewives and other professionals, that same year Mexico was the host for the Olympic games, in the middle of the cold war, social discontent in the Mexican society was evident, from the violent repression from the government and the censorship of the media, the Olympics gave a perfect stage for the organized social groups to make their demands heard. But the Mexican State, which at the end of the revolutionary war began a process of centralization with a single ruling political party, suppressed the movement before the Olympics started using excessive violence that included disappearances and assassinations, as well as the imprisonment of the major leaders, political or not, of the movement, leading to the October 2 Tlatelolco´s massacre. During these events the United States government conducted and investigation via the CIA, to ensure that there wasn't a soviet threat inside the organized protests against the Mexican State, when they found nothing that linked the USSR, China or Cuba directly to the movement, the investigations turned to the discontent of the people against the Mexican State, declaring that said organ wasn't as organized, centralized or hegemonic as they previously thought, appointing the massacre as the breaking point of the other state government, they decided that an intervention was needed, but with a different approach from the usual military, economic and political action conducted in the rest of Latin America and the Caribbean.

Power through Strength: Why the use of Battleships are still effective in the 21st Century

Presenter: Dominic Deeley
Project Advisor: Dr. Daniel Acheson-Brown

We are in a time of rising challenges to U.S. power around the world. Therefore, the United States faces a struggle to maintain an adequate navy to deal with or contain threats. The need for an increase in capable warships to maintain the objective of securing U.S. sea power rises to the forefront. With new ships plagued with mechanical and technology issues, the need for old-style ships to maintain the strategic power arise. While considered old by many, the Iowa class Battleships are still relevant to the U.S.N. mission. Serving the better half of a century in times of need, the four Iowa class battleships were retrofitted to keep up with better technology in the 1980s. Being second only to the size of Aircraft Carriers, the Iowa's maintained the influence of power of the United States for many years. With the evolution of ship design and capability, the thought of continued use of these vessels was at an end shortly after the first Gulf War. Rising costs and declining funds led to striking them from the naval register. Current events, however have led to the possibility of bringing Battleships back. Problems that come with this idea is range from the ramifications of economic costs to aging systems. I argue that the four Iowa's should be placed back into fleet service and the United States Navy should construct four new cutting edge battleships.

Correlations of Crime and Violence with the Rise of Urbanization and Literacy in 19th Century France

Presenter: Laura Evans
Project Advisor: Dr. Kathy Roler Durand

This research will focus on the correlation of crime and violence and the rise of urbanization and literacy in 19th century France. The information found in this research will either prove or disprove the idea that crime rates rose along with the rise of urbanization. Along with finding this information, the rise of literacy and its effect on the people of 19th century France will also be explored.

Equity in Education

Presenter: Jennifer Martinez
Project Advisor: Dr. Daniel Acheson-Brown
Award Winner

My paper proposes and elaborates on three ideas for modern day reform of the public education system in the United States while delving into the lack of equity and difference in equality between schools districts and systems across the country.

When Targeted Killings Become Casual: The Due Process-less Assassination of Anwar al-Aulaqi

Presenter: Robert Wilson
Project Advisor: Dr. Daniel Acheson-Brown

Does the United States, which has historically banned the use of "assassination tactics" through executive order , have the lawful and constitutional right to justify placing an American citizen on an authorized "kill list," without affording that citizen the rights enumerated in the United States Constitution; those being primarily the right of Due Process as guaranteed by the Fifth Amendment; and in doing so condone and warrant the use of para-military strikes in order to kill that citizen while on foreign soil, and not in an active battlefield? Further, does the President of the United States of America have the unilateral authority (under the notion of national security) to by-pass judicial review, forego a citizen's right of due process, and in essence sign that citizen's death warrant acting as judge, jury, and executioner?

Paper/Performance Presentation Group 17

Interpretive Compositon

Presenter: Noah Alonzo
Project Advisor: Dr. Mark dal Porto

My presentation is a piece for solo piano that I composed. The piece is formatted in a way that allows for any performer to interpret and play the piece differently each time he or she performs it. The piece itself is comprised of nine distinct sections and a list of instructions. The performer refers to the list of instructions to interpret how to play each section, however the instructions are loosely worded to give the performer the freedom to choose how he or she wants to play the piece. The result is a different piece at every performance that the performer can put a part of himself or herself into.

