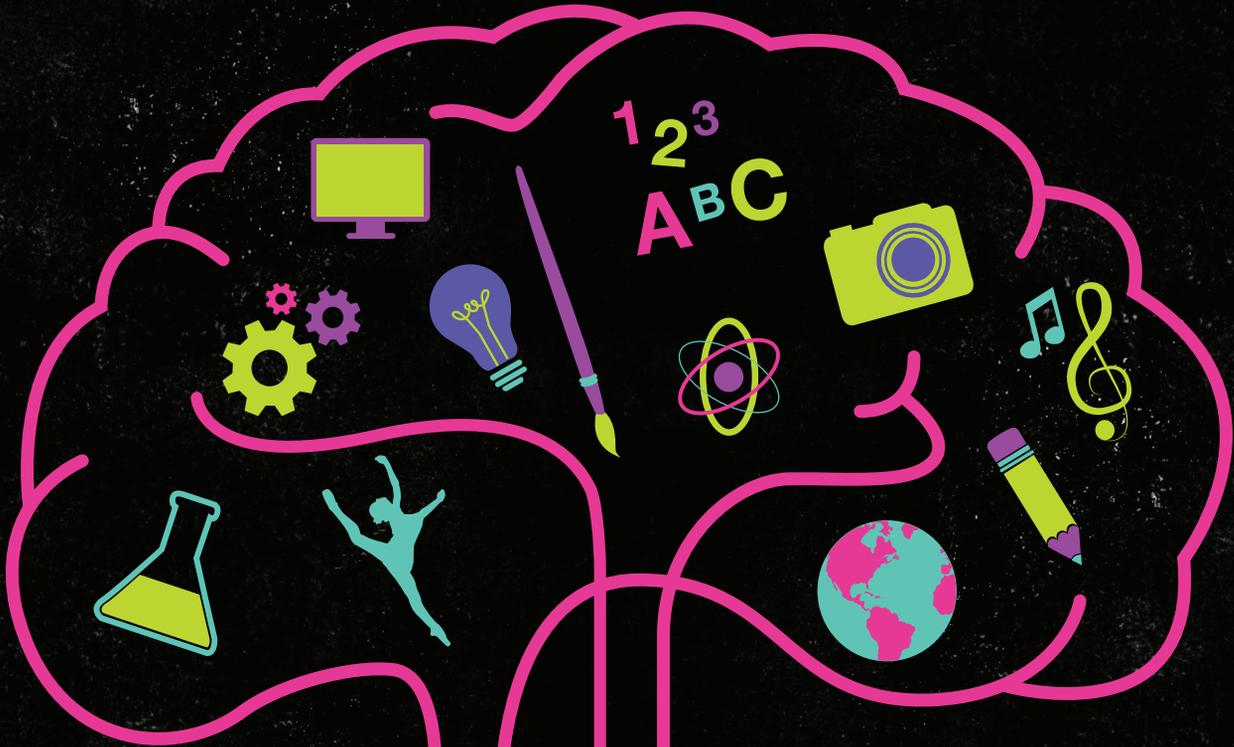


The Office of Student Research & The Office of Graduate Studies Present the

7th Annual Student Research Symposium



MEETING OF THE MINDS

- Oral & Poster Presentations
- Art Exhibit
- Live Performances
- Keynote Speakers
- Free Lunch

*Honoring this year's OSR's Student Honoree, Faculty
Research and Creative Activities Mentor Awardees,
and the CSUSB Student Research Competition Delegates*



May 17, 2018 • 9:30 a.m.–7 p.m. • Santos Manuel Student Union
For more information, visit osr.csusb.edu or call (909) 537-5058

WE DEFINE THE *Future*



CALIFORNIA STATE UNIVERSITY, SAN BERNARDINO

7th Annual
“Meeting of the Minds”
Student Research Symposium

May 17th, 2018

Hosted by



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Welcome Message from Dr. Dorota Huizinga



Dr. Dorota Huizinga
Associate Provost for Academic Research
Dean of Graduate Studies

May 17th, 2018

Dear Colleagues and Students,

Welcome to the 2018 "Meeting of the Minds" Student Research Symposium- the 7th year of this university-wide event that highlights the outstanding research and creative taking place on our beautiful campus. This event is an opportunity to celebrate and acknowledge the innovation, scholarship, and creativity that our undergraduate and graduate students bring to their research and place for sharing their discoveries and insights with the campus community.

More than 200 students from across all disciplines are presenting their research or creative projects, and more than ten awards will be presented for the best oral and poster presentations during our Recognition of Student Researchers Luncheon on May 18th.

Thank you to our dedicated faculty mentors who have encouraged students in their research, and to the staff for coordinating this year's symposium. More than 70 volunteers of faculty, staff, and students are sharing their time today to help make the event a successful one. I am truly grateful for these efforts, and I am proud to call CSUSB my new home.

Sincerely,

Dorota Huizinga, Ph.D.

Welcome Message from Dr. Christina Hassija



Dr. Christina Hassija
Faculty Director for the Office of Student Research

May 17th, 2018

Dear Colleagues and Students,

It is with great pleasure that I welcome the students and faculty of California State University, San Bernardino to the Office of Student Research's (OSR) 7th annual "Meeting of the Minds" Student Research Symposium. "Meeting of the Minds" is our opportunity to showcase the outstanding research and creative projects of our students and their faculty mentors.

Today, we would like recognize and see the results of our students' hard work. I sincerely hope that you enjoy today's presentations and performances, take pride in our students' efforts, and offer them congratulations on their successes. I would also like to extend sincere gratitude to our faculty mentors and volunteers who consistently go above and beyond to support their students and the activities of our office. Our continued growth and success would not be possible without your passion, generosity, and commitment. The success of your students reflects the transference of your knowledge and skills to the next generation of scholars and researchers.

Thank you all for your support and attendance today, and I hope you will continue to participate in future OSR events.

Sincerely,

Christina Hassija, Ph.D.

Faculty Mentors and Jurors

College of Arts and Letters

Dr. Ahlam Muhtaseb
Dr. Alexandra Cavallaro
Dr. Alison Petty
Dr. Brad Spence
Dr. David Marshall
Dr. Ed Gomez
Dr. Elizabeth Martin (Juror)
Dr. Jane Chin Davidson
Dr. Jess Block Nerren (Juror)
Dr. Julie Paegle
Dr. Julie Taylor
Dr. Katherine Gray
Dr. Kelly Dortch
Dr. Liliana Gallegos
Dr. Luz Elena Ramirez
Dr. Mihaela Popescu
Dr. Mo Bahk
Dr. Barbara Quartonm (Juror)

Jack H. Brown

College of Business and Public Administration

Dr. Alexandru Roman
Dr. Breena Coates
Dr. Victoria Seitz (Juror)
Dr. Susie Pryor

College of Education

Dr. Donna Schnorr
Dr. Edna Martinez
Dr. Eun-Ok Baek

Dr. Lynne Diaz-Rico
Dr. Nancy Acevedo-Gil
Dr. Sang Nam

College of Natural Sciences

Dr. Amanda Rymal
Dr. Angie Otiniano Verissimo
Dr. Becky Talyn
Dr. Claudia Davis
Dr. Codi Lazar
Dr. Corey Dunn
Dr. Corrine Johnson
Dr. Daniel Nickerson (Juror)
Dr. David Rhoads
Dr. David Marshall
Dr. Dawn Blue (Juror)
Dr. Dung Vu (Juror)
Dr. Erik Melchiorre
Dr. Geraldine Fike
Dr. Guillermo Escalante
Dr. Angela Horner (Juror)
Dr. Hosung So (Juror)
Dr. Hyun-Kyoung Oh
Dr. Jason Ng (Juror)
Dr. Jeremy Dodsworth (Juror)
Dr. Jeremy Mallari
Dr. Joan Fryxell
Dr. Kerry Cato
Dr. Kimberley Cousins
Dr. Kimberlyn Williams
Dr. Laura Newcomb

Dr. Michael Chao
Dr. Min-Lin Lo
Dr. Monideepa Becerra
Dr. Nicole Bournias-Vardiabasis
Dr. Nicole Dabbs
Dr. Nicole Henley (Juror)
Dr. Paulchris Okpala (Juror)
Dr. Priyanka Yalamanchili
Dr. Qingquan Sun
Dr. Rajrani Kalra (Juror)
Dr. Sally McGill
Dr. Sang Ouk Wee (Juror)
Dr. Stuart Sumida
Dr. Tomasz Owerkowicz
Dr. Timothy Usher
Dr. Zhaojing Chen (juror)

College of Social and Behavioral Sciences

Dr. Alexis Norris (Juror)
Dr. Amy VanSchagen
Dr. Angie Otiniano Verissimo
Dr. Cari Goetz (Juror)
Dr. Christina Hassija
Dr. Cherstin Lyon (Juror)
Dr. Cynthia Crawford (Moderator)
Dr. David Chavez
Dr. Deirdre Lanesskog
Dr. Dionisio Amodeo
Dr. Donna Garcia (Juror)
Dr. Erica Lizano (Juror)
Dr. Eugene Wong
Dr. Geraldine Fike (Juror)
Dr. Gisela Bichler

Dr. Guy Hepp
Dr. Hideya Koshino
Dr. Isabel Huacuja Alonso
Dr. Ismael Diaz
Dr. Janet Kottke
Dr. Jason Reimer
Dr. Jennifer Alford
Dr. Joseph Wellman
Dr. Karen Robinson (Juror)
Dr. Kate Liszka
Dr. Kelly Campbell
Dr. Kenneth Shultz
Dr. Kevin Grisham
Dr. King-To Yeung (Juror)
Dr. Laura Kamptner
Dr. Leslie Amodeo (Juror)
Dr. Mark Agars
Dr. Matthew Logan (Juror)
Dr. Meredith Conroy (Juror)
Dr. Michael Lewin
Dr. Nerea Marteache
Dr. Richard Addante
Dr. Ryan Keating
Dr. Sharon Ward
Dr. Shuryo Fujita (Juror)
Dr. Timothy Pytell
Dr. Yasmin Dildar (Juror)
Dr. Yvette Saavedra

Agenda

“Meeting of the Minds” Student Research Symposium

May 17th, 2018

8:30- 9:00 a.m.

Registration

Event Center

9:00- 9:30 a.m.

Opening Remarks

SMSU Event Center A

*Welcome Remarks, Dr. Dorota Huizinga
President Tomás D. Morales
2017-18 Outstanding Scholarship, Research,
Creative Activities Award*

9:30-11:00 a.m.

Poster Presentations & Art Exhibits

SMSU Event Center BC

11:00-12:00 p.m.

Lunch

SMSU Event Center A

*Special Guest Speaker, Dr. Alexandru Roman
“Power of Research”*

12:00-1:20 p.m.

Student Presentations Session I

SMSU Fourplex

1:30-2:50 p.m.

Student Presentations Session II

SMSU Fourplex

3:00 -4:20 p.m.

Student Presentations Session III

SMSU Fourplex

Recognition of Student Researchers Luncheon

May 18th, 2018

12:00-12:30 p.m.

Registration

Yasuda Center

12:30-12:40 a.m.

Welcome Remarks

Yasuda Center

Welcome Remarks, Dr. Dorota Huizinga

12:40- 1:10 p.m.

Special Presentations

Yasuda Center

*2018 Outstanding Student Researcher, Khanh Luu
“Life on the Rocks: How minerals serve as tape
recorders for early Eather history”*

*Special Performance, Dr. Alastair Edmonstone and
Alexis Ramirez*

“Je dis que rien ne m’épouvante”

1:10-1:30 p.m.

Recognition of CSU Student Research Competition Representatives

Yasuda Center

1:30-1:50 p.m.

Award Ceremony

Yasuda Center

2018 Outstanding Student Researcher



Khanh Luu

Major: Geology, B.S.

Faculty Mentor: Dr. Erik Melchoirre

Title: *Isotopic and Geochemical Evidence for Organic Preservation in Stichtite*

Each year, the OSR recognizes one student that has stood out among their peers for their research and academic achievements. Selected as this year's Outstanding Student Researcher, Khanh Luu is an undergraduate student pursuing a degree in Geology. Accepted into CSUSB as a Presidential Scholar, Khanh has actively participated in research projects with faculty, and is currently being mentored under the supervision of Dr. Erik Melchoirre. As this year's recipient, Khanh will speak about her research during the Recognition of Student Researchers Luncheon on May 18th.

Abstract: Stichtite, a magnesium-chromium hydrotalcite mineral associated with serpentinite, preserves a record of past environmental conditions by trapping organic material within its crystal lattice. Organic compound identification of material trapped within the molecular interlayer of stichtite reveals a complex profile of molecules similar to modern soils. Some of these molecules are not associated with modern environments or contamination sources. Furthermore, this organic material has $\delta^{15}\text{N}$ values similar to marine kerogen. The organics from stichtite and ancient chert follow a similar trend of lighter $\delta^{15}\text{N}$ values and less stored organics in Archean-aged samples, vs. heavier values and more organics in the younger samples. Thus, stichtite is inferred to have preserved an organic and nitrogen isotope signature from the serpentinizing conditions in which it formed in deep-Earth time. This confirms results from earlier work on chert, which established that life was present in marine rocks dating back at least 3.4 billion years. Given that stichtite can preserve organic molecules from serpentinizing environments, where life is suspected to have begun, stichtite should be considered a possible biomarker for studies of the serpentinite known to exist on Mars.

Faculty Keynote Speaker



Dr. Alexandru Roman
Professor of Public Administration
Jack H. Brown College of Business and Public Administration

Title: *Power of Research*

Dr. Alexandru V. Roman is an Associate Professor with the College of Business and Public Administration at California State University San Bernardino. He is the Director of the Research Institute for Public Management and Governance and the Coordinator for the Management Certificate in Public Procurement. He is also the Editor of the Journal of Public Procurement and the Managing Editor of the International Journal of Organization Theory and Behavior. His research focuses on questions of management, strategy, and public procurement. His publications have appeared in many leading journals in the field such as the Public Administration Review, Public Performance Management Review, American Review of Public Administration, Journal of Public Procurement and Administration & Society.

Research is certainly powerful. Yet, while we often discuss the far reaching impacts of research on social progress, we rarely pay commensurate attention to the effects of research experiences on our personal development. The latter, nevertheless, can be transformational – both in terms our professional growth and opportunities as well in term of our self-identity. In his presentation, Dr. Roman will share his experiences with research and discuss the power of research and why doing research is such a rewarding enterprise.

