



17th Annual Capstone Conference



John Rogers Faculty Development Center

Friday May 4, 2018

11:00am - 4:30pm

*University Honors Program
McNair Scholars Program*

*California State University Stanislaus
One University Circle, Turlock CA 95382*

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The following faculty taught in the Honors Program this year:

April Anderson (English), Xamuel Bañales (Ethnic Studies), Ellen Bell (Anthropology), Tom Carter (Computer Science), Andrew Conteh (Political Science), Jennifer Cooper (Biological Sciences), Scott Davis (English), Andy Dorsey (English), Jeffrey Frost (Anthropology), Suditi Gupta (Psychology), Tim Held (Library), Heather Jarrell (Anthropology), Therese Lunt (History), Alexander Markov (Communication Studies), Chris Nagel (Philosophy), Justin Pack (Philosophy), Richard Randall (Political Science), Jennifer Ringberg (Anthropology), Cynthia Santos-DeCure (Theatre), Kathryn Steele (English), Jim Tuedio (Philosophy), Michael Tumolo (Communications), Chris Turner (Philosophy), Arnold Webb (English), Katrina Weber (English) and Janey Youngblom (Biological Sciences).

Seniors in the Honors Program are encouraged to tackle complex problems using methods and knowledge drawn from relevant disciplines. Honors Program faculty and research mentors offer critical feedback and guidance along the way. The main objective is for students to explore, gather and analyze information effectively, and to reflect on the implications of what they have discovered. Group discussions help to promote thoughtful questioning. The goal is to communicate knowledge, judgments, and original perspectives based on careful inquiry, exploration and analysis.

*Special thanks to Stanislaus State's **Ronald E. McNair Postbaccalaureate Achievement Program** for co-sponsoring this event.*

Featured Presentations

FDC 118

Moderator: James Tuedio, Dean of the College of Arts, Humanities and Social Sciences
and University Honors Program Director

- 11:00-11:20 **Refreshments, Poster Review, Conference Welcome**
- 11:20-11:40 **Nicole Kluenker** (Biology): In Utero Growth Rates of Nigerian Dwarf Dairy Goats
- 11:40-12:00 **Branden Escobar** (Computer Science): An Environmental Internet of Things Solution for Wild Pig Tracking
- 12:00-12:20 **Karina Enriquez** (Computer Science): Faster Face Detection Using Convolutional Neural Networks & the Viola-Jones Algorithm
Faculty Mentor: Dr. Kyu Han Koh (Computer Science)
- 12:20-12:40 **Kelly Stahl** (Math & Computer Science): Fake News Detection in Social Media
Faculty Mentor: Dr. Melanie Martin (Computer Science)
- 12:40-1:00 **Timothy Trammel** (Cognitive Studies): Data-Informed, Agent-Based Model of Information Dissemination within Social Media Networks
Faculty Mentor: Dr. Thomas Carter (Cognitive Studies)
- 1:00-1:20 **Capstone Research Poster Displays (Honors Juniors and McNair Scholars)**
Service Learning Poster Displays (Honors Sophomores)
- 1:20-1:40 **Royal Sandhu** (Biology): Effects of Acanthocephalan Parasitism on the Fecundity of the Pacific Mole Crab, *Emerita analoga*
Faculty Mentor: Dr. Ritin Bhaduri (Biology)
- 1:40-2:00 **Livier Camarena** (Biology): Relationship between Airborne Proteins in the Central Valley Area and Allergies
Faculty Mentor: Scott Russell (Chemistry)
- 2:00-2:20 **Najiba Afzal** (Biology): Isometrically Pure, Mono-Bromination of an Organic Compound
Faculty Mentor: Dr. Nhu Y Stessman (Organic Chemistry)
- 2:30-3:15 **Keynote Address: Edgar Campbell, IV** (Ph.D. Candidate in the Department of Chemical & Systems Biology, Stanford School of Medicine and Stan State Honors Program alumnus, graduated in the Class of 2013 with a B.S. in Biology and a minor in Chemistry) The Role of Prions as Protein-Based Epigenetic Elements

- 3:20-3:40 **Poster Review, Informal Conversation with Keynote Speaker**
- 3:40-4:00 **Maximiliano Rodriguez** (Philosophy): The Streets are Uneven
Faculty Mentor: Dr. Hakhamanesh Zangeneh (Philosophy)
- 4:00-4:20 **Justin Yee** (Philosophy): Stabilizing Kant's First and Second Critiques: Causality and Freedom
Faculty Mentor: Dr. Hakhamanesh Zangeneh (Philosophy)
- 4:20-4:30 **Closing Remarks**

Featured Presentations

FDC 103

Moderator: Dr. Ellen Bell, Associate Professor of Anthropology, University Honors Program Director