Yin and Yang: A New Composition for Saxophone Quartet by Dr. Mark Dal Porto

Presenters: Logan Aragon, Maegan Stegemoeller
Collaborators: Deidre Howard, Chance O'Shea
Project Advisor: Dr. Richard Schwartz

This is a two-part project. The first is an interview with the composer. The interview includes prompted questions including (1) his compositional rationale and process, (2) how composing for a saxophone quartet compares to other ensembles or solo works, (3) how a performance by the Eastern New Mexico University Saxophone Quartet at the College Music Society National Conference influenced the success of his work and (4) how is the yin and yang philosophy represented in his work? The second part of this project is a live performance by the Eastern New Mexico University Saxophone Quartet. The members of the quartet include the two presenters and the two collaborators.

Advanced Compositions

Presenter: David Bowman
Project Advisor: Mr. Kenneth Miller

This project explores the dynamics of collaboration between composer and interpreter. The focus is a commissioned choral work by ENMU Composition Professor Mark Dal Porto for the ENMU Chamber Singers. Dr. Dal Porto chose a poem, ""From Spring Day To Winter"" by Oscar Wilde for his text.

The presentation will include an interview with Dr. Dal Porto about his selection process for this poem and research discoveries about the place of this poem in the opus of Wilde's output. We will also cover the various and advanced compositional techniques utilized by Dr. Dal Porto in his composition, and how they challenge the Chamber Singers as the prepare this work.

The Psychoanalysis of Robert Schumann Through His Musical Compositions

Presenter: Alexandra Esquibel
Project Advisor: Ms. Stephanie Beinlich

In this performance of selections from Robert Schumann's Myrthen, I will demonstrate my findings from my research on Schumann and how his mental being and personal struggles show in his music. I will be mostly focusing on Schumann's two composing personalities; Florestan and Eusebius and how they represent his struggle with bi-polar and how it shows in his music. The pieces I have selected to sing, I feel exemplify the contrasts of these two personalities best. I selected four pieces from his song cycle Myrthen, that show Schumann's two composing sides. Florestan is more fiery, mischievous and passionate, the movements that coincide with this are no.1Widmung, and no. 22 Niemand. Eusebius is more contemplative, reflective, and gentle, and sometimes has a

darker undertone, the movements that coincide with this are no.15 Aus den hebraischen Gesangen and no. 22 Weit, Weit.

The Process of Composing a Mash-up

Presenters: Javier Lopez, Zane Burden
Collaborators: Annabelle Rangel, Austin Phillips, Cristian Zaragoza, Dalia Melendez, Devin Crockett, Edie Gutierrez, Geoffrey Andersen, Hannah Weeks, Larissa Aragon
Project Advisor: Mr. Kenneth Miller
Award Winner

Members of the Swannee singers, here at Eastern, are in the process of creating a mash-up. A mash-up is an arranged song that has multiple songs within it. The eleven members have collaborated with each other to compose a nine-song mash-up from the '80s. We will discuss the creative process, the collaboration between members, composing, and the ultimate production of the arrangement for concert performance.

Paper/Performance Presentation Group 18

The History an Art of the Steel Pan

Presenter: Zak Bouldin
Collaborator: Kailtyn Grubbs
Project Advisor: Mr. Neil Rutland

I will discuss the history, development, and evolution of steel pans (an acoustical percussive instrument). Steel pan is the only significant Acoustic instrument developed in the 20th century,Lead pan and double seconds will be showcased in person along with images of double tenors, guitar, and bass to be displayed during the presentation. After the end of World War II a man named Winston "spree" Simon lived in the Port of Spain where he developed the pans we see and use today.

I will also be preforming a piece called Queen of the Bands at the end of the lecture.

The Process of a Musician

Presenter: Luis Burke
Project Advisor: Dr. Sidney Shuler

The presentation will be about the abilities that a young mature musician is capable of doing. From the start of when a music student begins to learn new techniques, to where they are currently standing.

The Development of Multiple Percussion Playing in Western Art Music

Presenters: Dustyn Crane, Stephen Yung
Project Advisor: Mr. Neil Rutland
Award Winner

Our presentation will consist of two musical performances. The oral presentation will discuss the historical significance of multi-percussion, progression over time, secular and economical factors of its creation, and the impact it had on modern day percussion (repertoire, curriculum standards, etc). Our presentation will also explore variations on the concepts of multiple percussion. The order of events will be a brief musical performance followed by our oral presentation and will conclude with one last performance.