Special Performances



Alexis Ramirez

Faculty Mentor: Dr. Alastair Edmonstone

Title: *"Je dis que rien ne m'épouvante"* from the opera *Carmen* by Georges Bizet

The CSUSB Opera Theatre is an auditioned ensemble that stages a major opera production on campus every year. The innovative, modern and zany adaptations of both standard operatic repertoire and new operatic works that have been produced by the CSUSB Opera Theatre have led to sold out performances, as well as rave reviews across the Inland Empire community. The CSUSB Opera Theatre is a proud six-time recipient of the City of San Bernardino Fine Arts Commission grant. This past season the CSUSB Opera Theatre presented the world premiere performance of an abridged adaptation of *Einstein on the Beach* by the iconic composer Philip Glass and renowned performance artist Robert Wilson.

"Meeting of the Minds"

Oral Presentation Schedule

Session I

Location: RM 215

Time: 12:00-1:15

Jurors: Dr. Elizabeth Martin, Dr. Alexis Norris, Dr. Nicole Henley

College: Arts and Letters

12:00 **Rebeccah Avila**

Social Penetration Theory: Examining How Immediacy Behaviors Influence Self-Disclosure in Student-Teacher Relationships

12:15 **Luis Esparza**

The Right to Exist: An De-Colonial View of Representations of Marginalized Sexual Identities in the Media

12:30 **Andy Acosta**

The Hip-Hop Pedagogy

12:45 **Erendira Torres**

Complexities of Being Female: How Sexuality and Shame Silences Female Voices

1:00: **Shirleena Baggett**

Corporate Communication within Non-Profits

Location: RM 216

Time: 12:00-1:30

Jurors: Dr. Angela Horner, Dr. Zhaojing Chen, Dr. Jeremy Dodsworth

College: Natural Sciences

12:00 **Madeline Blua**

Soil Types Impact Invasive Annual Plant Densities in California's Chaparral and Sage Scrub

12:15 **Bryan Castillo**

Preliminary ages of prehistoric earthquakes on the Banning Strand of the San Andreas Fault, near North Palm Springs, California

12:30 **Lauren Velasquez**

*Utilizing CRISPR to visualize the dopamine receptors DOP-1 and DOP-4 in *Caenorhabditis elegans**

12:45 **Eli Gonzalez**

A Wearable Sensor Based Hand Movement Rehabilitation and Feedback System

1:00: **Hau Tao**

Study on The Pattern Recognition Enhancement For Matrix Factorizations With Automatic Relevance Determination

1:15 **Jose Uribe**

Croconic Acid: Surface and Electric Field Influence on Deposition

Location: RM 217

Time: 12:00-1:15

Jurors: Dr. Meredith Conroy, Dr. Cherstin

Lyon, Dr. Geraldine Fike

College: Social and Behavioral Sciences

12:00 **Javeen Beard**

The Relationship between Early Maladaptive Schemas and Depression: The Mediation Role of Psychological Inflexibility

12:15 **Hector Garcia, Maria F. Lias Moreno, Osmara Cortez**

A Critical Race Analysis of Latinx Students College Choices and Pathways

12:30 **Sam Worrall**

Development of the Client Treatment Orientation Scale

12:45 **Ivette Jimenez**

Crimemapping.com: The Holy Grail?

1:00: **Nelly Zambrano**

Child Abuse Prevention in Rural Southern California: A Participatory Action Research Project

Session II

Location: RM 215

Time: 1:30-2:45

Jurors: Dr. Dung Vu, Dr. Barbara Quarton,

Dr. Victoria Seitz

College: Arts and Letters

1:30 **Jessica Vierra**

Who Says Teachers Can't Be Funny?: An Analysis of the Success of Humor in the Classroom

1:45 **Andre Adame**

Hope for the Future: An Analysis of Overwatch Directors 2017 DICE Keynote

2:00 **Katherine Orr**

Roller Derby Pedagogy: Utilizing Alternative Narratives in the Composition Classroom

2:15 **Francisco Rodriguez**

How Often Are College Students to Self-Disclose About Sexuality?

2:30 **Victoria Luckner**

Don't Dream Too Big: An Ideological Criticism of Feminism in Disney's Be a Champion Commercial

Location: RM 217

Time: 1:30-2:45

Jurors: Dr. Jess Block Nerren, Dr. Nicole

Henley, Dr. Erica Lizano

College: Social and Behavioral Sciences

1:30 **Yesica Valenton**

Impact of Early Attachment Security on Academic Achievement Motivation in Young Adults

1:45 **Kori Gearhart**

Consuming and Sexualizing Women in Advertisements

2:00 **Janae Koger**

Advancing CSUSB

2:15 **Marmar Zakher**

From Female Moneylenders to Church Shares: Socioeconomics in the Coptic Village of Jeme

2:30 **Athahn Steinback**

In the Name of Utopia: Social Engineering in the Third Reich

Location: RM 218

Time: 1:30-2:30

**Jurors: Dr. Shuryo Fujita, Dr. Donna Garcia,
Dr. Cari Goetz**

College: Social and Behavioral Sciences

1:30 **Courtney Schwartz**

The American Dream May Be More Than a White Fence and a House

1:45 **Julieta Hernandez**

A Time Series Assessment of Water Conservation Strategies for the San Bernardino Mountain Communities

2:00 **Kathleen O'Donnell**

Anxiety, emotional stimuli, and attentional scope.

2:15 **McKenzie Gamble and Kathleen Sanchez**

A Quantitative and Qualitative Analysis of the Functions of Observational Learning with Disability Sports Participants

Location: RM 208

Time: 1:30-2:15

Moderator: Dr. Cynthia Crawford

Panel: Be the Change: Students Cultivating Sustainability

1:30 **Claudia Castaneda**

Resilient CSUSB Water Conservation and Resource Management Strategies

1:45 **Jeffrey Hutchison**

Race to Zero: Identifying strategies to achieve Zero Waste

2:00 **Maulik Ankolia**

Influencing Pro-Environment Behaviour at CSUSB: Its Challenges.

Location: RM 211

Time: 1:30-2:45

Jurors: Dr. Dawn Blue, Dr. Hosung So, Dr. Matthew Logan

College: Natural Sciences

1:30 **Gurnoor Kaur, Vianey Zavala, Alex Vasquez**

Effects of low dose methamphetamine in a Drosophila melanogaster model of traumatic brain injury (TBI)

1:45 **Sandra Guterrez, Gloria Azarez, Perla Guajardo, Jezel Sadol, Carissa Schoepfer**

Long waits and deteriorating mental states: The effects of psychiatric boarding in the ED

2:00 **Joel Salazar**

Radio Number for Ninth Power Paths

2:15 **Steven Doherty**

Western Kinesiology and Physical Education meet South Korea and Thailand

2:30 **Roland Morales, Jennifer LeDuff, Stephanie Cruz, Rafael Alamilla, Johnathan Derek Ramirez**

Ethnic Differences in Arterial Stiffness and Central Blood Pressure Regulation Following High-Intensity Exercise

Session III

Location: RM 215

Time: 3:00-4:30

Jurors: Dr. Victoria Seitz, Dr. Sang Ouk Wee, Dr. Rajrani Kalra

College: Arts and Letters

3:00 **Daniel Padilla**

The Plan for Liberation as Provided by the Robber Bridegroom Tale and the Struggle for Legitimacy

- 3:15 **Faith Nevarez**
YouTube and Tourism: A Comparative Study of Vlogs on Slovenian Tourism
- 3:30 **Manuel Arredondo**
Music and the Developing Mind
- 3:45 **Graciela Troche**
Digital Literacy Divides: Impact of Social Determinants on College Students' Digital Behaviors
- 4:00 **Ariana Cano**
A Small Step towards Change: A Comparative Analysis of Violent and Sexual Representations in Movies between the 1980s and 2000s

Location: RM 217

Time: 3:00-4:30

Jurors: Dr. Paulchris Okpala, Dr. Jason Ng, Dr. Daniel Nickerson

College: Natural Sciences

-
- 3:00 **Raquel Elias**
Drosophila melanogasters Developmental Dietary Behavior with Round-up Based Sucrose
- 3:15 **Saxxie Tran, Bianca Castro, Erika Giron, Maricela Torres, Jayme Ung**
Sad Dads: A Literature Review
- 3:30 **Sarah Rodriguez**
Method for Screening New Charge Transfer Organic Ferroelectric Systems
- 3:45 **Zahra Azizi, Maram Aldoghmi, Alicia Hernandez**
Improving Safety Through Proper Personal Protective Usage
- 4:00 **Krista Felbinger**
Pulmonary Bypass Shunt Reduces Oxidative Stress in The American Alligator

Location: RM 218

Time: 3:00-4:30

Jurors: Dr. Leslie Amodeo, Dr. Yasmin Dildar

College: Social and Behavioral Sciences

-
- 3:00 **Julian Acuna**
Early Formative Period Exchange, Crafting, and Subsistence: An analysis of La Consentidas chipped stone assemblage
- 3:15 **Stephen Ware**
The effects of anxiety on attention and cognitive performance
- 3:30 **Adriana Lopez Cota**
The HIV/AIDS Community, Stigma and Preventative Education Continues to be Overlooked
- 3:45 **Gia Macias**
Interactions between anxiety and emotional attention
- 4:00 **Natascha Bolden**
Information and Communication Technologies (ICT) and Violent Extremism in the Middle East: A Complex Systems Analysis of Loyalty and Intransigence
- 4:15 **Rubina Khanam and Gregory Foent Gallegos**
Role of International Community to Address Rohingya Refugee Issue

Location: RM 208

Time: 3:00-4:30

Jurors: Dr. Karen Robinson, Dr. King-To Yeung, Dr. Matthew Logan

College: Education

3:00 Yvette Lopez

Counteracting Microaggressions: How TESOL Educators Can Empower Students

3:15 Carl Christman

Instructor Humor as a Tool to Increase Student Engagement

3:30 Qi Guo, Tong Feng, Lu Jia

The Effect of Mobile Application for TOEFL Pronunciation and Speaking Learners and two other research

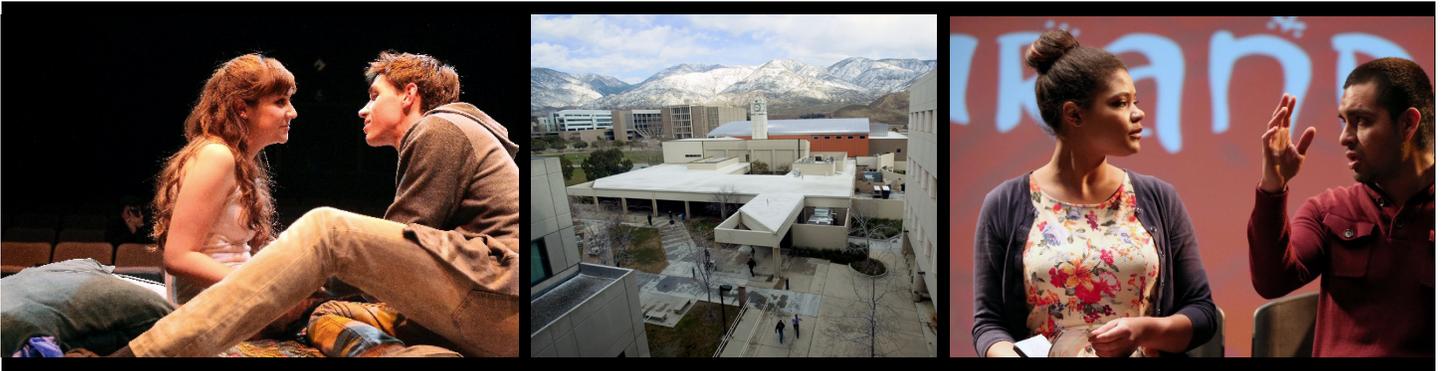
3:45 Jeniree Martinez

Curriculum Development for Transition Age Youth Program at University Center for Developmental Disabilities

Student Abstracts

Disclaimer: All student abstracts were written and approved by the student authors prior to publication.

Arts & Letters



Presenter(s): Andy Acosta

Major: Communications

Faculty Mentor: Dr. Ahlam Muhtaseb

Title: *The Hip-Hop Pedagogy*

Abstract: Hip-hop music is unique in a way that can articulate consciousness about the issues in society. The genre has crossed international borders because of the universal context. Age, gender, and ethnicity do not matter to the genre because the struggles we face in society are the same. The pedagogy in hip-hop is crucial in finding another way to teach people literacy. We can utilize hip-hop as a pedagogical tool to enhance consciousness inside and outside of an academic setting. The focus of this research paper is with anti-hegemonic hip-hop since this type of hip-hop music relates to critical and rhetorical theory. With critical theory, we can examine hip-hop music to see how the lyrics describe the hegemony that happens in society. For rhetorical theory helps in examining the lyrics to find what else is happening in the context of the lyrics. Hip-hop can potentially liberate society from the dominant ruling class. To do so, we need to examine hip-hop to find all the hidden messages to understand the contemporary issues we face in society. Specifically, we need to examine conscious hip-hop artist who are attempting to persuade listeners about society.

Presenter(s): Andre Adame

Major: Communications

Faculty Mentor: Dr. Ahlam Muhtaseb

Title: *Hope for the Future: An Analysis of Overwatch Director's 2017 DICE Keynote*

Abstract: This research examines a video game developer's perspective on the impacts of their successful title, Overwatch. Through an analysis of Jeff Kaplan's keynote speech from the 2017 DICE Awards, this research explores the cultural disparities within video game representations and how Overwatch compares to the current climate of the video game industry. These issues are addressed by Kaplan through a series of themes within the keynote, which construct an overall message of 'hope for the future'. Details of the research include representations of race and gender, how stereotypes are challenged or embraced, and how participatory culture impacts consumers to become more involved within their communities.

Presenter(s): Kaitlynn Albers and Rigoberto Orozco

Major: Music

Faculty Mentor: Dr. Matthew Brady

Title: *Score Study of Howell's Requiem*

Abstract: We auditioned and got accepted into a prestigious choral festival, presented by the Westminster Choral college in New Jersey. This year the festival will study and perform Requiem by the infamous British composer, Herbert Howells. Few choirs have had the

chance to perform this amazing piece due to its difficult and demanding nature. Additionally the work sat dormant from 1950 until its release for publication in 1980, making the work unique in the composer's output. This festival will allow a focused study of the Requiem, through the professional tutelage of world-class faculty from Westminster Choir College, the Princeton Pro Musica, Palomar College and Georgia State University. To prepare for the festival, we have decided to present an extensive score study.