- 11:20-11:40 **Mariah Nebre** (Sociology): Social Discrimination against People with Albinism
Faculty Mentor: Dr. Andrew Conteh (Political Science)
- 11:40-12:00 **Nama O'Donnell** (Psychology): "Sugar Dating" among College Students in the United States
- 12:00-12:20 **Isaac Sada** (Biology): Diagnosing Dyslexia
- 12:20-12:40 **Janeth Garcia** (Biology): Genetic Factors in the Y Chromosome Related to Autism Spectrum Disorder
Faculty Mentor: Dr. James Youngblom (Biology)
- 12:40-1:00 **Tiffany Spencer** (Cognitive Studies): Is it Sensory or Social?: Determining the Significance of Sensory Processing Disorder as a Diagnosable Disease by its Relation to Autism Spectrum Disorder
Faculty Mentor: Dr. Jamila Newton (Biology)
- 1:00-1:20 **Poster Display in FDC118**
- 1:20-1:40 **Britney Johnston** (Biology): The Endangerment and Conservation of Big Cats in the Old World
- 1:40-2:00 **Anela Medeiros** (Biology): Training of North American Porcupine (*Erethizon dorsatum*) to Allow for Subcutaneous Injections Using Positive Reinforcement
- 2:00-2:20 **Alexis Johnson** (Anthropology): Identity Unearthed
Faculty Mentor: Dr. Sari Miller-Antonio (Anthropology)

- 2:30-3:15 **Keynote address in FDC 118**
- 3:20-3:40 **Wesley Manuel** (History): The Geographic Impact of the Railroad on the First Battle of Manassas/Bull Run
- 3:40-4:00 **Rebecca Estrada Aguila** (Anthropology): The Importance of Invisible People and Places in the American West: An Archaeological Case Study in the San Luis Valley, CO
Faculty Mentor: Dr. Ellen Bell (Anthropology)
- 4:00-4:20 **Rebecca Forsman** (Anthropology): The Rise and Demise of the Ancestral Pueblo
Faculty Mentor: Dr. Jeffrey Frost (Anthropology)
- 4:20-4:30 **Closing Remarks in FDC 118**

Featured Presentations

FDC 114

Moderator: Ms. Araceli Garcia, Director of the McNair Scholars Program at Stanislaus State

- 11:20-11:40 **Selected Junior Poster Talks**
- 11:40-12:00 **Pristine Bui** (Nursing): Skin-to-Skin Care: The Power of Touch
Faculty Mentors: Jennifer Serratos (School of Nursing) and Dr. Marla Seacrist (School of Nursing)
- 12:00-12:20 **Sheenah DeMayo** (Nursing): Why Are There Fewer Men in the Maternal-Newborn Field of Nursing?
Faculty Mentor: Jennifer Serratos, (School of Nursing)
- 12:20-12:40 **Erik Jimenez** (Biology): Healthcare Reform and Issues with Insurance
Faculty Mentor: Dr. Mark Grobner (Biology)
- 12:40-1:00 **Sunpreet Kaur** (Biology): New Perspectives on Defeating Multidrug Resistant Pathogens
Faculty Mentor: Dr. My Lo Thao (Biology)
- 1:00-1:20 **Poster displays in FDC118**
- 1:20-1:40 **Raymond Mahnke, III** (English): An Inquiry into the Effects of Smartphone Use on Reading Comprehension

- 1:40-2:00 **Angelica Lee** (Liberal Studies): Technology as a Tool or Carrot?
Faculty Mentor: Dr. Katie Olivant (Liberal Studies)
- 2:00-2:20 **Jacklyn Heslop** (English): Students as Consumers: Undergraduate Perceptions on Higher Education
Faculty Mentor: Mr. Brett Ashmun (Liberal Studies)
- 2:30-3:15 **Keynote address in FDC118**
- 3:20-3:40 **Margaret Lunt** (Art): The Effects of Environmental Color in Higher Education Classrooms
- 3:40-4:00 **Jocelyn Camarillo** (Sociology & Ethnic Studies): Predicting Latino Academic Success: The Impact of College Aspirations and Mentorship
Faculty Mentor: Dr. Dana Nakano (Sociology)
- 4:00-4:20 **Alejandra Andrade** (Spanish): Bilingualism in the Education of Adolescents
- 4:20-4:30 **Closing Remarks in FDC 118**

Abstracts of Senior Capstone Presentations

Isometrically Pure, Mono-Bromination of an Organic Compound

Najiba Afzal

Acetaminophen, or more commonly known, "Tylenol," has a chemical structure that is nearly identical to that of Methamphetamine, commonly known as "Meth", with the exception of an additional CH₃ group connected to the Nitrogen in Meth. It is important to note that the change around even a single bond can have a dramatic effect on the overall reactivity of the molecule. Acetaminophen is used clinically as an analgesic, whereas Meth is used as an illegal drug due to its dangerous, potent, and addictive properties. Meth and Tylenol are only two specific examples; however, almost all drugs made and distributed throughout the world are manufactured inside a chemical laboratory. Organic synthesis is the regeneration of naturally occurring compounds through manipulation of previously tested procedures. Intricate properties such as exact placement of atoms in a chemical structure in addition to its reactivity with the reactants/catalysts are analyzed on the molecular level. It is the analysis of such characteristics that allows big-name corporations to produce the drugs that are distributed worldwide. This research explores the monobromination and regio-selectivity of the bromine to a specific organic compound, Anisole.

Bilingualism in the Education of Adolescents

Alejandra Andrade

The purpose of this research is to inform the public, specifically parents, about the drawbacks and benefits of being bilingual. This is an attempt to help them understand how this influences an adolescent's education, but also an attempt to influence the incorporation of dual after school language programs in K-12 schools.