What is Collaboration and why is it important to Music Education and Everyday life

Presenter: Herman Montoya
Collaborators: ENMU Clarinet Quartet, Haley Brown, Zandra Neff, Tavis Copp
Project Advisor: Dr. Jennifer Laubenthal

What is Collaboration? One would say: to work, one with another; cooperate, as on a literary work. What defines a successful collaboration? Collaborating has many different aspects such as Communication in performance, communication, connection, Repertoire choice, Give and Take, Scheduling, and many more. All of these aspects consist of the same motive when performing in a small ensemble. How do you make your musical collaboration a success? Never give up, always strive to perform and never say no to a performance. What causes an unsuccessful collaboration? Many things come to my mind when asked this question. Such as attitude and, negative energy. Why is collaboration important in music education and life? As humans we collaborate all the time. When working in groups, doing projects or even hanging out with your colleagues. Music is a far when it comes

to collaboration because we play as an ensemble or soloist but never play in chamber groups?

Chamber ensembles like the ENMU Clarinet Quartet perform spectacular music as well as expanding there musicality and social skills. Collaborating can widen your perspective in life, expands and enhances your performance ability, and can give you inspiration.

The ENMU Clarinet Quartet will perform a piece before the presentation. Herman Montoya will present how the performance relates to the discussion topic.

Aragonaise, from the suite "Carmen" Georges Bizet, arr. Marco Mazzini. Unspoken love, Jordon Johnson, for the ENMU Clarinet Quartet."

Paper/Performance Presentation Group 19

Drinking during pregnancy

Presenters: Tyler Bock, Holly Jackson
Collaborators: Devon Dillon, Karimah Estrada, Jasmine Hotchkins-Parker
Project Advisor: Dr. Gary Bond

This Public Service Announcement (PSA) specifically targets female viewers, ages 18 – 35, who are currently pregnant or plan on becoming pregnant. The goal is to raise awareness for the consumption of alcohol while carrying a baby. Surprisingly, there are still a number of women who still do this despite knowing the possible consequences for their child. The consumption of alcohol while pregnant poses a great risk for the child developing what's known as Fetal Alcohol Spectrum Disorder (FASD). This disorder leads to various physical and cognitive developmental issues such as smaller head size, abnormal facial features, learning disabilities, and poor memory (Sokol, Black, & Nordstrom, 2003). When it comes to the psychological aspects of the future mother, there might be a root reason for her drinking. More specifically, pregnancy leads to fluctuations in hormone levels which has the potential to drastically alter the mental state of the woman. For example, if depression is present in the woman prior to conception, it can become a much larger issue to handle when traveling down the road to motherhood. By comparing the healthy development of a child without FASD to a child who does, this PSA will urge future mothers to seek help from local counseling professionals before they make a life-altering mistake for their child.

The Physical and Mental Abuse of Child Abuse

Presenters: Eleny Ceniceros, Amanda Garcia
Collaborators: Kekoa Von Schriltz, Teresa Mitchell, Rylie Lee
Project Advisor: Dr. Gary Bond

A public service announcement (PSA) was created for our Senior Seminar course in Psychology to focus on mental and physical aspects of child abuse. The importance of the issue is readily apparent: child abuse occurs every day in different forms. Some forms are sometimes unnoticeable, such as when psychological and mental abuse is perpetrated. A second type of abuse is physical in nature. This is the form of abuse where one may see a child with cuts, bruises, injuries, soreness, or some forms of deformation on the skin and body. What we want our audience to understand from our PSA is that child abuse can progress and become more alarming and dangerous if no action is taken when the abuse is first noticed. The PSA takes a positive psychological approach to the problem. It informs the public generally about what child abuse is, the forms it takes, what one must do about it, as well as bringing overall awareness to the problem. Our target audience is primarily any one who is a caregiver, a legal guardian or anyone else that provides care or comes into contact with children. Our secondary target audience is children. The actors in the PSA are children and adults. In this presentation, we will show the PSA, talk about the psychological approach to its creation, and describe how a PSA is made: selecting an important problem or social issue, determining an audience, creating a storyboard and shot list, and producing the work for public consumption.

PSA: Tornadoes

Presenters: Sara Cerecerez, Jaycie Henson
Collaborators: Rebecca Clark, Maria Vang
Project Advisor: Dr. Gary Bond

Natural disasters occur around the world annually. Tornadoes are one of the natural disasters that affect regions of the United States. The most tornado-prone states include Texas, Oklahoma, Kansas, Nebraska, Colorado, Illinois, Iowa, Alabama, Missouri, Mississippi, and Florida. Tornadoes form from thunderstorms as fast, violent, rotating columns of air that extend to the ground. Warning signs of tornadoes include dark sky, large hail, extended bands of low cumulus clouds, a wall cloud, rear flank downdraft, and a condensation funnel. The most severe tornado in U.S. history happened in 1925 and killed 625 people in Missouri, Illinois, and Indiana. Tornado preparedness can prevent more deaths from occurring. Many people are unaware of what actions to take when a tornado strikes.