Presenter(s): Manuel Arrendondo

Major: Liberal Studies

Faculty Mentor: Dr. Kelly Dortch

Title: *Music and the Developing Mind*

Abstract: Music has been an important part of my life ever since I first picked up a guitar when I was eleven years old. Playing an instrument helped me become a more social person and grow as an individual. I believe that music has the power to positively affect the developing minds of children. That is why I have decided to research the importance of music in the class room setting. Music can be incorporated into virtually any subject in an educator's lesson plan. One of the methods I decided to test while conducting my research is creating a Math lesson using musical notation values instead of numbers in addition and subtraction problems. Teaching the students basic music theory allowed me to substitute numbers for notes and showed me that it is possible for children to learn a specific subject through different teaching methods. A second method I decided to test is the ability for students to increase memorization skills through music. In conducting my research at Terrace View Elementary I helped the educator I was shadowing create catchy jingles for her students to memorize. Before the jingles were created, her students had a difficult time memorizing punctuation rules in her daily language lesson. After a week of incorporating the new jingles I noticed that her students were having less trouble answering the questions she presented in her

daily language lesson. While conducting my research, I discovered how versatile music can be in the classroom setting. Not only did the students benefit from each lesson plan but they genuinely craved the unique approach music gave to learning.

Presenter(s): Rebecca Avila

Major: Communications

Faculty Mentor: Dr. Ahlam Muhtaseb

Title: *Social Penetration Theory: Examining How Immediacy Behaviors Influence Self-Disclosure In Student-Teacher Relationships*

Abstract: This paper examines how teacher immediacy behaviors influence self-disclosure in student-teacher relationships, using social penetration theory as the framework. Studies have indicated a relationship between teacher immediacy behaviors and self-disclosure, but further research must take place to determine if student-teacher relationships can become interpersonal relationships. Current research reflects immediacy behaviors and the positive influence it has on students, however, research linking teacher immediacy behaviors and self-disclosure to a close interpersonal relationship are scant. This paper is an examination of social penetration theory, self-disclosure, both verbal and nonverbal instructional immediacy, as well as the ethical aspects of a teacher disclosing to a student and what kind of relationship this can lead to.

Presenter(s): Shirleena Baggett

Major: Communications

Faculty Mentor: Dr. Ahlam Muhtaseb

Title: *Corporate Communication within Non-Profits*

Abstract: In this day and age, there are significant social injustices that force people to look to nonprofit organizations for assistance, whether it be to lend a hand, donate to a charity or use a human service like housing or drug programs. Government funding has significantly reduced over the years, leaving a financial

burden to these organizations to find resources to carry out their mission. But what makes a consumer select one nonprofit over the other? This paper examines corporate identity and its function to develop identity, branding, and reputation for these organizations. This paper also examines what communication skills will most benefit nonprofits and provides suggestion for future research.

Presenter(s): Frederick Brasear Jr.

Major: Studio Art

Faculty Mentor: Dr. Katherine Gray

Title: *In addition to High Noon*

Abstract: OSR Grant Project Abstract In Addition to High Noon Frederick J Brasear Jr. Purpose: To determine the human impact on an area of the Mojave desert that includes Hesperia, California, and the threat on the endemic Joshua tree due to the amount of trash that is dumped in the desert landscape. Methodology: contact the local government agency responsible for enforcing the laws against illegal dumping and gather information on the laws that are in place to stop this illegal activity. determine how much trash can be found in one square mile of desert by physically collecting trash and measuring the weight in pounds on a digital scale. Compile collected trash and use it in a Joshua Tree shaped sculpture made of cast resin with trash suspended in resin. Results: The information acquired will provide evidence and support for my ongoing art project, High Noon, and provide vital documentation of the threat to the desert environment that is an ongoing struggle. Conclusion: The outcome of research and trash collection will both provide a positive effect on the landscape and further my exploration into the answers for preventing the loss of the Mojave's Joshua tree. The sculptural representation of the Joshua tree made out of trash and resin that I plan on constructing will provide a 3D aspect to my current photographic work and provide a visual model of the threat trash has on the Mojave desert environment.

Presenter(s): Ariana Cano

Major: Communications

Faculty Mentor: Dr. Mo Bahk

Title: *A Small Step Towards Change: A Comparative Analysis of Violent and Sexual Representations in Movies between the 1980s and 2000s*

Abstract: The misrepresentation of minorities in media is a fragment of the faulty representations of their identity as a whole. However, it is important to note that contemporary movies might change the representation of minorities in movies. The purpose of this research study is to quantify, in particular, the representation of minorities' (non-white and women) violent and sexual representations in movies. This study is a comparative analysis of movies from the 1980s and the 2000s. Research design is a content analysis to measure representation by violent acts, sexual acts (hypersexualization), sexual activity, and consequences. The paper will first establish literature review on sexual representation of women, violence, and interpretation of minorities based on their media representations. Then the study will provide a list of ten research questions that are based on the literature review and compare both eras. The content analysis methodology of our research is explained, followed by the results of our coded data. Lastly, the discussion, based on the findings, supports that there might be a change in contemporary movies' violent and sexual representation of minorities.

Presenter(s): Ryan Clark

Major: Student Art

Faculty Mentor: Dr. Katherine Gray

Title: *Environmental effects on single crystal growth in molten bismuth*

Abstract: This project was developed to attempt to grow large bismuth crystals in a molten bismuth bath. After nearly a year of independent research I have been able to develop a procedure that results in large single and clustered crystal formations that when oxidized,

exhibit an amazing rainbow refraction in the oxidization layer. This truly amazing element has many unusual properties and has many potential art applications. I will be attempting to identify the environmental forces such as vibration, ambient temperature, and other variables that control the cooling rate of liquid bismuth, which either hinder or promote single crystal growth during the solidification of molten bismuth. Once identified, these variables will be adjusted to encourage large single crystal growth.

Presenter(s): Mariah Conner

Major: MFA

Faculty Mentor: Dr. Katherine Gray

Title: *Plasticozoic/Artifacts of the Anthropocene*

Abstract: I have investigated, through an artistic lens, how perception and distortion impact our relationships to each other and our environment in our current era. I excavate these concepts through artworks made with glass, mixed media, and found objects. I am inspired by biological forms and the disciplines of archeology, geology, and anthropology. My recent work has incorporated marine detritus, plastic articles of trash that will outlive those who used them. I grow crystals on them to create "Artifacts of the Anthropocene" that look like mineral crystals that contain plastic. I have also collected bits of plastic from the California coast and created transparent glass rock forms in which to encapsulate them. This work, 111 (Tipping Point Project) has one piece from each year since the 1907 invention of plastic. My artworks can be seen as time capsules, pseudo-artifacts, or archaeological discoveries of the future. In the same way we search for clues from the past that will further our understanding, I hope that closely examining the artifacts of our time, as if they were future discoveries, will stimulate new perceptions and provide insights into our present relationship with the world. I am inspired to work with found plastic because, as marine scientist Sylvia A. Earle put it, "Future geologists will be able to precisely mark our era as the Plasticozoic, the place in the sands of time in which bits of plastic first appeared." The exhibition of this work will open at

RAFFMA on April 26, 2018.

Presenter(s): Luis Esparza

Major: Communications

Faculty Mentor: Dr. Lilianna Gallegos

Title: *The Right to Exist: An De-Colonial View of Representations of Marginalized Sexual Identities in the Media*

Abstract: This article is aimed to view queer theory and representations of sexual minorities in the media through an anti-colonial lens. Through secondary research, I critique queer theory for its lack of inclusiveness of subaltern epistemologies of sexuality. Additionally, I take a look at various mainstream and pornographic films that give sexual minorities visibility. Finally I explore pornographic films that subvert to colonial constructs of non-European bodies.

Presenter(s): Halima Ladbon

Major: Art

Faculty Mentor: Dr. Alison Petty

Title: *Neon Glass: Bending, Filling, and Illuminating*

Abstract: I took a neon glass blowing class in Brooklyn, New York where I learned about the type of glass used, how to bend the glass, what types of bends are used for specific designs, how to layout the project design, how to pump the glass full of gas, and how to illuminate the neon light.

Presenter(s): Victoria Luckner

Major: Communications

Faculty Mentor: Dr. Julie Taylor

Title: *Don't Dream Too Big: An Ideological Criticism of Feminism in Disney's "Be a Champion" Commercial*

Abstract: In 2016, Disney launched an advertisement campaign called "Dream Big, Princess." This self-claimed "photography campaign" was set up to help raise money for the United Nations "Girl Up" Foundation (Disney Partners, 2017). The campaign featured photos of female bodies achieving notable feats. Girls everywhere were encouraged to hashtag the campaign in their inspiring photos on Instagram. The campaign reached their goal of donating \$1M to the "Girl Up" Foundation. After this goal was reached, the "Dream Big, Princess" commercials, products, interactive web-page, and advertisements remained in circulation. The previous "Disney Princess" line has now been replaced with the "Dream Big, Princess" line. In this paper, I use the "Be a Champion" commercial from Disney's "Dream Big, Princess" line to help understand the hidden ideologies that the company is producing. Using research of feminist movements and Disney's involvement with feminism, I conduct a rhetorical ideological criticism of the messages being produced by Disney. I explain the core values of feminism, power feminism, and post-feminism. Then, I present the current critiques of Disney's attempt at achieving a feminist stance. I conduct an analysis of the privileged and hidden messages presented in the advertisement and make the argument that this production of ideology is problematic for the growth of feminism.

Presenter(s): Sean Maudling

Major: Communications

Faculty Mentor: Dr. Ahlam Muhtaseb

Title: *Trans Representation in the U.S. Media: Using Clark's Evolutionary Stages of Minorities in the Mass Media*

Abstract: Trans visibility in the media, both news and entertainment, have increased over the past century.

Studies have shown that this increased visibility does not directly mean the coverage has been positive. The trans community is mainly depicted in stereotypical roles and as an object of ridicule. Studies have found a direct relationship between the depictions of minority groups in media and the public's perception of these groups. This paper investigated the historic and current representation of trans in the U.S. media, by applying Clark's (1969) evolutionary stages of minorities in the mass media to a review of the literature surrounding trans depictions. The author found that the trans community's depictions qualify for Clark's stages two (ridicule) and three (regulation) of his model. This lack of proper representation has led many in the community to seek representation in online communities. Suggested future research includes an exhaustive review of trans depictions in media using Clark's model as a guide.

Presenter(s): Faith Nevarez

Major: English

Faculty Mentor: Dr. Luz Elena Ramirez

Title: *YouTube and Tourism: A Comparative Study of Vlogs on Slovenian Tourism*

Abstract: My study focuses on how YouTube allows tourists to find information through travel site channels and video bloggers (vloggers). Travel vloggers show their experiences through their videos, allowing their audience to see their experiences traveling to a new destination or another country. Vlogs are an important form of user generated content which can reach a wide audience online; they offer visuals and tours of specific sites instead of a written review or commentary. To see how travel vloggers affect tourism, I focused my study on two travel vloggers, Hey Nadine and Slove Weekly travel vlog Slovenia. By focusing on these two vloggers, I was able to see how vlogs are and could be a valuable asset to the tourism industry.

Presenter(s): Katherine Orr

Major: English

Faculty Mentor: Dr. Alexandra Cavallaro

Title: *Roller Derby Pedagogy: Utilizing Alternative Narratives in the Composition Classroom*

Abstract: Judith Butler investigates performativity in her research on gender. She believes that identity is “is performative in the sense that it constitutes as an effect the very subject it appears to express” (314). Identity isn’t fixed but rather performed through interactions. This project seeks to investigate the performative nature of roller derby personas, highlighting the identities of the characters in the movie *Whip It* in order to help students learn to perform an academic identity in writing. This is a useful pedagogical tool because stressing the idea of performativity allows students to see that their identity as a writer can be carefully crafted into an academic persona which can lead to greater agency in writing. I will be examining the movie *Whip It* to discover how roller derby personas are constructed and performed. The movie introduces a freshmeat skater, Bliss Cavendar, to roller derby and explores how her new persona is negotiated and informed by the derby community. By creating a new persona, she is able to “constitute” it through her performance. Bliss ultimately fails at performing as a beauty queen but is successful at performing her roller derby persona “Babe Ruthless.” Students in First Year Composition are undergoing the same process as Bliss is when she enters the derby community: they are crafting an academic identity when they enter the university. Ultimately, a performative academic identity can lead to greater agency both in and out of the classroom because it helps students take a stance in their writing.

Presenter(s): Daniel Padilla

Major: English Literature

Faculty Mentor: Dr. Julie Paegle

Title: *The Plan for Liberation as Provided by the Robber Bridegroom Tale and the Struggle for Legitimacy*

Abstract: Marina Warner, in her piece titled *The Old Wives’ Tale*, argues that fairy tales have the potential to “exchange knowledge between an older voice of experience and a younger audience” (314). Warner’s claim suggests that the loss of spoken folk tales and the denigration of fairy tales have silenced stories such as the Brother Grimm’s *The Robber Bridegroom*, which in turn silences warnings within those stories for marginalized groups, such as women. Interpreted through Warner’s critical lens, *The Robber Bridegroom* can be interpreted to mean that the oppression or liberation of women is contingent on available knowledge, passed down through the female characters, and whether it is silenced or vocalized. However, given the need for the Me-Too Movement, it is clear that the issues this tale means to address have not been effectively dealt with, as elements of a patriarchy are still firmly in place today. In fact, the Me-Too movement shows that the problem is much larger than many previously thought. Unfortunately, such media outlets as Fox News, using the same sociological mechanisms described by Warner in her piece of criticism, attempt to delegitimize the movement, forcefully vocalizing their opinion that the women of Me-Too are disingenuous. Relatedly in the civil rights movement, the powerful voice of W.E.B. Du Bois underscores the oppression of women, suggesting a parallel with the centrality of racism. Furthermore, Du Bois suggest that plans for the liberation of women and of “Blacks” share a pattern which is recognizable in *The Robber Bridegroom*.