Bilingualism is the ability to speak and understand two languages. Factors that affect this can vary from simple things such as the opinion he or she might have about being bilingual, to the way their environment drives them towards or away from learning a second language. One of the barriers included in the research, for example, is code-switching, the ability to switch from one language another within a sentence or a conversation. The problem here arises when there is a confusion between the native language and a second language; for example, when the adolescent does not recognize the rules of when it is appropriate to use code-switching and when it is not. We also have the benefits of being bilingual. Aside from the advantage in communication skills, bilingualism also has an impact on cognitive thinking. Bilingualism can enhance skills such as brainstorming, reading, writing and problem solving. This is because a bilingual person is constantly thinking not only in one, but two languages, which allows more flexibility for critical thinking. This study attempts to provide an explanation of both the benefits and barriers that arise from bilingualism.

Skin-to-Skin Care: The Power of Touch

Pristine Bui

Skin-to-skin care (SSC) is the prolonged holding of a diaper-clad neonate to the bare chest of the mother shortly after birth. It facilitates and strengthens the maternal-infant bond, in turn bettering the health and wellness of each. The therapeutic effects of SSC have been widely researched and discussed. Despite its popularity, however, new mothers may not know nor understand the nuances of SSC, thereby discontinuing its practice too soon to reap all available benefits. This paper features analyses of disparate studies illustrating the vast benefits that mothers and their neonates obtain from SSC. Searches were conducted utilizing the CINAHL Plus database of peer-reviewed articles using key terms 'skin-to-skin care', 'preterm', and 'kangaroo care.' The objective of this literature review is to promote earlier initiation of SSC and better maternal knowledge and understanding of short-term and long-term effects of SSC. Further, labor and delivery nurses will be able to provide their patients with pertinent knowledge to guide home skin-to-skin care. The analyses of the findings will contribute to a growing area of study and are aimed at improving the health of mothers and infants in the nation and bettering the nurse and patient education system in the healthcare environment.

Relationship between Airborne Proteins in the Central Valley Area and Allergies

Livier Camarena Sanchez

Here in the Central Valley there are many contributions to ambient particulate matter. Agriculture, ranching activities, fires, wind-blown dust, diesel and gasoline exhaust, power plant emissions, and home heating all play a role in the particulate matter that is present in our environment. The Central Valley of California has many individuals who face allergic reactions, which may be epidemic or respiratory reactions. Agriculture, ranching activities, fires, wind-blown dust, diesel and gasoline engine exhaust are all activities that are very highly needed and take place here in the Central Valley. Sacramento was listed in the Huffington post as one of the worst US cities for allergies and that is because of the high particle concentration. Identifying mass concentration of what is obtained from our environment should shed light on what is being breathed in by the general population who reside in the Central Valley.

Predicting Latino Academic Success: The Impact of College Aspirations and Mentorship

Jocelyn Camarillo

Success in higher education can be a complex process, especially for students of color. Latino students, for example, experience multiple, interconnected factors that affect their chances of earning a bachelor's degree. For some students socioeconomic background, race/ethnicity, gender, access to financial aid and citizenship affect their graduation from a higher education institution (Ed Trust West 2017). While there has been an

increase in the rate of Latino students entering higher education in recent years, their graduation rate still lags behind whites (Ed Trust-West 2017). In my research, I take a different perspective from the common demographic factors contributing to or hindering college academic success. I focus on the role of childhood college aspirations and the role of mentorship on long-term academic achievements of Latino students. My data is drawn from waves 1, 3 and 4 of the National Longitudinal Study of Adolescent to Adult Health (Add Health 1994, 2001, 2008).

Why Are There Fewer Men in the Maternal-Newborn Field of Nursing?

Sheenah DeMayo

It is commonly known that gender categorizes people in some way, by placing people into certain roles or stereotypes. Because of these stereotypes of masculine vs. feminine, men in nursing encounter many obstacles, especially if they desire to go into maternal-newborn nursing. Nursing in general has been associated with women, because of the claim that women are nurturing and caring by nature. As a result, only 11% of nurses in the United States are men, and research on the experience of men in nursing in the maternal-newborn field is limited as most articles consist of anecdotal evidence. An overview of the difficulties men in nursing face when pursuing the maternal-newborn field, a comparison to male midwives and obstetricians, and implications for policy, education, and the public media are discussed.

Faster Face Detection using Convolutional Neural Networks & the Viola-Jones Algorithm

Karina Enriquez

If you have ever used social media, a digital camera, or a cell phone, chances are you have encountered face detection more than once. Popular social media applications ranging from Facebook to Snapchat use face detection for a variety of their popular features such as tagging friends and applying filters. Face detection is defined as computer technology that is used to detect human faces in digital images. There are various computer algorithms that are employed in the field of face detection, but this paper will focus on two of the most popular methods: Convolutional Neural Networks and the Viola-Jones algorithm. The motivation for this paper is a general curiosity about face detection in everyday life as well as a curiosity about how face detection algorithms work. In my classes so far I have talked about the structure of different types of computer systems but I have never delved into algorithms for these systems. This project offered the opportunity to not only learn about face detection but also delve into the world of computer algorithms.

An Environmental Internet of Things Solution for Wild Pig Tracking

Branden Escobar

This purpose of this paper is to propose a way to track wild pigs in California, a species that causes millions of dollars in damages throughout the state each year. Using the methods involved with the Environmental Internet of Things (EIoT), better data could be obtained regarding the pigs, thus allowing for better policies in managing these animals. Based on its use in several other countries, such as China, the data collected using this system is of a higher quality and therefore more useful. The monetary costs of the system are also explored and weighed against the costs in damages caused by the pigs. This paper concludes that, though expensive, the Environmental Internet of Things would help wildlife managers create more effective policy for managing wild pigs.