Seeking shelter below ground or on the lowest level of a building in an interior, windowless space is important. If outside, one needs to take cover in a stationary vehicle. If possible, they can drive to a sturdy building for better protection. If not possible, one needs to make sure a seat belt is on and one's head is protectively covered. There are obvious material losses incurred in tornadoes, but damage can also be physical and psychological. The psychological effects of tornadoes can include survivor's guilt, post-traumatic stress disorder, anxiety, and depression. This public safety announcement about tornadoes created for the Senior Seminar in Psychology course serves to prevent less panic, promote safety and precaution, and help decrease the rates of deaths caused by tornadoes.

Public Service Announcement

Presenters: Tonya Chairez, Irene Landa
Collaborators: Kenneth Lloyd, Daniel Mairot, Nathaniel Swain
Project Advisor: Dr. Gary Bond

A public service announcement (PSA) is a message dispersed to the public without charge, with the objective of raising awareness, changing public attitudes and behavior towards an important social issue. PSAs are important because they bring consciousness to a large number of viewers about issues like DWI, staying in school, and the importance of being drug free. They are meant to encourage viewers to make well-informed decisions. This PSA created for the Senior Seminar in Psychology course focuses on the importance of staying in school and targets an audience age 12 to 21. The purpose is to emphasize the important aspects of staying in school, such as avoiding incarceration, gaining basic job qualifications, enjoying the higher rates of income among high school graduates, and gaining cognitive psychological benefits. This PSA is a 30 sec video of a person who has dropped out of school trying to apply for jobs, filling out job applications, then getting turned down for jobs because they are not qualified. There are shots of them turning to illegal alternatives to make income and then eventual incarceration. The importance of making good decisions is the final shot of the PSA. The researchers will describe planning, storyboarding and shot list processes in making a PSA, and the psychological approach used in the "stay in school" PSA.

Emotional Stroop Test & Anxiety

Presenters: Nichelle Cody, Jackie Herrera
Collaborator: Omary Shabani
Project Advisor: Dr. Gary Bond

McLeod (2008) notes that it is difficult, if not impossible, for any person to attentively focus on all the sensory input that they receive at one time. Therefore, we use selective attention to focus on some aspects of sensory input. Selective attention is the ability to concentrate on the present task, while dismissing the other surrounding distractions. The Stroop Effect is a model that researchers can use to test selective attention with reaction time in completing a task. We will use an Emotional Stroop Effect model to test participants' reaction time to anxiety-provoking words and neutral words. The Stroop test will allow us to use a baseline time and compare it to an interference time on each of the anxiety and neutral words. Thirty words from the Affective Norms for English Words (ANEW; Bradley & Lang, 1999) dataset will be used as stimuli (15 anxiety and 15 neutral words). We will also give the short GAD 7 Anxiety Screening Questionnaire (Spitzer, Kroenke, Williams, & Lowe, 2006) to participants after the Stroop stimuli are presented to measure each participant's level of generalized anxiety. Before analyzing the data, a median split will be taken to construct an independent variable, Anxiety (high, low). The dependent variables will be reaction times on responses to anxiety-provoking and neutral words. An independent samples t-test should show that people with higher anxiety levels as shown on the GAD 7 should have longer reaction times to anxiety-provoking words than people in the lower anxiety group.

Recognize the Signs

Presenter: Todd Countee
Project Advisor: Dr. Gary Bond

Sexual assault is a prominent and ongoing problem worldwide. One in five women will be raped at some point in their life and on average there are 321,500 women who report a case of molestation each year. We need to continue to address this problem publicly and on an ongoing basis. There are long-lasting psychological effects on the victim and victims may suffer from psychopathological conditions such as PTSD, depression, and suicidal thoughts. A call to action to address this serious problem is to recognize situational signs before something happens. A Public Service Announcement (PSA) was made to address the problem, targeting all audiences. The researchers will discuss the problem of sexual assault, the psychological approach to the problem, the storyboarding process, the shot list, and how a PSA directs action in the community. The psychological approach will entail positive psychology constructs, and students will appear as actors in the PSA.