Presenter(s): Francisco Rodriguez

Major: Communications

Faculty Mentor: Dr. Lilianna Gallegos

Title: *How Often Are College Students to Self-Disclose About Sexuality?*

Abstract: LGBT+ instructors were examined to determine their perception of self-disclosure in the classroom, in particular with sexual orientation. Instructors were either publicly out on college campus or concealing their sexuality. LGBT+ faculty visibility was observed in association to LGBT+ students. Student motivations in general were observed in relations to instructor immediacy behaviors including self-disclosure. Based on the climaxes of student motivations, LGBT+ student motivations were compared to general student motivations. The findings suggest that LGBT+ professors concealed their sexuality due to fear which caused them to maintain silence within a college community. LGBT+ students have not been looked at in terms of instructional communication research and learning motivations, rather integrated with the general student population in most studies. Embracing LGBT+ education, research studies and campus culture were analyzed and discussed. Future exploration of LGBT+ student interests, learning behaviors and homology.

Presenter(s): Heather Roessler

Major: Studio Art and Design

Faculty Mentor: Dr. Brad Spence

Title: *The Art of Death*

Abstract: Traveling to research and explore the art and science of taxidermy, while also visiting museums related to my interests, will further expand my practice as an emerging artist in graduate school. I use dead animals in my work; pushing to expand my practice by learning other methods and techniques (not only as an art material, but in understanding the science behind it). My goal is to build a very real and intimate relationship with what makes us uncomfortable (to confront

inevitable death) and to accept it. My methods in expanding my knowledge base and skills is trying new practices and techniques to strengthen my foundations in the art world. I want to see what I can do with the actual material (knowing how to properly work with the bodies) and seeing the ways in which manipulating the material can be an explorative, educational, and a creative process. I want to push the physical forms of my pieces and compositions (sculpturally) as well as in my photography work. In conclusion to this experience, I learned what I liked and didn't like about taxidermy as a science and as an art form. I gained knowledge of tools and hands-on experience; learning to skin, dissect, stuff, and form a sculptural object. I learned what materials are needed and the steps it takes to preserve and construct. I gained valuable knowledge, skills, and ideas by experiencing the class, as well as exploring museums related to my interests.

Presenter(s): Erendira Torres

Major: Communications

Faculty Mentor: Dr. Ahlam Muhtaseb

Title: *Complexities of Being Female: How Sexuality and Shame Silences Female Voices*

Abstract: Communication experts have focused on verbal and nonverbal messages as communicative aspects; however, not many studies have associated the concept of silence as communicative. Though silence contains messages, those messages are not viewed the same in all cultures, genders, and concepts. In addition, silence is not used the same between genders and cultures. In the United States, men and women communicate silence differently. Most importantly, men are women are encouraged to use silence differently. While men are encouraged to be voice their opinions and be loud and assertive, women are socially silenced. The purpose of this paper is to investigate how women's voices are silenced. This paper investigates how sexuality and shame play a role in female silence.

Presenter(s): Graciela Troche

Major: Communications

Faculty Mentor: Dr. Mihaela Popescu

Title: *Digital Literacy Divides: Impact of Social Determinants on College Students' Digital Behaviors*

Abstract: In a world of always-on connectivity, the nature of the digital divide has changed from mere digital access to the ability to navigate the digital environment and make use of digital information productively (digital literacy). This paper explores the role of social determinants on students' digital literacy. The paper operationalizes digital literacy across four dimensions: digital information skills, digital content skills, networking skills, and privacy skills. Using a survey on a random national sample of 376 students, the paper explores the relationships between gender, parental education and family income and the four dimensions of digital literacy. The paper finds evidence that income has an effect on digital skills.

The results show that a numerous amount of benefits come from utilizing instructional humor, however, the present research cannot be generalized, because there is not an effective way to measure learning. Although it cannot be generalized, teacher humor can persuade students to be more interested in content and want to participate more in creating a healthy classroom climate.

Presenter(s): Jessica Vierra

Major: Communications

Faculty Mentor: Dr. Ahlam Muhtaseb

Title: *Who Say's Teachers Can't Be Funny? An Analysis of the Success of Humor in the Classroom*

Abstract: This study examines instructional humor and how it enhances students affective learning. Typically, a healthy learning environment with successful students does not always come from a serious classroom. Instructional humor can lighten the classroom climate and is a tool that every instructor should have at their disposal. Students use of humor (i.e. a class clown) is outside of the scope of this study, primarily, this study dives into describing research associated with classroom humor, how it affects different genders, and why humor is beneficial in the classroom. Particularly, associating the areas of study with arousal theory, expectancy violation theory, and instructional humor processing theory to explain why instructional humor is beneficial.

Business & Public Administration



Presenter(s): Maulik Ankolia

Major: Business Administration

Faculty Mentor: Dr. Breena Coates

Title: *Influencing Pro-Environment Behaviour at CSUSB: Its Challenges.*

Abstract: The primary purpose of this research is to test the hypothesis that despite higher willingness to live a pro-environmentally lifestyle it does not reflect on the behaviour of individuals. This research examines the various internal factors like awareness of the issue, knowledge and willingness, etc., as well as external factors like leadership and policy to identify the influence to lead pro-environment behaviour (especially in the reference of Energy and Electricity consumption) among students, faculty, and staff at California State University San Bernardino (CSUSB). The research methodology used is a quantitative survey research design. It utilizes correlation of data, received from an electronic survey sent to students, faculty, and staff of CSUSB via email. The secondary method of collecting the data is by a personal interview questionnaire. Questionnaires for this survey contain 19 questions including standard demographic questions, behavioural questions, and preference questions to find out the best possible way to inspire the pro-environmental lifestyle in reference to electricity consumption. We will use random sampling to collect our data and use statistical software to analyse the data. Our finding will highlight underlying factors about how we can design and implement policies and/

or campaign at CSUSB to influence pro-environment behaviour among the students, faculty, and staff.

Presenter(s): Maira Durazo

Major: Public Administration

Faculty Mentor: Dr. Anthony Silard

Title: *Young Leaders Program*

Abstract: Young Leaders Program Dr. Anthony Silard Maira Durazo Most young people can go into the computer lab at their school and find access to thousands of strategies for how to conduct transactions such as completing their college applications, applying for college scholarships, writing a resume, interviewing or writing a business plan. However, this will only happen if a young person views this research as a critical action step in their larger purpose. Without a clear and compelling vision for what they want to accomplish in their lives, which may require a personal transformation, adolescents will continue to walk past the computer lab and become involved in illicit activities and risky behaviors because there is nothing to measure those activities and behaviors against. The Young Leader's Program is focused on teaching leadership as a distinct skill that low-income youth can leverage to build their careers and pursue higher education. The Young Leaders Program (YLP) is a 40-hour program targeting low-income high school students. YLP teaches low-income youth Five Critical Skill Areas that enable them to learn

the leadership skills necessary to become agents of change in the pursuit of social justice. These five skills include College Preparedness, Career Readiness, Leadership, Goal Setting, and Becoming a Change Agent. Youth are guided to identify and create an action plan towards the careers of their choice to find and sustain themselves in healthy, meaningful careers.

Presenter(s): Kristen Morrish

Major: Business Administration- Marketing

Faculty Mentor: Dr. Victoria Seitz

Title: *Isolation Unit Market Research*

Abstract: Market research was conducted by Kristen Morrish, a CSUSB Marketing major, with the aid of Dr. Victoria Seitz to analyze the external and internal factors of a medical product known as isolation units. The original purpose for this information was for a new product known as "PITU" (Personal Isolation Transportation Unit) which was produced by the company AR Tech in Fontana, California. This product was invented with the hopes of helping people who are suffering from contagious diseases from spreading this disease to their caretakers and others. These market research findings will help the company find the niche in the market for potential sales once production begins.

Presenter(s): Bin Wang

Major: Business Administration – Finance

Faculty Mentor: Dr. Alexandru Roman

Title: *Exploring the Link between Socioeconomic Status and Social Responsibility*

Abstract: CEOs have been an important focus in strategy research for the past decade. Prior literature has explored a number of relationships between CEO demographics, such as education, social ties, social capital, and power and CEO and firm behavior. Surprisingly, no research has focused on CEO childhood experiences and their aggregate impact on CEO

decisions (consequently on organizational behavior). This research aims to fill this gap by addressing how CEO socio-economic status (SES) during development years (childhood to adulthood) relates to his or her perceptions on social responsibility as reflected by organizational behavior. Specifically, we are addressing the following question: do organizations led by CEOs who grew up rich or poor differ in terms of socially responsible behavior from those led by CEOs who grew up in middle class? We draw on risk perception and affect theory to develop and test our hypotheses regarding the link between CEO SES and a firm's socially responsible behavior. Thus far, our preliminary analysis of large American organizations over sixteen-year period (2000-2016), reveals that both ends of the spectrum, lower and higher levels of SES, translate in different behaviors as it relates to social responsibility. Organizations led by CEOs who grew up middle class tend to be more socially responsible compared to those led by CEOs who grew up either poor or rich.

Education



Presenter(s): Mina Blazy

Major: Educational Leadership

Faculty Mentor: Dr. Nancy Acevedo-Gil

Title: *Creating a College-Going partnership with Parents and Families*

Abstract: Students of working class families do not always have access to college and career compared to those of middle and upper class. With the grant, both parents and their children in elementary grades were given access to a four-year university. During this university, participatory action research parents and their children toured a university. Students engaged in a one-hour hands on lesson with university students and their professor. During the classes, parents had the opportunity to hear about what students need in high school to be prepared for the UC and CSU schools. Before the trip, parents were given a pre-survey and the same post-survey was given to parents after the trip.

Presenter(s): Carl Christman

Major: Educational Leadership

Faculty Mentor: Dr. Donna Schnorr

Title: *Instructor Humor as a Tool to Increase Student Engagement*

Abstract: As various stakeholders examine the value and quality of higher education, a greater emphasis is being put on educational outcomes. There is constant focus on improving the quality of undergraduate education and one of the keys to this is understanding what makes a good instructor. Effective instructors rely on a variety of tools and techniques to engage their students and help them learn. One common tool that instructors in higher education rely on in the classroom is humor. The primary research question this study is attempting to answer is: Does humor infused instruction promote high levels of emotional, cognitive, and behavioral engagement among college students? The researcher's hypothesis is that college students who view video clips of humor infused instruction will be significantly more emotionally, cognitively, and behaviorally engaged than students who view video clips of the same instructional content without humor. In order to test for a correlation between instructor use of humor in class and student engagement, student participants will be randomly assigned to one of two groups. One group will watch a lecture on fallacies that includes humorous illustrations and examples while the other group will watch a lecture that does not include

these humorous illustrations and examples. Immediately after watching the lecture students will be asked to complete an 18-item questionnaire that will measure their engagement.

Presenter(s): Alliance Gueming

Major: Educational Leadership

Faculty Mentor: Dr. James Smith

Title: *Closing the Achievement Gap: What Else Can We Do?*

Abstract: The achievement gap begins in elementary school and continues to persist throughout elementary and secondary schools producing differences in high school graduation rates, college and career attainment, and ultimately socio-economic differences in income between various groups (Gordon D. Amerson Jr, 2014; Salvin & Madden, 2006). Despite decades of overall progress in narrowing achievement gaps, disparities in educational outcomes related to poverty, English language proficiency, disability, and racial and ethnic background persist (Waldman, 2016). The purpose of this study is to constructively and concurrently analyze the practices and experiences of teachers as they work to close the achievement gap in relationship to key factors such as: the proportion of ELLs and non – ELLs students in the classrooms, Parents involvement in student’s education, etc. We will focus on schools in the Inland Empire County . Human subjects will be composed of teachers. Survey instrument will be associated with focus groups meetings, and research will take place after approval from IRB. A two-phase explanatory sequential mixed methods design will be used: quantitative and qualitative. Data collected will be analyzed with NVIVO software. We hope to propose a new model of practice that can potentially help close the achievement gap between high performing students and low performing students in K-12 as well as in higher education.

Presenter(s): Qi Guo, Lu Jia, and Tong Feng

Major: Instructional Technology

Faculty Mentor: Dr. Eun-Ok Baek

Title: *The Effect of Mobile Application for TOEFL Pronunciation and Speaking Learners and two other research*

Abstract: The first project contains two phases. First phase is to design and develop a mobile application (mobile app) for Test of English as Foreign Language (TOEFL) learning. The content of this mobile app is based on the Stealth TOEFL Online Learning: <http://stealth.michaelbuckhoff.com>. After the mobile app is ready to download from Android Market and Apple Store, there will be a research conduct with college students in California State University San Bernardino (CSUSB) to study the effect of using the mobile app in study English. There are three proposed modules in the mobile learning course at this stage, TOEFL vocabulary, Pronunciation, and Speaking. The mobile learning course will first introduce the TOEFL topic; tutorial videos will be embedded in the mobile application to introduce the TOEFL exam. In the Vocabulary Module, learners can browse academic vocabulary and take quizzes. In the Pronunciation and Speaking Module, learners can watch tutorial videos, record their voices, and send their voices to the instructor for evaluating. The research will use explanatory sequential mixed-method. There are two research questions: 1: What is the effect of STEALTH Mobile Application on students’ performance in TOEFL Vocabulary, Pronunciation and Speaking learning? Two: What are learners’ perceptions of STEALTH Mobile Application? The intervention will be introduced from the beginning of 2018 spring quarter to one class of students in CSUSB English Language Program. The researcher will discuss with the professor, who provides his own product of TOEFL courses for this project to convert from online class to mobile app, and divide students to two groups randomly. One group will be the control group; the rest of them will be the treatment group. The researcher will use pretest and posttest to college students and meanwhile ask students to fill out pre-survey and post-survey. Duration of intervention will last for 3 months

between the pre/post-tests. Correlation coefficient will be conducted to test the relationship of students' academic performance and the intervention. Paired-t test will be conducted based on the tests scores. The results will be classified to three sub-groups depends on their degrees of progress. After the completion of the quantitative portion of the research, interviews will be conducted to some students, choosing from the three sub-groups to further explore their perspectives toward the mobile application.

Presenter(s): Yvette Lopez

Major: MA TESOL

Faculty Mentor: Dr. Lynne Diaz-Rico

Title: *Counteracting Microaggressions: How TESOL Educators Can Empower Students*

Abstract: TESOL educators are challenged to help students who experience bias, prejudice, and racism. ESL teachers of new immigrants may find their students struggling to study in areas where xenophobia circulates, while teachers of short-term visitors could be called upon to help students process hostilities based on their native languages, accents, or appearance. While overt acts of violence or aggression are easy to identify and denounce, microaggressions—brief, subtle, and ambiguous denigrating messages to a marginalized person—are harder to combat and can leave lasting scars. ESL students experiencing microaggressions typically respond to the trauma through “fight, flight, or freeze.” Educators can teach students an alternative: An opportunity to “stand” for themselves and provide a response that alters the aggressor’s consciousness for the better. The presentation given to CATESOL 2017 Conference by Dr. Lynne Diaz-Rico, MA TESOL Program Coordinator and Yvette R. Lopez, graduate student, gave TESOL professionals practical tools to overcome apprehension, successfully facilitate open dialogues in the classroom, and provide ESL students with the skills needed to respond to microaggression incidents in an empowered way that mutually benefits both aggressor and the person being targeted.