The Importance of Invisible People and Places in the American West: An Archaeological Case Study in the San Luis Valley, CO

Rebecca Estrada Aguila

The American West has been the focus of the national imagination since the majority of the land was gained after the wars with Mexico in the 19th century. The region since has also been the subject of more current academic research within the field of historical archaeology. This paper presents the context and discussion of the interaction between the western military and the civilians who lived alongside, worked for, and interacted with them through the lens of historical archaeology, with a specific emphasis on the working women who served the U.S. Army as laundresses. Archaeological investigations in Fort Massachusetts, the 19th century army post in the San Luis Valley of Colorado, will serve as the main case study on how historical and archaeological detective work can illuminate the roles and experiences of civilians at frontier forts. Along with a brief sketch of the history of the military interactions in the New Mexico territory and Fort Massachusetts, I will report on the archaeological work done thus far on the post site. The material culture encountered in recent excavations of Fort Massachusetts reveals not just the work activities of the laundresses, but also more intimate details of their frontier experience. A broader goal of this study is to show the part archaeology has in providing a more complete and inclusive picture of the American West.

The Rise and Demise of the Ancestral Pueblo

Rebecca E. Forsman

The Ancestral Pueblo lived in the Four Corners of the American Southwest from AD 750-1300 and built a complex society. Their collapse in the early 12th century has been the subject of many archaeological studies. This article will examine the case study of their societal reactions to the climate change that brought on the collapse. The constantly changing climates in the American Southwest are an important topic to study, because it provides archaeologists evidence for cultural responses to the drastic change in the environment. Through archaeological evidence, we find signs of migration out of Chaco Canyon into better habitable areas within the region and, in extreme cases, violence leading to cannibalism. If scientists can gain an understanding into the ways societies deal with climate change, they can help understand how societies can better react to such drastic changes in climate in modern times.

Genetic Factors in the Y Chromosome Related to Autism Spectrum Disorder

Janeth Garcia

Autism Spectrum Disorder (ASD) is one of the fastest growing diagnosed disorders in our time. One in 68 children are diagnosed and the number is even greater in males, with one in 42. There is currently no cure nor definitively known cause for autism. Since it is more prominent in males, there has been speculation that ASD can be attributed to a genetic anomaly, but it has yet to be proven. To test this hypothesis, cheek cell samples were taken from two families. In the first family, the two full brothers sampled have been diagnosed with autism; in the second family two full brothers were sampled, one of whom has been diagnosed with autism. Their DNA samples were compared with that of an adult male who is not diagnosed and has never had anyone in his family diagnosed. None of the participants were twins. Their DNA samples were amplified using polymerase chain reaction (PCR). Once their DNA has been sequenced, we can compare the samples to determine whether there are any genetic differences (such as variations in tandem repeats or single nucleotide polymorphisms) between the children diagnosed with Autism and the males who are not.

Students as Consumers: Undergraduate Perceptions on Higher Education

Jacklyn Heslop

Undergraduates' motivations to earn a Bachelor's degree are increasingly tied to their fears about gaining meaningful employment after graduation. As a preventive measure to insure they will be employable, students push themselves to achieve scholastically to distinguish themselves from their peers. Student achievement favors consuming the material for a course in order to pass with the highest grade possible. Very little of what is memorized is retained, meaning students begin to lack confidence in their ability as an academic; overall, this enforces consumerist behaviors, such as memorization, in order to hide personal insecurities about one's own intellectual abilities. This paper aims to explore how the role of the student within university has changed and whether the increase in consumer behavior has affected the student's ability to learn. In this study, 102 participants provided responses to a fifteen question survey about academic life. Emphasis was placed on each student's perceptions of professors, learning, and the worth of higher education. Supported by the data collected, I will argue that, by treating education like a business, students are products whose worth is based on external achievement unsupported by an accessible knowledge base. To address the problems found in modern higher education, a number of pedagogical approaches are explored to not only confront the pressures surrounding the university, but to call for more practical methods of examination that support meaningful learning.

Healthcare Reform and Issues with Insurance

Erik Jimenez

Healthcare is essential for a thriving and healthy society, yet even in affluent societies such as the United States healthcare disparities persist. The government compensates for these disparities by enacting healthcare reform. This is especially important in California's Central Valley where communities face a shortage of medical professionals and there is high dependency on publicly funded healthcare coverage. In 2010 the United States government enacted the Patient Protection and Affordable Care Act (PPACA/ACA). Perhaps the most impactful and controversial component of the law was the health insurance mandate, the aim of which was to insure all individuals, providing access to healthcare and covering the cost of healthcare. This review explores whether having health insurance ensures access to healthcare services. Furthermore, this paper covers US and California healthcare reform and its implementation to examine how it has shaped the healthcare system and the health insurance industry.

Identity Unearthed

Alexis Johnson

Archaeologists are tasked with understanding the past through its material remains. This includes reconstructing the identities and life histories of a site's occupants as individual people and a collective group. This paper addresses how archaeologists and anthropologists use cultural artifacts, burial locations, and identifying features on human remains to examine and assign identities. To elucidate the formation of individual and collective identities in the traditional archaeological sense, I draw on an extended case study of the use of place myths and pseudoscientific data in the creation of national identity in the modern nation-state of Romania. This paper is meant to highlight the complexity of identity studies and the need for archaeologists to be more involved in the application and representation of their findings.