Recycling in the United States

Presenters: Victoria Pallas, Troy Hardy
Project Advisor: Dr. Gary Bond
Award Winner

There are many benefits to recycling plastic in the United States, such as saving aquatic life, cleansing the oceans, reducing landfills, pollution, and making the Earth a more suitable habitat for all humanity. Hundreds of animals, by land and sea, are dying due to the plastic waste and constant production of pollution from landfills being expelled to our oceans. This pollution causes our environment to shift from its original, eco-friendly design. While there are many problems with pollution and its draining effect on all, there are simple ways that this can change, such as proper recycling and disposal. With new and improved environmentally friendly ways to recycle, reduction of landfill and plastic waste is highly possible. This reduction will not only aid the aquatic life and their natural habitat, but improve humanity's living conditions as well. A Public Service Announcement (PSA) was created by our research group for our Senior Seminar in Psychology course to bring attention to this pressing world problem. The group will talk about the psychological approach used to craft the PSA, as well as target audience, storyboarding, and shot list processes

Paper/Performance Presentation Group 20

Who are the Gypsy?

Presenter: Catalina Arana-Mendoza
Project Advisor: Ms. Gloria Jurado
Award Winner

I will be talking about the history of the Gypsy and the steps they had to take in order to get where they are now.

History of the Spanish Language

Presenter: Evangelina Castillo
Project Advisor: Ms. Gloria Jurado

The history of the Spanish language is very complex and has many factors that have contributed to its growth and diversity. Learning how the language

came to be and how much it has expanded over time helps learn more about it. Many countries have contributed to the Spanish language from the early settlers to the Arabs. Anytime there were new settlers they helped contribute and expand on the language. The Spanish language is a very diverse language, depending on what country it is spoken in. Different parts of the world speak Spanish, but within the countries that speak the language there are also many variations of it. With language getting a background on how the language came to be, helps with the understanding of that new language and how everything that has happened from the beginning has had an impact on the language.

Identidad

Presenters: Melissa Davalos, Alexandria Crowson
Project Advisor: Dr. Rodrigo Figueroa Obregon

This paper will explore the different types of identity which the Mexican people posses. The movie, Amores Perros, is one movie in which we see how cultural and social aspects play into the role of identity in the lives of Mexicans. The film's direct approach into the raw nature of identity will also be analyzed in this paper. Identidad, which translates to identity, is what makes each individual unique within their world. The culture within Mexican communities is prevalent in how identity molds individuals within these communities. Identity is the building block that creates character which then creates individuals, later groups, and then the identity of people within an entire nation.

La historia de los paganos

Presenter: Cruz Exiga
Project Advisor: Ms. Gloria Jurado

The paper will be about the history of pagans throughout history. The good, the bad and their influences they had in to what is Europe today.

La LLorona: folkorico como un sitio de resistencia en Nuevo Mexio

Presenter: Opal Greer
Project Advisor: Ms. Gloria Jurado
Non-competing

The legend of La Llorona is a familiar one to many New Mexicans. The story has deep and complex roots, having been attributed to a wide variety of sub-cultures in the Mexican diaspora. The story also has commonalities with the broader folk tale of the white woman or woman in white, which is a wide-spread ghost story. While the crux of the story is that La Llorona, the crying woman, weeps after having been jilted or otherwise mistreated by a male paramour, like the other women in white stories, some of the versions, including the version told widely in New Mexico, set the ghost up as a figure with agency. Not only is she haunting the Rio Grande, we are told, but she drowns naughty children in it. In this presentation, I will discuss the ways in which the different versions of La Llorona have been used as sites of cultural change, but more specifically, I will argue that the way the stories have evolved in New Mexico indicates their use as a site of rebellion against a broad range of oppressive forces. Furthermore, I argue that La Llorona's apparent agency in the tale as told in New Mexico is tied to the historical rebellions of the territory, and that it is, in fact, a manifestation of those rebellions. (presented in Spanish.)

Leccion de Cocina

Presenter: Stephanie Misangyi
Project Advisor: Ms. Gloria Jurado

This paper aims to examine the role of women in Latin American culture through the analysis of Rosario Castellano's short story, 'Leccion de Cocina'. The information gathered from the story will be used to draw parallels that still exist in the world today.

Catolicismo en España

Presenter: Sandra Reed
Project Advisor: Ms. Gloria Jurado

My papel is about Catholicism in Spain. First I will talk about what Catholicism is and were it started then I'll talk about how it got to Spain. Then just talk about what happened in Spain while under catholic rule. Then I'll wrap it up.

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