Presenter(s): Mary McAllister-Parsons

Major: Educational Leadership

Faculty Mentor: Dr. Nancy Acevedo-Gil

Title: *Creating a College-Going Partnership with Parents and Families*

Abstract: The purpose of the research project was to expand the college-going culture by developing a school-college partnership and challenging the deficit perceptions that educators may have of low-income students of color. The aim of this research project was to implement a college-going intervention with fifth grade students and their parents/families from an elementary school with a majority low-income, Hispanic student population. The study is guided by the successful school and college partnership modeled through “research as an intervention” in Delgado Bernal and Aléman (2016, p. 12). Education scholars, contend that a college culture can help negate the educational limitations experienced by low-income, students of color, and potential first-generation college students. This research project will provide the opportunity for the students and parents/families to have a shared college experience and continue the college-going culture at home. Students and parent participants completed surveys before and after visiting a local state university. The surveys would identify the perceptions that participants had of attending college.

Presenter(s): Jesse Neimeye-Romero

Major: Educational Leadership

Faculty Mentor: Dr. Edna Martinez

Title: *High Impact Practices and their Influence on Students Attending a University Branch Campus*

Abstract: The purpose of this study is to understand the High Impact Practice experiences of university branch campus students. Additionally, the study seeks to understand how student participation in High Impact Practices (HIPs) has influenced their persistence. For this study, persistence is defined as a student’s

behavior during their time in higher education that leads them to eventually graduate and receive a degree (Arnold, 1999). Currently, there is a gap in the literature concerning the experiences of students attending university branch campuses. Studies have examined the reasons why students choose to attend a branch campus (Bird, 2014; Hoyt & Howell, 2012), branch campus student motivations (Cossman-Ross & Hiatt-Michael, 2005), and branch campus demographics relative to academic performance and retention (McClelland & Daly, 1991; O'Brian, 2007). However, there is an absence of studies that explore branch campus student experiences in relation to High Impact Practices and their persistence. This qualitative study attempts to further the understanding of the branch campus experience of students and the impact of High Impact Practices. Through a transcendental phenomenological approach (Moustakas, 1994), semi-structured in-depth interviews (Creswell, 2013) were conducted with recent graduates of a state university branch campus who had, during their time as an undergraduate, participated in at least one high impact practice and attended the branch campus for the entirety of their academic career. The data collected was organized and analyzed through Moustakas' (1994) phenomenological analysis method.

Presenter(s): Lisa Tucker

Major: Counseling and Guidance

Faculty Mentor: Dr. Susie Pryor

Title: *The Artist Entrepreneur*

Abstract: Couched in the space of the emergent "creative economy," this research proposes to examine what connection, if any, exists between the artist and the (business) entrepreneur. It is interested in offering insights into what we term "artist entrepreneurs" – individuals who are driving innovation in the arts (e.g., graphic, textile, visual, music). We are explicitly seeking to develop a matrix for classifying artist entrepreneurs. The project includes both quantitative and qualitative methods. A survey utilizing existing psychometric scales will be developed and administered to individuals who

self-identify as artists and/or as entrepreneurs. These scales will also allow us to segment individuals who are highly innovative. Depth interviews will be conducted with a subset of individuals from this last segment who exhibit highly innovative characteristics coupled with highly innovative creative output.

Presenter(s): Fernando Villalpando and Maria Theresa Domingo

Major: Educational Leadership

Faculty Mentor: Dr. Nancy Acevedo-Gil

Title: *Bridging the Path to Higher Education for Undocumented Students*

Abstract: Due to the current political climate, changes in immigration policy, and rhetoric, current high school undocumented students will have to face a new obstacle just when doors were opening for them. As it is, research has shown and reaffirmed that low-income students of color attend schools with less resources than those students who attend schools in wealthy communities with primarily White students (Oakes, 2004; Rogers, et al., 2010). The goal of this project is to bridge the gap of information and access to higher education for undocumented students. We want to be able to still create a college culture option for students who do not fit the "regular" college admissions path (Jarsky, McDonough, & Nuñez, 2009). Many undocumented students once they find out their status do not feel as if all the college information provided applies to them. General college meetings are focus on FAFSA, in-state tuition for state residents, that they feel disconnected.

Presenter(s): Jeniree Martinez

Major: Biology

Faculty Mentor: Dr. Priyanka Yalamanchili

Title: *Curriculum Development for Transition Age Youth Program at University Center for Developmental Disabilities*

Abstract: This project focuses on curriculum development to support the new Transition Age Youth (TAY) program at University Center for Developmental Disabilities (UCDD), at California State University, San Bernardino. Curriculum development will include enhancing current life skills, social skills, and pre-employment vocational skills material. In doing so, the targeted skills, goals, and content areas can be modified based on the individual needs identified during the initial assessment and those that develop during the clients' participation in the program. As part of the ongoing TAY program, the goal is to provide quality service to the clients and their families.

Natural Sciences



Presenter(s): Rafael Alamilla

Major: Kinesiology

Faculty Mentor: Dr. Jason Ng

Title: *Fitness and Body Composition Characteristics of Special Weapons and Tactics Team Members of Law Enforcement Agencies*

Abstract: PURPOSE: Occupational demands of Special Weapons and Tactics (SWAT) law enforcement agents involve extended sedentary periods with occasional bouts of vigorous exertion. It is imperative that these agents have high physical fitness levels to support vigorous exertion whilst avoiding musculoskeletal or cardiovascular injury, but investigations of the SWAT population is limited. The purpose of this study was to examine the fitness characteristics of SWAT team members. METHODS: Fourteen male SWAT members (mean±SD; age = 33.1±5.7 y, height = 180.7±5.4 cm, body mass = 90.6±10.0 kg) completed five assessments. These included a 1) dual-energy x-ray absorptiometry scan to determine percent body fat (%body fat) and bone mineral density (BMD); 2) one-repetition maximum (1RM) bench press test to assess strength; 3) graded exercise test to measure maximal oxygen uptake (VO₂max); 4) YMCA submaximal bench press test to measure muscular endurance; and 5) forward flexion test to measure flexibility. RESULTS: Participants had 18.7±4.7% body fat and a BMD T-Score of 1.06±1.15. Absolute and relative 1RM bench press results were 120.9±14.5 kg and 1.35±0.22 kg·kg⁻¹,

respectively. VO₂max was 47.9±5.5 ml·kg⁻¹·min⁻¹. Participants completed 52±15 repetitions on the YMCA submaximal bench press test. Participants reached 30.7±5.7 cm on the forward flexion test. CONCLUSION: Compared to 30-39-year-old male normative data, this population exhibited a higher-than-average BMD T-score. Participants' %body fat was classified as fair. Cardiorespiratory fitness; muscular strength and endurance; and flexibility ranged from good to excellent. These findings suggest fitness levels of these SWAT members are appropriate for the vigorous exertions involved in this occupation.

Presenter(s): Robert Avina

Major: Public Health

Faculty Mentor: Dr. Monideepa Becerra

Title: *Burden of Hospital Acquired Infection Among HIV Patients*

Abstract: Objective: Human immunodeficiency virus (HIV) infection remains a public health issue, especially among vulnerable populations. In recent years, co-infection with HIV have emerged as a novel threat to morbidity and mortality though little evidence exists on the burden of hospital-acquired infections (HAIs) among HIV patients. In this study, we utilized the Nationwide Inpatient Sample (NIS) to assess the burden of HAIs among such patients. Methods: Survey weighted data from NIS were assessed to determine the prevalence

of clostridium difficile (CDI) and methicillin-resistant staphylococcus aureus (MRSA) and the burden of such co-infection among patient and hospital outcomes (in hospital mortality, length of stay, and total charges). Results: Prevalence of CDI and MRSA were noted as 2.88 and 3.12 per 1,000, respectively, among those with HIV, with higher rates reported among middle-aged adults (46%), males (68%), Blacks (56%), and those on Medicaid (42%). Incidence rate ratio (IRR) of length of stay among HIV patients with CDI and MRSA were 2.02 and 1.43 respectively, while odds of in-hospital mortality was 74% higher among CDI discharges and 34% higher MRSA discharges. Finally, total charges for HIV increased by 56% and 42% upon presence of CDI and MRSA, respectively. Conclusion: With increasing rates of globalization coupled with change in the weather matter, emerging infectious diseases have become prevalent. CDI and MRSA are two such examples, and the results of our study demonstrate that such co-infection with HIV posit a significant healthcare burden with increased length of stay, in-hospital mortality, and total charges.

Presenter(s): Toshio Alvarado

Major: Biology

Faculty Mentor: Dr. Jeremy Dodsworth

Title: *Isolation and characterization of a novel Thermodesulfobacterium sp. from laboratory enrichments containing candidate phylum Atribacteria (OP9)*

Abstract: Atribacteria (OP9) is candidate phylum with no representatives in pure culture, and is found in various anaerobic environments worldwide. "Caldatribacterium", a thermophilic lineage within the Atribacteria, is currently being maintained in laboratory enrichment cultures with fucose as a carbon source, where "Caldatribacterium" is present at ~95% relative abundance. Metagenomics and 16S rRNA gene tag sequencing techniques showed that the enrichments growing on fucose appear to be a co-culture of "Caldatribacterium" and an uncultivated member of the genus Thermodesulfobacterium, which consists of sulfate-reducing thermophiles. Due

to the failed attempts to isolate "Caldatribacterium" by dilution-to-extinction or plating techniques, it has been hypothesized that there is a syntrophic relationship between the two bacteria. To better understand the potential interaction between these two microbes, several isolates of Thermodesulfobacterium were obtained from the fucose enrichments under sulfate-reducing conditions, and one of these isolates was characterized. Genomic comparison of a metagenome bin corresponding to the dominant Thermodesulfobacterium lineage present in the co-cultures to other sequenced members of the genus Thermodesulfobacterium by in silico DNA-DNA hybridization showed percentages lower than 70%, suggesting that the Thermodesulfobacterium in the co-cultures represents a distinct species. The isolate's 16S rRNA gene sequence is 98.7% identical to other related species, also consistent with it representing a novel species. The characterization of Thermodesulfobacterium will help give insight into possible syntrophic interactions between the isolate and "Caldatribacterium", with Thermodesulfobacterium possibly consuming hydrogen and/or organic acids produced by "Caldatribacterium", and will also allow for formal proposal for this Thermodesulfobacterium strain as a new species

Presenter(s): Zahra Azizi, Alicia Hernandez, and Maram Aldoghmi

Major: Nursing

Faculty Mentor: Dr. Dawn Blue and Dr. Geraldine Fike

Title: *Improving Safety Through Proper Personal Protective Usage*

Abstract: Nurses are constantly surrounded by potentially hazardous agents. They take care of patients with diseases that are highly contagious such as influenza, varicella, and Methicillin-Resistant Staphylococcus Aureus (MRSA). To combat the high risk of transmission, hospitals have adopted evidence based practices that indicates personal protective equipment (PPE) must be worn during airborne, droplet, and contact precautions. In addition to protecting the nurse,

PPE aids in the reduction of infections in patients who have lowered immune systems and are on neutropenic precautions. This means that the purpose of PPE is not only to protect the nurse, but to also protect the patient. Despite these precautions and the high risk of contamination, nurses are not properly utilizing PPE. Issues that contribute to the problem include nurses believing that it is a hindrance to their job performance, the lack of availability, and time constraints. The absence of PPE can potentially lead to nosocomial infections, increased hospital stays, and mortality. This review of the literature presents reasons as to why staff nurses are noncompliant with PPE protocols by highlighting different causes that continually appeared in several various articles and studies.

Presenter(s): Maryam Badoella

Major: Biology

Faculty Mentor: Dr. Becky Talyn

Title: *Drosophila melanogaster's Mortality reared with herbicides*

Abstract: *Drosophila melanogaster's* Mortality reared with herbicides Herbicides have been used in agriculture to kill weeds. Roundup is a common herbicide that is used worldwide in a variety of formulations. The active ingredient is glyphosate, but formulations differ in other ingredients. Other studies have indicated the toxicological effects of different roundup formulations. I have used *Drosophila melanogaster* to study the mortality effects of different herbicide formulations. Ten male and ten female flies were kept on organic medium for a week, then the flies were anesthetized, sexed, and put on the different treatments containing one of three herbicide formulations at different concentrations. Their mortality was noted after 2 and 7 days of Roundup exposure. Differences in mortality will be analyzed using JMP statistical software to determine which herbicide formulation and concentrations, are responsible for the highest mortality rate. According to my preliminary results, mortality correlates with glyphosate concentration, and is highest when flies are exposed to

an herbicide formulation containing a surfactant, POEA. This is consistent with other studies that have shown that mortality increased in rats when given POEA. This may imply that the use of these herbicides can pose a risk to human health.

Presenter(s): Timothy Baum

Major: Biology/Biopsychology

Faculty Mentor: Dr. Michael Chao

Title: *Anatomical Locations of the dop-1 Expression Sites in C. elegans*

Abstract: Our laboratory utilizes the model organism *Caenorhabditis elegans* to study the molecular basis of behavior. We and others have demonstrated that behavioral avoidance of noxious chemicals in *C. elegans* is modulated by the catecholamine dopamine (DA). To further investigate the details of these mechanisms, our project uses CRISPR-Cas9 as a means of conducting gene-substitution experiments. Fluorescent reporter genes replace the coding sequence of the dop-1 dopamine receptor gene; this visibly reveals the precise anatomical locations of their expression sites. This is accomplished by engineering two DNA plasmids. One plasmid contains both the Cas9 and guide RNA sequences, which we will generate by site-directed mutagenesis. The other plasmid provides a repair template containing the fluorescent reporter sequence flanked by the appropriate genomic DNA, created by Gibson assembly. These constructs will be injected in *C. elegans* germline cells, and animals carrying modified genomes will be screened for using fluorescence microscopy and polymerase chain reaction. We will report on our progress creating the recombinant plasmids.