The Endangerment and Conservation of Cheetahs (*Acinonyx jubatus*), Leopards (*Panthera pardus*), Lions (*Panthera leo*), and Tigers (*Panthera tigris*) in Africa & Asia

Britney Johnston

The four largest species of felids in Africa and Asia include the cheetah (*Acinonyx jubatus*), the leopard (*Panthera pardus*), the lion (*Panthera leo*), and the tiger (*Panthera tigris*). One thing that all of these species have in common is that they are all on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species in categories ranging from vulnerable to critically endangered. There are many known reasons for the endangerment of species including, but not limited to, habitat depletion and degradation, overhunting, and loss of resources. However, in the zoological community there is a need for a compilation of these reasons with causal factors, the past range and current range of each species, the life history, and the importance of conservation. Rather than forcing keepers, researchers, or zoologists to search over many sources for information, the information should be in one place. By compiling data from a variety of sources, I have created a single source through extensive literature review that analyzes the reasons for the endangerment of each species so that scientists and people that care about these animals can work together toward conservation efforts. This data can also be used in educational settings pertaining to the conservation of species in the light of global preservation of species and habitats. This data is also useful to those in the general public who are looking for ways that they can help contribute to the conservation of these species.

New Perspectives on Defeating Multidrug Resistant Pathogens

Sunpreet Kaur

Understanding the spread of antibiotic resistant pathogens in hospitals is of vital importance. As time goes on more and more microorganisms are becoming drug resistant and it is becoming increasingly important to find a method to control this process. In this research, I will be studying the microorganisms closely and evaluating multidrug resistance in bacteria to find out if there is a particular mechanism all the bacteria use to become resistant. For the mechanism, I will be focusing on the chromosomal mechanism of the bacteria, in particular, the gram-negative bacteria. The two bacteria that I will be focusing on will be *Methicillin-resistant S. aureus* (MRSA) and *Mycobacterium tuberculosis*. If I am able to find a particular mechanism or pattern that all the bacteria use then it can become easier to find a drug that targets that and would lead to the prevention of microorganisms' immunity. Even if a specific common mechanism is not found, looking at the two bacteria more closely can bring new information in light that can help future research.

In Utero Growth Rates of Nigerian Dwarf Dairy Goats

Nicole Kluncker

Nigerian Dwarf Dairy Goats are a small breed of goats meant for the production of milk, either for direct consumption or to use in making dairy products like butter and ice cream. They are an understudied breed in general and no published studies to determine fetal growth rates have been completed. This information can be used to extrapolate days gestation from fetal size using correlation between fetal measurements and days bred, this can then be used to determine due dates. In this study, a group of pure bred Nigerian Dwarf dairy goats were exposed to bucks during observed estrus and the date was recorded. If the does did not re-enter estrus after 21 days, they were ultra-sounded to check for presence of fetuses. If present, the fetuses were measured from nose to crown and from crown to rump and a rough estimation of area taken up by the fetus and its sack in cm² was recorded. Initial findings are as follows: it is incredibly easy to miss a fetus on ultrasound and the best method for determining the number of fetuses present was to count skulls at days 45-65 gestation. It was also found that measurements were consistent across does who were to be first fresheners and those who had previously kidded, as long as number of kids and number of kids per horn of the uterus were held constant. The discrepancies in size between kids alone in a horn and those who shared a horn were not present until late in

the pregnancy. At around 130 days bred those kids who were singles in their horn were found to experience a rapid increase in size.

Technology as a Tool or Carrot?

Angelica Lee

The fast-paced advances that make technology widely available at our fingertips are shaping how we engage with information. Gadgets and modes of accessing these new tools are becoming more integrated into daily routines, with schools moving toward lesson plans being taught with technology and assignments being completed and submitted on-line. As elementary school teachers incorporate new tools within the classroom, it is important to know the effect that technology will have on student interest and engagement with subject matter. This study aims to look at elementary school students' engagement with lesson plans administered through three different mediums: technology-based materials, paper-based materials, and blended learning.

The Effects of Environmental Color in Higher Education Classrooms

Margaret Lunt

There is a critical presence of color in our everyday lives. Even though we might not always notice it, the presence of color can have the ability to subconsciously affect our emotions and behaviors. If color can affect our emotions and behaviors, what kind of consequences might this have in education and on students? The purpose of this study is to examine how colored classroom walls might affect students' academic achievements. The students were placed in a red, blue, and beige environment and then tested and timed on three different simple multiplication math tests. This study expects to find that, when compared to the current beige walls, students in red rooms would have poor times and scores and students in blue rooms would have improved times and scores. The expected results of this study suggest that it is important to consider the coloring of a classroom in its design. To achieve the greatest efficiency and for the students to get the best results out of their education, classroom coloring should be seriously examined.

An Inquiry on the Effects of Smartphone Use on Reading Comprehension

Raymond Mahnke

As smartphone use becomes more common, do we really understand the potential negative effects of the technology on our abilities to read, remember, and recall information? Why is reading comprehension so important? How does smartphone usage affect reading comprehension? Four key aspects of reading comprehension—repetition, organization skills, cognitive skills, and metacognitive skills—are all greatly affected by the types of distraction caused by smartphone usage. Included are analyses of recent studies that show that simply having a smartphone nearby may cause a 10% reduction in working memory ability. Data regarding smartphone usage trends, user attitudes and perceptions, distraction, reduction of cognitive abilities, and task switching strongly imply that smartphone use is responsible for a significant negative impact on reading comprehension.