Presenter(s): Joseph Berrera

Major: Chemistry

Faculty Mentor: Dr. Kimberley Cousins

Title: *NICS Difference: Determination of Relative Aromaticity*

Abstract: Aromatic compounds commonly occur in pharmaceuticals, fuel additives, polymers, etc. Key characteristics that make up an aromatic structure are the delocalization of pi, particular stability of the structure, and the distinct electronic field generated, that can be detected running an NMR analysis. NICS (short for Nucleus Independent Chemical Shifts) is the computational method for predicting the NMR spectrum. In this Project, NICS values are obtained using four programs: (1) Spartan to build the molecules, optimized structures (using the DFT B3LYP 6-311+G** method), and record geometry measurements such as bond lengths and angles; (2) Avogadro to insert probe/ghost atoms which are where the calculations for NICS are determined; (3) a text editor to set up proper input page for the final step, and (4) Submission to GAMESSQ (General Atomic and Molecular Electronic Structure System) to calculate shielding values for NICS. NICS has taken some criticism for not being able to determine the relative aromaticity of rings of different sizes. Our novel method, NICS difference scans uses two NICS scans one for the structure in question and its reference structure. This project demonstrates the ability of our novel NICS difference method to further enhance NICS scans in predicting aromaticity, as can be examined by modelling benzene and distorted benzene derivatives

Presenter(s): Alison Brewer

Major: Geology

Faculty Mentor: Dr. Codi Lazar

Title: *Petrogenesis of pyrite-bearing assemblages in the Thomas Range of Western Utah*

Abstract: The Thomas Range is part of the Basin and Range and is just west of the Wasatch hinge line. As a part of the Cordilleran Miogeocline, sediments were deposited in the Thomas Range area. The Thomas Range also underwent a wave of volcanism after the ocean regressed. Elemental and mineral analyses were performed on pyrite-bearing assemblages found in the Thomas Range of Western Utah. Petrogenesis of the sample is determined using the known minerals and the ways those minerals form. Pyrite associated with a

sedimentary rock confirms that there was an anoxic sea covering the Thomas Range at some point in geologic history.

Presenter(s): Joy Berry

Major: Geology

Faculty Mentor: Dr. Erik Melchiorre

Title: *Silver production from the Silver King Vein, Calico, California: A forensic geology estimate*

Abstract: The Calico District is regarded as a historically important contributor of silver in California, with 13-20 million troy ounces of silver officially reported mined. However, these reported values for the entire district are inconsistent with reported ore grades and volumes mined from the King Vein alone. Underground mine mapping with laser range-finders was conducted under supervision of the mine rescue squad and county search and rescue to produce accurate stope maps along the King Vein. Silver ore grade maps for these stopes were made from fire-assay and portable XRF analysis of ore remnants in pillars and stope borders. It is assumed that remnant ore represents a minimum ore grade, not a maximum. The resulting volume and grade estimates provide a more accurate picture of the minimum amount of silver removed from the King Vein. This research suggests that at least 26 million troy ounces of silver were produced from this single vein alone. Assuming a 20% milling loss, this still indicates that the King Vein yielded at least 21 million troy ounces of silver. This estimated production of the King Vein exceeds the high-end historical estimate for the whole district, even without contributions from the Red Jacket, Oriental, and Bismarck veins. This suggests that, at best, the privately-held companies at Calico kept poor records. But given the remote location of this early district, the proximity to Mexico, and elevated black-market silver prices, it may indicate an intentional and systematic effort by these companies to defraud the government of tax revenue.

Presenter(s): Jessle Bagby

Major: Geology

Faculty Mentor: Dr. Codi Lazar

Title: *Chemical composition analysis of Mn/Fe ratio in California rock varnish*

Abstract: Rock varnish is a rock patina that occurs in arid and semi-arid regions and is composed of clay minerals, manganese and iron oxides, and trace amounts of more than 30 minor compounds. Previous work has determined that the top surfaces of desert pavement clasts have black, manganese-rich varnish and the underside of clasts have orange, iron-rich varnish. Some of the formation theories include bacteria on the surface of the rock oxidize and concentrate manganese, manganese and iron are leached from the host rock and precipitated on the surface, and dust particles on the surface of the rock react with atmospheric fluids. The Mn/Fe ratio in manganese-rich varnish from Death Valley, CA and the Mojave Desert, CA have been determined to be 0.3-1.2 and 0.9-2, respectively. The purpose of this study was to test the conclusion that the California Mn/Fe ratio in manganese-rich varnish is between 0.3-2 for multiple rock types using a Scanning Electron Microscope. Five samples from five locations were analyzed. The results suggest that not all California rock varnishes have a Mn/Fe ratio within the 0.3-2 range. Further studies may identify a correlation between rock types and the Mn/Fe ratio.

Presenter(s): Madeline Blua

Major: MSEES

Faculty Mentor: Dr. Kimberlyn Williams

Title: *Soil Types Impact Invasive Annual Plant Densities in California's Chaparral and Sage Scrub*

Abstract: Invasive annual plants displacing native plants in California's chaparral and California sage scrub habitat is of increasing concern. With the deterioration of these natural ecosystems, examining factors that account for the incursion of invasive plants is crucial. In this study we examined the correlation between

invasive annuals and soil color, which is indicative of its chemistry, mineralogy, carbon content, and genesis pathways. Various metal oxides and organic matter content are typically responsible for the color of a soil. Our study compares sites with red soils to sites with less-red soils. The red coloration of red soils is likely caused by hematite, an iron oxide, and the less-red soils colored by another iron oxide-- likely goethite. The different iron oxides not only affect soil color, but also play a role in plant nutrients. Hematite and goethite have been shown to react differently with cations and anions depending on the pH of the soil, which may impact critical plant nutrients. With soil chemistry differing with soil color, we also expected to see a difference in plant ecology associated with soil color. A survey measuring invasive annual plant density determined that red, hematite-influenced soils have fewer invasive annuals than less-red soil sites of similar slope and aspect. An initial study that compared important nutrient and mineral parameters in the two soils types did not show differences that could account for the differences observed in invasive annuals. Further studies will focus on the supply rate of nutrients to the soils, infiltration rates of the soil, and pH measurements.

Presenter(s): Bryan Castillo

Major: Geology

Faculty Mentor: Dr. Sally McGill

Title: *Preliminary ages of prehistoric earthquakes on the Banning Strand of the San Andreas Fault, near North Palm Springs, California*

Abstract: The southernmost section of the San Andreas Fault (SAF) is the only section of that fault that has not ruptured historically. It is not known whether this long quiescent period reflects a long average recurrence interval, or whether the current interseismic interval is longer than average. Near Indio, the SAF splits into 3 strands; limited paleoseismic work has been conducted on the Mission Creek and Garnet Hill strands. We studied a paleoseismic trench on the Banning strand, which has no available age control for any surface-rupturing, prehistoric earthquakes. We were able to document clear evidence for five prehistoric earthquakes and

possible evidence for four additional events. The most recent event occurred sometime between 560 and 936 calibrated years before present (BP). At least 3-4 earthquakes have occurred since ~2700 years ago. At greater depths, we document two events with strong evidence and two other possible events with weak evidence. From existing dates, we calculate a maximum average interval of 720 yrs based on three complete earthquake cycles between earthquakes 1 and 4 or a minimum average interval of 350 yrs based on limiting ages for earthquakes 1 and 5. This makes the average interval equal to or less than the current open interval on the Banning strand. Compared to nearby paleoseismic sites, the Banning appears to be intermediate; it has a shorter interval than that published for the San Geronio Pass Thrust (~1000 yrs) but longer than the Mission Creek (~215 yrs) and Coachella sections (~220 yrs) of the SAF

Presenter(s): Jeffrey Chance

Major: Biology

Faculty Mentor: Dr. Jeremy Mallari

Title: *The development of chemical inhibitors against the metalloprotease falcylisin*

Abstract: Plasmodium falciparum is the cause of more than 500,000 fatal malaria cases a year with most being in African children. Falcylisin is a metalloprotease that is important to the parasite cell for growth within human cells. Our goal is to synthesize inhibitors against falcylisin so that loss of function studies can be done to better understand the biological functions of the protease. We are using piperazine-based hydroxamic acids with multiple substituents at the N-1 and N-4 position to find what groups would fit and interact the best with falcylisin active site. Each compound contains a hydroxamic acid group to coordinate with the zinc at the active site of the protease. We tested multiple different substituents ranging from small and large amides, amides with electron withdrawing groups, sulfonamides, and small aryl amines. Each inhibitor was tested for activity against falcylisin and cultured parasites. We have found that bulky aromatic groups

have had the most success at the N-4 position. Further research is being done on the N-1 position because it has not seen a variety of different substituents. The N-4 position is also being further tested with different large aryl amides to optimize the compounds potency versus falcylisin.

Presenter(s): John Carter

Major: Physics

Faculty Mentor: Dr. David Marshall

Title: *Biofouling & Corrosion of Steel in Seawater*

Abstract: In 1941, an oil tanker named the S.S. Montebello sunk to the bottom of the ocean while still carrying a full load of oil. Concern about all the oil in the sealed compartments being released into the seawater has resulted in efforts to determine how much the compartments have corroded and how much longer they can last. In order to answer these questions without damaging anything, a method has been developed that need only analyze the marine growth on the surface of the ship to determine the corrosion rate. It takes into account four characteristics of the marine growth. These are density, thickness, iron content, and the number of years it has been growing. A previous study analyzed a sample from the same ship as we have and they produced the same corrosion rate of 0.7mpy. This supports the usefulness of this new method as it has produced precise results with the use of different samples and different measurement techniques. The one thing the method lacks is a thorough analysis of porosity which plays a large role in how the marine growth affects the corrosive process.

Presenter(s): Elizabeth Corella

Major: Kinesiology

Faculty Mentor: Dr. Nicole Dabbs

Title: *Immediate Effect of Mini-Trampoline Jumping On Balance Performance*

Abstract: Purpose: The purpose of this study was to investigate the immediate effect of mini trampoline jumping on dynamic balance. Methods: Twenty-one

recreationally trained individuals volunteered to participate in two days of testing. On familiarization, day participants were randomly assigned a testing condition of either trampoline group (TG) or control group (CG). Anthropometrics were measured followed by a dynamic warm-up and participants were familiarized with the Biodex Balance System SD and mini-trampoline protocol, which consisted of counter movement vertical jumps (CMVJ). On day two, participants completed the dynamic warm-up and completed the balance protocol. Anterior-posterior (AP), medial-lateral (ML), and overall stability index was recorded and used for analysis. The TG completed six maximal CMVJ on the trampoline and the CG rested for 20 seconds. Immediately after either jumping or resting, participant's balance was reassessed. A 2x2 mixed factor ANOVA was used to analyze group and time effects. Results: There were no significant interactions between time and group for overall ($p=0.28$), AP ($p=0.63$), and ML ($p=0.097$) dynamic balance. There was no significant time ($p= >0.05$) or group ($p= >0.05$) effect for overall, AP, and ML dynamic balance. Conclusion: The results show that there were no effects of trampoline jumping on balance performance. The amount of jumps performed on the trampoline was not sufficient to cause an increase or decrease in balance performance. Participants balance results in the TG may have shown a decrease in balance had they jumped on the trampoline longer than the six maximal CMVJ possibility due to fatigue.

Presenter(s): Jessica Denton

Major: Geology

Faculty Mentor: Dr. Sally McGill

Title: *Using a sUAV and photogrammetry software to measure scarp heights on the Cucamonga Fault*

Abstract: The Cucamonga thrust fault marks the southern boundary of the San Gabriel Mountains. Over the course of four days a DJI Phantom 4 Pro sUAV was used to collect aerial photographs along the southernmost strand of the Cucamonga fault on the Day Canyon alluvial fan. Agisoft photogrammetry software was used to create a digital elevation model

(DEM) from the images that were collected. With the DEM, a total of 10 profiles were constructed across the scarp along with two profiles parallel to the scarp. From those profiles, it was determined that the scarp height was an average of 6-7 m everywhere along the fan even though some parts of the fan appear to have different ages. This suggests all the different parts of the fan may have experienced the same number of earthquakes, and that it is possible that no earthquakes with significant slip at the surface occurred during the time between deposition of the oldest and youngest parts of the fan for which scarp profiles were made.

Presenter(s): Steven Doherty

Major: Kinesiology

Faculty Mentor: Hosung So

Title: *Western Kinesiology and Physical Education meet South Korea and Thailand*

Abstract: Four Kinesiology students with concentrations in Pedagogy go to South Korea and Thailand in the Summer of 2017. While there in South Korea we met many esteemed Kinesiology professors at Seoul National University as well as Gwangju National University of Education and were able to learn and exchange information that will further our teaching skills in the field while touring their facilities. We have provided charity to a Osan Elementary school in Ik San by conducting Physical education and physical activities with the students. This enabled us to work on our teaching skills in the field as well as improving communication skills. While in Thailand we met many esteemed professors in the Kinesiology and Physical Education field at the Institute of Physical Education Angthong and were able to learn and exchange information that will further our teaching skills in the field while touring their facilities. While in Thailand we attended the 7th Institute of Physical Education International conference to obtain information that will improve our skills in the field.

Presenter(s): Janelle Doyle

Major: Biology

Faculty Mentor: Dr. Nicole Bournias-Vardiabasis

Title: *Characterizing the Effect of Combined Temozolomide-Irradiation Therapy on Cognitive Function and Investigating Neural Stem Cells and Extracellular Vesicles as Translational Therapies*

Abstract: Each year, approximately 240,000 cancer patients are diagnosed with brain tumors. Following cessation of radiation therapy treatment, 50% of these patients experience delayed adverse cognitive effects. Although difficult to quantify, these treatment associated effects on mood, memory, concentration, and executive functions are persistent and have a major negative impact on quality of life. Despite acknowledgment of the cognitive problems, differences in disease status, treatment regiment, and baseline cognitive reserve between patients makes it difficult to study the mechanisms underlying effects on cognition. Therefore, it is critical to conduct controlled animal studies to define the neurotoxicity of irradiation and chemotherapy and the mechanisms underlying their toxic effects. In this study, we aim to characterize the effects of temozolomide (an adjuvant chemotherapeutic agent used in clinical protocols) and radiation therapy, and to investigate whether temozolomide (TMZ) exacerbates cognitive impairments. Further, past work in our lab has demonstrated the benefit conferred by both intrahippocampal stem cell transplantations and stem cell-derived extracellular vesicle transplantations in ameliorating neurocognitive deficits associated with cranial irradiation (IRR). Thus, we also aim to investigate the efficacy of these grafting interventions on ameliorating neurocognitive deficits associated with combined TMZ+IRR treatment. Ultimately, these experiments will provide the foundation for elucidating the causes of radiation- and chemotherapy-induced cognitive impairment and will be instrumental in developing a translational strategy for the long-term resolution of these unintended cognitive side effects.

Presenter(s): Raquel Elias

Major: Biology

Faculty Mentor: Dr. Becky Talyn

Title: *Drosophila melanogaster's Developmental Dietary Behavior with Round-up Based Sucrose*

Abstract: Herbicides have been used increasingly in agriculture, but their toxicological effects are still not well understood. *Drosophila melanogaster* were used to investigate the development of dietary behavior in flies exposed to Round-up, a glyphosate based herbicide. My previous studies analyzed dietary preferences involving Round-up Ready GMO corn and Round-up based sucrose. Previously unexposed flies selected organic sucrose more than sucrose containing a Round-up formulation with pelargonic acid. In this study, female flies reared on treatments with one of two Round-up formulations (containing glyphosate and either pelargonic acid or POEA) or organic medium for one week, were then starved for 15-16 hours, and given 5ul of organic sucrose to consume during the next hour. Simultaneously, an empty vial with 5ul of sucrose was used to measure the evaporation rate. The amount of sucrose consumed per fly is calculated as (sucrose consumed - evaporation rate)/(number of flies). Consumption will be compared across treatments using JMP Statistical Software to determine whether previous exposure to glyphosate-based herbicides affects sucrose consumption. Preliminary results suggest that exposure to increasing Round-up concentrations causes increasing sucrose consumption. Flies consumed more sucrose with higher concentrations of Round-up, which was unexpected since flies often chose to eat less when exposed with the organic and round-up based sucrose simultaneously in a previous study. Flies probably because they are avoiding the medium with Round-up during pre-treatment, which makes them hungrier, resulting in more sucrose consumed during the experimental period.

Presenter(s): Krista Felbinger

Major: Biology

Faculty Mentor: Dr. Tomasz Owerkowicz

Title: *Pulmonary Bypass Shunt Reduces Oxidative Stress in the American Alligator*

Abstract: There have been several hypotheses proposed discussing the evolutionary preservation of cardiac shunting among some of the vertebrates; specifically the right-to-left (R-L) pulmonary bypass shunt seen in reptiles. We hypothesized that the R-L shunt mitigates the amount of oxidative stress imposed upon the tissues of vertebrates exposed to atmospheric hyperoxia. In order to test this hypothesis, we eliminated the R-L shunting ability in juvenile American alligators (*Alligator mississippiensis*) by surgical ligation of the left aorta (LAo), effectively preventing their circulatory system to no longer function in-parallel but in-series. Experimental animals (no R-L shunt; n=8) and sham-operated controls (shunt intact; n=8) were housed under normoxia (21% O₂) and hyperoxia (35% O₂) conditions at 30°C for 25 days. Whole blood and plasma samples collected after each exposure were assayed for lipid peroxidation and antioxidant activity. We found significantly higher (+13%) malondialdehyde concentrations in response to hyperoxia in experimental animals, and no differences in catalase concentration between treatment groups. This suggests alligators without shunting ability suffered greater oxidative damage than those who maintained the shunt, and were also unable to mount a sufficient cellular antioxidant defenses to protect against the influx in reactive oxygen species. We suggest the pulmonary bypass shunt, by admixture of deoxygenated and oxygenated blood, reduces blood oxygen tension and limits oxidative stress upon the systemic tissues. Palaeoatmospheric oxygen fluctuations would have had limited effect on contemporary vertebrate taxa with in-parallel circulation. Evolution of in-series circulation in ancestors of mammals and bird must have necessitated upregulation of antioxidant expression.

Presenter(s): Silvia Florez

Major: Geology

Faculty Mentor: Dr. Joan Fryxell

Title: *Sediment compaction and change of penetrability at depth of alluvial sediment in parts of the Land Lab, California State University San Bernardino*

Abstract: A penetrability study of disturbed and undisturbed alluvial sediment which counts the strikes of a drop hammer required to drive rebar into the ground in 2 inches intervals up to 8 inches. Sediment samples were also collected in 2-inch intervals from a pit and were treated with hydrochloric acid to determine calcium carbonate content. Results suggest that penetrability of the sediment decreases at depth and samples with lower amounts of calcium carbonate are more penetrable than samples with higher amounts. Penetrability is also connected to rainfall which could be dissolving calcium carbonate that can create caliche and increase penetrability once the sediment dries.

Presenter(s): Sandra Gutierrez, Gloria Azarez, Perla Guajardo, Jezel Sadol and Carissa Schoepfer

Major: Nursing

Faculty Mentor: Dr. Claudia Davis

Title: *Increased Length of Stay in the Emergency Department and Psychiatric Patient Outcomes – A Literature Review*

Abstract: There has been an increase in boarding time among psychiatric patients in the Emergency Department (ED). Research indicates that psychiatric patients wait 1089 minutes to receive specialized care compared to 340 minutes for nonpsychiatric patients. Yet, there is a paucity of research on contributing factors related to poor health outcomes that are affected by prolonged length of stay (LOS). Objective: The objective of this systematic literature review is to investigate the contributing factors that lead to poor outcomes among adult psychiatric patients boarding the ED. Methodology: Using a systematic approach, the databases utilized included EBSCOhost Academic Search Premier, ScienceDirect, PubMed (MEDLINE), PsycARTICLES, PsycINFO and Current Index to Nursing

and Allied Health Literature (CINAHL), which allowed redirection to other search engines like Wiley Online Library and SAGE Journals Online. Frequently used keywords: emergency department, psychiatric, boarding, length of stay, and poor outcomes. Inclusion: peer-reviewed articles published in English. Results: Utilizing 25 articles, our research team investigated factors that may contribute to poor health outcomes for psychiatric patients who experience a prolonged LOS in the ED. Some of these factors include lack of specialized medication, loss of sufficient sleep, loss of specialized care, lack of support, loss of privacy and loss of autonomy. Conclusion: Given the national awareness of mental health and based on our findings, we see opportunities to address this pressing issue such as increased funding to mental health research, improvement projects, and implementation of legislative policies that ensure that psychiatric patients do not experience an unacceptable LOS.

Presenter(s): Andy Garcia

Major: Geology

Faculty Mentor: Dr. Erik Melchiorre

Title: *Fourier Transform Infrared (FTIR) Spectrographic Threshold Analysis of Serpentinite vs Stichtite: Implications for Biomarker Detection on Mars*

Abstract: Stichtite is a chromium magnesium carbonate hydroxide mineral that forms in environments associated with the earliest life on Earth. This mineral was detectable at levels less than 5% of a sample, using Fourier Transform Infrared Spectroscopy (FTIR), a remote sensing technique which has been used to map Mars. FTIR data was collected from stichtite and its serpentinite host to capture average spectral profiles for each mineral. These endmember profiles were used to calculate synthetic profiles for a range of endmember ratios. Significantly, these synthetic profiles are an excellent match for actual measurements with stichtite-serpentinite mixtures, providing validation for the use of synthetic profiles. A synthetic profile with just 5% stichtite still displays FTIR peaks discernible from serpentinite by at least 1% reflectance intensity at wavelengths of 3500 cm⁻¹, 1366cm⁻¹, and 750cm⁻¹. The

association of terrestrial stichtite with early habitable environments, and its ability to be detected with a common remote sensing technique, suggest future work is needed to re-examine Mars FTIR data for the presence of a stichtite biomarker

Presenter(s): Jennifer Gallardo and Cristina Gazca

Major: Biology

Faculty Mentor: Dr. Laura Newcomb

Title: *Investigating NP Interactions to Identify Novel Antiviral Targets in Influenza A Viruses*

Abstract: Influenza A viruses can cause fatal respiratory infections. The viral ribonucleoprotein (vRNP) is responsible for influenza RNA synthesis and is comprised of many nucleoproteins (NP), the RNA genome segment, and the RNA dependent RNA polymerase (RdRP), a trimer of PA, PB1, and PB2. NP is a highly conserved structural component of the vRNP, but also interacts with both viral and host factors, making NP interactions of interest as possible targets for influenza inhibitors. In addition to direct protein interaction with subunits of the RdRP, NP also interacts with influenza NS1, a multifunctional viral protein, and host UAP56, a DEAD box RNA helicase. Our overall goal is to investigate NP interactions and identify novel antiviral targets. We examined NP interactions with PB2, NS1, and UAP56, each reported to influence vRNP activity. Along with wild type, two NP altered proteins were studied, NPbd3, speculated to disrupt interaction with PB2, and del20NP, reported to disrupt interaction with UAP56. Protein extracts were analyzed either for co-sedimentation of NP and interacting proteins in sucrose gradient ultracentrifugation fractions, or co-immunopurification of NP and interacting proteins. Our data reveal that while wild type NP co-sediments with PB2, as expected, NPbd3 does not, suggesting that NPbd3 is non-functional for vRNP activities because it does not interact with PB2. Co-immunopurification did confirm NP-NS1 interaction and will be used to examine interaction with NS1 mutants to comprehend the role NP-NS1 interaction may play in vRNP activity. Our data probe important NP interactions that may serve as

viable antiviral targets.

Presenter(s): McKenzie Gamble and Kathleen Sanchez

Major: Kinesiology

Faculty Mentor: Dr. Amanda Rymal

Title: *A Quantitative and Qualitative Analysis of the Functions of Observational Learning with Disability Sports Participants*

Abstract: Observation is a common way to learn new skills through either watching others or oneself. The Functions of Observational Learning Questionnaire (FOLQ) was developed by Cumming and colleagues (2005) which determines three reasons why people use observation: (a) skill, (b) strategy, and (c) performance. In recent research with able-bodied athletes, it shows that they use the skill function most often, followed by the strategy then the performance function (e.g., Wesch et al., 2007). While most research has focused on able-bodied athletes, there has been little research done on other populations such as athletes with physical disabilities and their reasons for using observation. As such, there is uncertainty to whether athletes with physical disabilities use observation in a similar manner as able-bodied athletes. Therefore, the purpose of this research is to determine the reasons as to why and how athletes with physical disabilities use observation. This will be determined through the use of the FOLQ as well as interview questions which will provide an in-depth perception of the reasoning behind the use of observation within the disability sport population. The analysis of 36 participants ($M = 36.9$; $SD = 17.34$), indicated similar results from previous research. At the present time, answers to interviews are being analyzed to determine themes. The results from the FOLQ and interviews will be discussed as well as directions for future research.

Presenter(s): Eli Gonzalez

Major: Computer Science

Faculty Mentor: Not indicated

Title: *A Wearable Sensor Based Hand Movement Rehabilitation and Feedback System*

Abstract: This research presents a wearable hand rehabilitation system for stroke patients based on digital glove and keyboard games. This is achieved via hand gesture recognition along with hand model animation. In this work, the digital glove with bending sensors is good for motion data collection during hand rehabilitation. The hand animation model, combined with keyboard games, enables the stroke patient under test to see their finger movements and exercise process. In the feedback stage, the rehabilitation evaluation and recommendation are provided based on the recognition of hand gestures. The experimental results have demonstrated a high accuracy on overt gesture recognition and a reasonable accuracy on complex key press gesture recognition.

Presenter(s): Maryori Hernandez

Major: Biology

Faculty Mentor: Dr. Becky Talyn

Title: *Genetic Variation in Round-up Induced Mortality in *Drosophila melanogaster**

Abstract: The use of glyphosate, the active ingredient in many popular herbicides, has dramatically increased in the past decade. The use of this chemical is not well managed, and many studies have demonstrated the toxic effects on non-target organisms. Studies show that these pesticides affect animal behavior, reproduction, kidney, liver function, and increase their probability of developing cancer. In this study we compared the effects of glyphosate on two different strains of the fruit-fly model organism, *Drosophila melanogaster*. This comparison was done by housing 10 females and 10 males of one strain on organic medium for 7 days to allow mating. The flies were anesthetized with CO₂, sexed, and single-sexed groups were transferred to treatments. Roundup® Super

concentrate which also contains POEA as a surfactant was added to the medium at concentrations of 0, 2, 5, and 10 g glyphosate/L medium. The flies were counted after two days of exposure to record mortality rate. Five days after, for a total of 7 days, the final number of living flies was recorded. Comparing these two strains allowed us to observe similar mortality rates of Canton-s and Harwick when maintained on the same glyphosate concentrations. This concluded that the genetic variation between the strains does not affect glyphosate susceptibility. While there was no difference in glyphosate susceptibility between Canton-S and Harwick, the genetic basis for susceptibility is of interest. Current studies address the generational effect of Roundup® on Canton-S under direct selection for reduced Roundup® susceptibility.

Presenter(s): Christopher Hernandez

Major: Kinesiology

Faculty Mentor: Dr. Nicole Dabbs

Title: *The Acute Effect of Miniature Trampoline Usage on Muscle Activation during Vertical Jumping*

Abstract: The purpose of this study was to investigate the acute effects of miniature trampoline usage on muscle activation during vertical jumping in recreationally trained males and females. **Methods:** Twenty-one individuals volunteered in two sessions. Before testing participants completed an IRB approved informed consent and PAR-Q were completed. Electromyography (EMG) sensors were used to collect muscle activation while performing counter-movement vertical jumps (CMVJ) and were recorded. The EMG sensors were placed on five lower body muscles. On the first visit, participants were randomized into a control group (CG) or trampoline group (TG). Participants then performed a dynamic warm-up and were familiarized with the equipment and CMVJ's. For testing day, a warm-up followed by CMVJ's while collecting EMG was performed. The TG performed six trampoline jumps and the CG rested. Participants were then reassessed for EMG for CMVJ's. Percent change scores were calculated and used for analysis. Independent t-tests were used to

compare percent change scores between TG and CG. **Result:** There was no significant difference between TG and CG for percent change EMG muscle activation in VL ($p= 0.39$), VM ($p= 0.71$), MG ($p= 0.91$), TA ($p= 0.20$), and BF ($p= 0.69$). **Discussion:** The results show that there was no significant difference between TG and CG in any of the muscles tested. The amount of time the participants jumped on the trampoline wasn't sufficient enough for selected muscles to increase muscle activation. If the participants jumped for longer, the results may have changed the muscle activation between the two groups.