The Geographic Impact of the Railroad on the First Battle of Manassas/Bull Run

Wesley Manuel

The purpose of this research is to identify and explore the short-term and long term impacts of railroad use in the American Civil War. In this particular project, the battle of First Bull Run or First Manassas will be the centerpiece in examining the multiple points of impact the Manassas Gap Railroad had on this early-war conflict in terms of geography and logistics. The railroad is widely regarded as one of the keystones in the Union's victory over the Confederacy in 1865. The two opposing governments treated the railroad in different fashions

which created a dichotomy of how effectively the two parties were able to utilize the iron horse. Despite the consensus on the important role the railroad played, is its role still understated to this day? In order to examine this issue, the actual historical event of Manassas I is analyzed, identifying how the railroad was employed in this battle, its impact on the geographic location of the conflict, the advantages it provided to each respective combatant, and what might have been if the railroad had not been a key part in bringing this battle to pass. Through the detailed exploration of this topic, one can discover that the railroad not only impacted the logistical aspect of the war but also the geography.

Training of North American Porcupine (*Erethizon dorsatum*) to Allow for Subcutaneous Injections Using Positive Reinforcement

Anela Medeiros

Most captive animals live well past their average lifespan in the wild and this longevity increases the frequency and number of medical procedures needed to maintain their health and welfare. Most procedures require that the animal be restrained in some way, which can produce stress and trigger aggressive behavior. Positive reinforcement training can be used to lessen the stress experienced by the animal during minor medical procedures such as vaccinations, blood draws, and administering medications, and to protect the handlers and veterinary staff from physical adaptations, such as sharp teeth, claws, or quills, that could pose a potential threat. A squeeze box is often used to gently restrain small-to-medium sized animals during medical procedures, but abrupt introduction of the apparatus can result in extreme confinement-related stress and aggression. The North American porcupine (*Erethizon dorsatum*) is a good candidate for squeeze box restraint and this paper presents the formulation, implementation, and outcome of a shaping plan developed to introduce and acclimate a young North American porcupine at the Lindsay Wildlife Experience in Walnut Creek, California, to a squeeze box. This shaping plan divides the medical procedure of giving subcutaneous injections into small steps to which the porcupine was introduced and acclimated during three training phases completed January-April, 2018. The use of a squeeze box as a form of restraint proved to reduce stress in the porcupine and also increased the safety of the keeper and veterinary staff. Some amendments to the shaping plan were made, but all retained training goals were completed within the four-month time period of the project. This shaping plan establishes a protocol for injection training for North American porcupines using a squeeze box that can be expanded at facilities that house North American porcupines for use in other procedures and adapted for use with other small-to-medium sized, potentially dangerous animals.

Social Discrimination against People with Albinism

Mariah Nebre

People with albinism have faced different forms of discrimination due to their genetic condition called oculocutaneous albinism. Oculocutaneous albinism, also known as OCA, is a genetic condition that results in people with low skin pigmentation and melanin levels in their hair, skin, and eyes to varying degrees. People who are afflicted with OCA have a high percentage of visual impairment and life-threatening sensitivity to the sun. Affected individuals also face negative outcomes of social, cultural, and economic prejudice because of the lack of color that their skin provides. People with albinism are shunned by the rest of their community and are at a high risk of being killed because of their unique physical features. The most common location where people with albinism are discriminated against is in Africa. In this exploratory study, research was conducted by interviewing four people with albinism to get an understanding of the social discrimination they faced. In these in-depth interviews, the focus was on the social aspect of their past and present lives and how they go about addressing any positive and/or negative outcomes they face in society because of their genetic condition. In addition, undergraduate students were surveyed from different fields of study to get an understanding of how much knowledge students have about albinism and its social aspects. Some of the majors surveyed include: biology, sociology, psychology, and liberal studies. The survey consisted of nine questions that were either

multiple choice or true or false. The results of this research show that the people with albinism that were interviewed for this research have faced social discrimination within the societies they live in. The people that were interviewed were also from different locations in the country. The goal of the study is to bring awareness to the social struggles that people with albinism face in their everyday lives.

“Sugar Dating” Among College Students in the United States

Nama O’Donnell

Sex work is and has been a consistent and ever-growing institution that continues to exist throughout the world today. Although sex work has been around for centuries, more recently a new facet of this industry has emerged: Sugar Dating. Sugar Dating is a phenomenon where individuals who are older and of a higher socioeconomic class engage in relationships with younger individuals who are of a lower socioeconomic class. The difference between these relationships and other intergenerational relationships is that Sugar Dating relationships often involve an exchange of money or gifts from the older and richer partner for the companionship of the younger partner. Research on these relationships has been limited, but the media coverage has been consistent. There has been generally positive coverage of these types of relationships in the media, which has led to a spike in interest by the general population, causing young women to engage in relationships that are said to be based on companionship when, in reality, these relationships are more focused on power, money, and sex. This paper looks at the negative effects of these relationships, including sexual exploitation and violence, and what we can do as a society to help change the narrative about sex work.

The Streets are Uneven

Maximiliano Rodriguez

Martin Heidegger has taken up an investigation of the meaning of Being (existence) and has carefully arranged this exposition in his work *Being and Time*. Such an investigation begins with the exposition of *Dasein*, the being that can investigate its existence. This appears to be the nickname for humanity. While investigating its proper existence, *Dasein* can be lead astray and fall into the being of *They*. The *They* is Heidegger’s appeal to coexistence. *They* have their being localized and accounted for, there are no surprises when it comes to *them*. Heidegger claims that the *They-self*, into which *Dasein* can slip, can lead to a loss of traction on one’s own existence. The implication seems to be that when *Dasein* engages *Them*, the meaning of its proper existence is at stake, in danger of being lost amid the ubiquitous nature of *They*. What is the nature of this meaning, and if lost can it be recovered? Following these expositions, we will (re) gain the meaning of Being as both utterly private and unexpectedly public. We turn our attention to the writings of Jean-Luc Nancy (*Being Singular Plural* and *Sense of the World*) to critique Heidegger’s lamenting of the loss of the meaning of Being and determine whether or not these lamentations are out of place. Nancy does away with the notion of authenticity and replaces it with the plurality of Being. In this new discourse concerning existence, not exclusive to humanity, the meaning of Being is had in the communication between entities in the world. All of Being then has a share in circulation of meaning as a relation from the I, myself, to the door leading to the other side of our existence, to our coworker and every entity in between. From this we can conclude that we must remain open to the possibilities of communicating our existence to others, receiving theirs in turn, in order to gain a newfound appreciation for the incredible flux of Being before us. Such communication, however, commands that we account for the distance to be covered in our communications. We must be cognizant of our position in relation to the plurality of Being and the way in which we engage in circulating meaning to the existents that come to make up our world. Such a relation, born of the union of Heidegger’s notion of authenticity and Nancy’s proclamation regarding the plurality of Being, is one of constant work. We must account for the manifest disparity of the meanings of Being, taking care to communicate with a greater range of existences, some at our human capacity like the friend from work and others at their own levels like the lemon tree blossoming in the neighbor’s yard. As such, assuming our place within the plurality of Being and likewise communicating with other existences, we will stay grounded

in our own existence which is itself part of the great flux of all Being. Resulting from our being grounded in the Plurality we will happen upon things that escape our apprehension or seem base to us but these will only further reinforce our relation to our proper place in the Plurality of Being. At such a juncture we must familiarize ourselves with this, our place in relation to others, and remember “people are strange when you’re a stranger” and “the streets are uneven when you’re down”.

Diagnosing Dyslexia

Isaac Sada

Understanding mental diseases and disorders stems from research on polygenic traits. Traits in an organism are coded from genes. Traits may be coded for by a single gene (monogenic traits) or by multiple genes (polygenic traits). Many developmental disorders are polygenic and the extent to which the environment will influence the expression of the trait will always vary. Development disorders in the brain such as dyslexia usually affect an individual’s ability to think properly in different situations. The diagnosis of dyslexia has been an onset problem. Dyslexia untreated at a younger age can result in a child being held back in their education. Most children feel discouraged and confused when they are held back. Genetic testing offers a different approach to diagnosing children with dyslexia. The specific proteins that exhibit the most activity in the brain associated with dyslexia are KIAA039, DCDC2, ACOT13, DYX2, DYX3 and FAM65B. If any of these proteins are mutated by the genetic code, it will lead to a protein being constructed improperly. Understanding the proteins as a whole will serve a better diagnostic tool for diagnosing dyslexia.

Effects of Acanthocephalan Parasitism on the Fecundity of the Pacific Mole Crab, *Emerita analoga*

Royal Sandhu

Parasites may influence their hosts in multiple ways, ranging from physiological changes and behavioral modifications to altering certain life history traits, like fecundity, in their host populations. The acanthocephalan parasite, *Profilicollis altmani*, commonly infects the Pacific mole crab, *Emerita analoga*; yet, this parasite’s effect on the crab’s fecundity is unknown. Consequently, we examined the effects of parasitism on various aspects of fecundity of this mole crab species. Crabs were collected from the swash intertidal zone in Monterey Bay, California, in September 2017. We recorded each crab’s carapace length, egg-bearing status, egg developmental stage, parasite prevalence and infection intensity, parasite volume, and crab dry mass. To quantify fecundity, eggs from gravid crabs were carefully removed, counted and weighed. Of the 124 crabs examined, 94 (75.8%) were gravid. Parasite prevalence was 86.2% in gravid and 73.3% in non-gravid crabs. There was a positive relationship between parasite intensity and female body size, indicating that the acanthocephalan did not affect its growth or survival of their crab host. Egg mass was unaffected by both infection intensity and mean cystacanth volume. No significant differences were noted when egg mass between uninfected and infected crabs were compared. Similarly, no significant difference was documented between different developmental stages in uninfected and infected crabs. Our study suggests that the fecundity of *E. analoga* remains mostly unaffected by the presence of the acanthocephalan parasite, *P. altmani*.

Is it Sensory or Social? Determining the Significance of Sensory Processing Disorder as a Diagnosable Disease by its Relation to Autism Spectrum Disorder

Tiffany Spencer

Current statistics indicate that 1 in 68 children in the United States are diagnosed with autism spectrum disorder. Autism is a serious, lifelong, pervasive, neurological developmental disorder causing deficits in social interaction and communication. It is said that more than ninety percent of people with autism have atypical responses that are caused by common every day sensory stimuli. These reactions can be described as over

responsive (an extreme sensitivity to the texture of clothing or food), under responsive (which may seem something like not being able to notice obstacles in their path), sensory seeking (chewing on various objects like shirt cuffs), or an inability to discriminate various types of sensory stimuli (not being able to differentiate auditory stimuli like *cat* or *cap*). The lack of published research related to individuals with symptoms of sensory processing disorder is an indicator of the importance of collecting data. A literature review of current research regarding both autism and sensory processing disorder discusses how the disorders interact and the biologically significant evidence that supports sensory processing disorder being defined as a separate neurological disorder. While atypical sensory responses are treated for those on the autism spectrum, others who do not qualify under the autism diagnosis are not eligible for therapy relating to sensory processing disorder, as there is not an accepted diagnosis. Establishing a paradigm and outlining diagnostic criteria and potential therapy is essential for providing services and therapies for those individuals living with sensory processing disorder.

Fake News Detection in Social Media

Kelly Stahl

Due to the exponential growth of information online, it is becoming impossible to decipher the true from the false. Thus, this leads to the problem of fake news. This research considers previous and current methods for fake news detection on textual formats while detailing how and why fake news exists in the first place. This paper includes a discussion of Linguistic Cue and Network Analysis approaches, and proposes a three-part method using Naïve Bayes Classifier, Support Vector Machines, and Semantic Analysis as an accurate way to detect fake news on social media.

Data-Informed, Agent-Based Model of Information Dissemination within Social Media Networks

Timothy Trammel

Online social media are becoming increasingly prevalent sources for both legitimate and fake news. Therefore, there is a growing need to study the way in which information spreads across social media and how this spread of information influences the opinions and decision making of social media users. Prior studies have used a variety of models from linear threshold to epidemic models for studying information diffusion in social networks. The present study hypothesizes that an agent-based model can be developed that is informed by data extracted from real world social media platforms. The model for this research has been developed using the NetLogo agent-based modeling framework. Real-world data extracted from Twitter using the Twitter Streaming API and the Twython library informs the structure of the model. The model has face validity in that it performs in manners expected from observing social media platforms. This justifies further study of the model involving more detailed statistical analysis to measure fit with data from real world social media platforms.

Stabilizing Kant's First and Second Critiques: Causality and Freedom

Justin Yee

In the *Critique of Pure Reason* and the *Critique of Practical Reason*, Kant examines the problem of causality and freedom in relation to epistemology and ethics. What is puzzling about the two Critiques is how each Critique produces a different outcome regarding the status of causality and freedom. This results in clear differences between the extent of causality and freedom in the world, especially in regard to the possibility for there even being freedom at all. The problem of discontinuity arises between the first Critique and the second Critique as the second Critique must reconcile freedom and choice with the first Critique's mechanical causality. In order to resolve this problem, this paper will refer to and focus on the proposal by Bencivenga who argues that Kant's conception of causality changes from a causality of imposition in the first Critique to a causality of regularity in the second Critique. Understanding this change will resolve the discontinuity between the two Critiques and produce two separate arguments that are coherent.

Sophomore Service Learning Poster Displays

Haley Barton	Hannah Lockwood
Juryn Calimquim	Jasmine Mann
Jacqueline Cerda	Alexa Marquette
Alexander Chavez	Timothy Nersy
Kayli Clark	Kayla Nguyen
MaggiJo Erickson	Denise Perez-Fernandez
Grasiela Franco-Carreño	Karen Ramos Lupercio I
Meagan Gallman	Scarlett Renteria
Keith Gordon	Connor Roberts
Hazel Guerrero	Hope Rodriguez
Lynsey Hillberg	Jasmyn Romo
Cheyenne Johnson	Kendra Souza I
Trevor Johnson	Breanna Suarez
Sarah Kline	Kaylee Weible
Kaitlin Lang	

Capstone Research Poster Displays

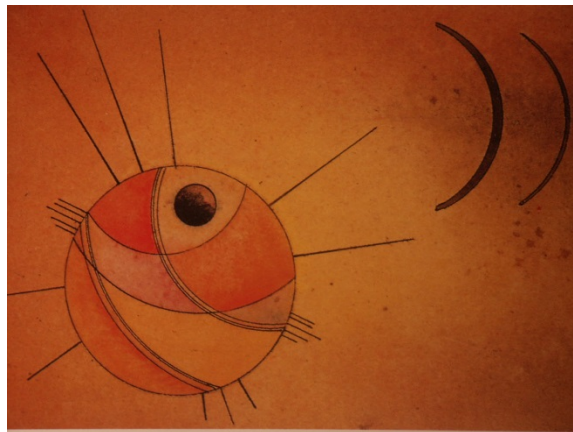
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*Monica Calderon, Psychology	*Maria Marquez Mendoza- Communication Studies: Dr.
Jenna Castellanos, Psychology: Dr. Harold Stanislaw	Marcy Chvasta
Jacob Cayabyab, Nursing- Licensure	Lauren Martinez, Biological Sciences
Jose Chavez, Computer Science	Aleta Mascorro, Ethnic Studies
Scott Contreras, Mathematics	Caycie Maynard, History
Amber Crabtree, Criminal Justice	Tyler McLeod, History
Ethan Dawson, English	Frank Mills, Communication Studies
Camilo DeAnda, Philosophy	Amir Mostafavi, Biological Sciences
Lauren Eckerdt, Psychology	Dennis Nguyen, Mathematics
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