Presenter(s): Martin Ibarra, Xilonem Montoya, Cassandra Romero, and Gema Gonzalez

Major: Health Science

Faculty Mentor: Dr. Angie Otiniano Verissimo

Title: *Discrimination in the Health Care Setting Among Latinx in California*

Abstract: Discrimination, such as being treated unfairly due to race/ethnicity or gender, has been associated with negative physical and mental health outcomes. The present study examines the relationship between gender and discrimination in the health care setting among Latinx. Analyses focus on a sample of 4,959 Latinx adults who participated in the 2015 California Health Interview Survey (CHIS). CHIS is the largest health survey done at the state level in the US carried out by the UCLA Center for Health Policy Research every year. Logistic regression examined the association between self-reported discrimination in the health care setting and gender stratified by English proficiency. Latina women had a higher odds of reporting discrimination in the health care setting compared to Latino men in both the low English proficiency and the high English proficiency groups even after adjusting for additional sociodemographics. Insurance was not associated with discrimination in the health care setting. Exploratory analyses also assessed these relationships for the aggregate group of Latinx, without stratifying, producing similar findings. Despite the Institute of Medicine's Report published in 2002, "Unequal Treatment: Confronting Racial and Ethnic Disparities

in Health Care”, which highlighted disparities in health care services and established policies and practices to address these inequalities, discrimination in the health care setting remains a reality for communities of color. As discrimination may be a risk factor for several negative health outcomes, health care providers should commit to addressing biases that can exacerbate the health of their patients.

Presenter(s): Alessa Ibrahim, John Montano, and Gabriel Lopez

Major: Physics

Faculty Mentor: Dr. Timothy Usher

Title: *A New Paramagnetic & Piezoelectric Organometallic Material*

Abstract: We have synthesized a new organometallic material that is predicted to be multiferroic. Ferroelectric materials can pave a way to exciting new technologies, such as FRAM. Bis(Diisopropylammonium) Cobalt(II) Tetrachloride, BLUE, is grown from beaker solutions containing; molar solution Cobalt(II) Chloride Hexahydrate(237.93g/L), Hydrochloric Acid (HCL), and Diisopropylamine (DIPA). Crystals can form in small needle like morphology within one week, larger crystals can take two or more months. Its density is 1.309 g/cm³ and melting point is above 130°C. Single crystal x-ray diffraction data gives its symmetry group is C 1 2 1. Dipole strength along each axis (a, b, c) respectively are -7.8541, 99.567, and -56.677 e-Å. The dipole strengths indicates the polar axis along a diagonal, predicted from theory to be 28° off the b-axis. Atomic Force Microscopy testing has shown ferroelectric and piezoelectric results. Weak ferroelectric results are shown by Piezo Force Microscopy imaging a process of “reading and writing” domains onto ferroelectrics, while piezoelectric results are point tested with responses of 5-12 nA and qualitative hysteretic results. The Radiant System testing has shown butterfly curves that indicate piezoelectric responses for different samples of blue, and lemon shaped hysteresis curves due to resistance. Blue samples have shown piezoelectric responses when tested with an electric field that ranges between 5-15 Kv/cm. However,

at the electric field of 11-15 Kv/cm the break down voltage of blue crystals is noted. Further testing is to be conducted on larger crystals and different axes with Atomic Force Microscopy and bulk capacitance testing.

Presenter(s): Jason Jung

Major: Biology

Faculty Mentor: Dr. Stuart Sumida

Title: *Redescription and Phylogenetic Analysis of Materials Associated with “Captorhinikos” chozaensis*

Abstract: “Captorhinikos” chozaensis is a multiple-tooth-rowed captorhinid reptile from the Lower Permian Clear Fork Group, undivided formation. Upon re-examination of the materials associated with the species from both the Chicago Field Museum of Natural History, and the Smithsonian United States National Museum, I reaffirm their affinity and collective identity as a valid taxon. “Captorhinikos” chozaensis does not, however, belong with either of the two members of its genus, C. valensis or “C.” parvus, instead occupying its own branch on the phylogenetic tree of the Captorhinidae. This conclusion is based in strong results from a combined phylogenetic parsimony analysis combined with an analytical apomorphy analysis. I then conclude the current designation “Captorhinikos” chozaensis to be a nomen ambiguum.

Presenter(s): Gurnoor Kaur, Alex Vasquez, and Vianey Zavala

Major: Biology

Faculty Mentor: Dr. Nicole Bournias-Vardiabasis

Title: *Effects of low dose methamphetamine in a Drosophila melanogaster model of traumatic brain injury (TBI)*

Abstract: According to the Centers for Disease Control and Prevention, traumatic brain injury (TBI) contributes to about 30% of all injury-related deaths in the United States. A TBI is caused by a bump or blow to the head that interrupts the normal functioning of the brain. Previous studies have demonstrated methamphetamine efficacy in a rat model with severe TBI. The present

study examined the effects of methamphetamine in a *Drosophila melanogaster* model of TBI. The two *Drosophila* strains that were used in this study are 00C (n = 1300; male) and A β -42 (n = 1300; male.) A β -42 flies express a mutant peptide that results in an Alzheimer's phenotype. 00C serves as the control strain. A β -42 flies were utilized because it has been shown that Alzheimer's may occur as a long-term result of TBI. TBI was induced in 0-1 days old flies using the high intensity trauma (HIT) device. The treatment groups receive methamphetamine (0.06% per day) in a fixed-dose schedule across 25 treatment days. The Lifespan and health-span assays were performed both before and during the treatment. One-way ANOVA results showed that there wasn't a significant effect of methamphetamine on 00C and A β -42 flies with/without TBI for the condition ($p > 0.05$.) In contrast with previous research, our study found that methamphetamine was not effective in improving the TBI condition amongst *Drosophila*. A likely explanation is that a lower dosage of methamphetamine was used. In conclusion methamphetamine, at the state dosage doesn't seem to benefit *Drosophila* with TBI in either strain.

Presenter(s): Andrew Lavengood

Major: Mathematics

Faculty Mentor: Dr. Corey Dunn

Title: *Constant Vector Curvature in 3 Dimensions: A Complete Description*

Abstract: A relatively new area of interest in differential geometry involves determining if a model space has the properties of constant vector curvature or constant sectional curvature. The natural setting in which to begin studying these properties is in 3-dimensional space. This paper in particular examines these properties in the Lorentzian setting, where all Ricci operators take on one of four Jordan-Normal forms. We determine that three of these four model space families (Ricci operators) possess the property of constant vector curvature, and that under an orthonormal basis, only the diagonalizable family has constant sectional curvature, and that is only when the Ricci Operator has precisely one eigenvalue.

By examining these families together, we draw some interesting and unifying conclusions that may be useful for exploring these properties in higher dimensions.

Presenter(s): Gabriel Lopez

Major: Mathematics

Faculty Mentor: Dr. Corinne Johnson

Title: *Modeling Self-Assembled DNA Nanotubes*

Abstract: Emerging laboratory techniques have been developed using the Watson-Crick complementarity properties of DNA strands to achieve self-assembly of graphical complexes. One recent focus in DNA nanotechnology is the formation of nanotubes, which we model with a two-dimensional lattice that wraps around to form a tube. The vertices of the lattice graph represent k-armed branched junction molecules, called tiles. Using concepts from graph theory, we seek to determine the minimum number of tile and bond-edge types necessary to create a desired self-assembled complex. Results are known for certain infinite classes of graphs, but are yet to be found for several other classes. Specifically, results are unknown for lattice graphs which motivates our study of triangle and hexagonal lattice graphs. While some laboratory settings allow for the possibility of the formation of smaller complexes using the same set of tiles, we examine the problem under the restriction that no smaller complete complex may be formed.

Presenter(s): John Montano

Major: Physics

Faculty Mentor: Dr. Timothy Usher

Title: *A New Paramagnetic & Piezoelectric Organometallic Material*

Abstract: We have synthesized a new organometallic material that is predicted to be multiferroic. Ferroelectric materials can pave a way to exciting new technologies, such as FRAM. Bis(Diisopropylammonium) Cobalt(II) Tetrachloride, BLUE, is grown from beaker solutions containing; molar solution Cobalt(II) Chloride Hexahydrate(237.93g/L), Hydrochloric Acid (HCL), and

Diisopropylamine (DIPA). Its density is 1.309 g/cm³ and melting point is above 130°C. Weak ferroelectric results are shown by Piezo Force Microscopy imaging a process of “reading and writing” domains onto ferroelectrics, while piezoelectric results are point tested with responses of 5-12 nA and qualitative hysteretic results. The Radiant System testing has shown butterfly curves that indicate piezoelectric responses for different samples of blue, and lemon shaped hysteresis curves due to resistance. Further testing is to be conducted on larger crystals and different axes with Atomic Force Microscopy and bulk capacitance testing.

Presenter(s): Roland Morales, Jennifer LeDuff, Stephanie Cruz, Rafael Alamilla, and Johnathan Ramirez

Major: Kinesiology

Faculty Mentor: Dr. Sang Ouk Wee

Title: *Ethnic Differences in Arterial Stiffness and Central Blood Pressure Regulation Following High-Intensity Exercise*

Abstract: Cardiovascular Disease (CVD) is a leading cause of death in the U.S. with 610,000 mortalities every year. Arterial stiffness and high blood pressure (BP), especially central BP are independent risk factors of future CVD events. African Americans have the highest prevalence of developing CVD, followed by the Hispanic and white population, and Asians having the lowest risk of developing CVD. Cerebral vascular disease, known as Stroke, is a serious vascular disease that may be caused by the similar risk factors as CVD. Arterial stiffness is associated with cerebral vascular disease and Hispanic population has a high rate of developing cerebral vascular disease. The purpose of this study is to investigate ethnic difference in arterial stiffness and its response to high intensity exercise in young healthy Hispanic and non-Hispanic white adults. Participants will undergo arterial stiffness and hemodynamic measurements, including carotid artery intima media thickness, pulse wave velocity and central BP measurements by ultrasonography, and tonometer,

respectively, before, immediate post, and 30-minute post high intensity exercise. We hypothesize that healthy young Hispanic has similar arterial stiffness compared to non-Hispanic white at rest. The second hypothesis is that Hispanic exhibits higher arterial stiffness and central blood pressure immediate post exercise and 30-minute post exercise, when compared to non-Hispanic white.

Presenter(s): Pedro Medina

Major: Biology

Faculty Mentor: Dr. Laura Newcomb

Title: *Examination of Host Factors to Identify Novel Anti-Influenza Targets*

Abstract: Influenza virus readily undergoes genetic changes so that antivirals and vaccines become ineffective. A novel approach used to treat viral infection centers on targeting host proteins integral for viral replication. I aimed to establish the importance of two host nuclear export factors on influenza RNA expression; XpoT, which exports cellular tRNAs, and Xpo5, responsible for cellular pre-microRNA nuclear export. To do this, I employed siRNA-mediated knockdown. I performed triplicate trials, transfecting siRNA SMARTpools or non-target control for 48 hours on two cell types, A549 and VERO cells. Cells were then infected with influenza A at a high multiplicity of infection for four hours when protein and RNA was isolated. Total RNA concentration was determined using optical density and integrity confirmed using agarose gel electrophoresis. Reverse transcription with oligo dT primers and equal concentrations of total RNA provides cDNA for qPCR analysis with gene specific primers to reveal the relative abundance of specific RNAs. Our results show each siRNA resulted in specific target knockdown, as expected. We discovered there is no significant change in influenza PA or NP total mRNA expression when Xpo5 is downregulated in either cells type. In VERO cells, there was also no significant change when XpoT was downregulated. In A549 cells there was a slight but significant inhibition of NP with XpoT down regulation but no significant change in PA expression. Our results conclude that neither host factor is essential

for influenza total RNA expression. Future directions aim to use this approach to examine additional host factors.

Presenter(s): Damon Mosier

Major: Biology

Faculty Mentor: Dr. Jeremy Dodsworth

Title: *Testing and Validation of a Microfluidic Device and Laser Tweezers for Use in Single-Cell Isolation for Cultivation*

Abstract: Of the many species of bacteria and archaea that are known, few have been successfully grown in pure culture. This is due to a variety of reasons, including the inability of some microbes to grow on solid media or their slow growth rates and low abundance in natural samples. Optofluidic cell sorting, a method for viewing and separating live microbial cells via microscopy, is one technique that can be used to isolate cells for cultivation, but is not often implemented due to the level of difficulty and associated costs. Based on a previous design used for single-cell genomics, a microscope was adapted for single-cell isolation using optical trapping (laser tweezers) and a microfluidic device made from polydimethylsiloxane (PDMS). The goal of this study was to address several concerns associated with this technique: maintaining sterility, preventing cells from sticking to the inner surfaces of the microfluidic device, validating single-cell isolation, and determining cell survival rates. To validate that single, viable cells could reliably be obtained, control sorting experiments were performed using *E. coli*. Confirming that the technique can be reliably applied for isolation of viable microbes allows for use in future studies for isolation of uncultivated thermophiles, including members of the candidate phyla Aigarchaeota, Fervidibacteria, and Caescamantes that are currently maintained in mixed enrichment cultures in the laboratory. Obtaining pure cultures or defined co-cultures of members of these candidate phyla will allow for a better understanding of their metabolic capabilities.

Presenter(s): Jeniree Martinez, Karina Vega, Kevin Kleine, Celina Bravo, and Felix Maya

Major: Biology

Faculty Mentor: Dr. Tomasz Owerkowicz

Title: *Is the caudofemoralis longus muscle the primary driver of crocodilian propulsion?*

Abstract: The caudofemoralis longus (CFL) muscle is assumed to play an important role in crocodilian terrestrial locomotion. Earlier electromyographic studies of the American alligator hind limb musculature found that the CFL muscle is active during the stance phase, and thus acts as the primary retractor and medial rotator of the thigh. Our project uses a surgical approach to test this hypothesis in twelve alligator hatchlings. We performed unilateral tenotomy (severing the distal tendons) on the right CFL muscle to render it non-functional, while the contralateral (left) side was sham-operated. Animals were allowed to recover and grow for three months, at which point surface markers were placed on their hind limb joints (ankle, knee, hip). We filmed their locomotor behaviour at 1000Hz using three high-speed video cameras to allow for track markers and reconstruct hind limb posture kinematics in 3D. Using ProAnalyst software, we analysed differences in joint angles, as well as hip height and stride length at constant-speed strides during level walking. Ground reaction forces by the hind foot were measured using a force plate flush with the walkway surface and analysed with the help of IGOR. Preliminary data suggest no significant differences in hind limb posture between the tenotomised and control sides. This leads us to suggest that the CFL muscle is not a primary driver of crocodilian terrestrial locomotion

Presenter(s): Kelly Muller

Major: Biochemistry

Faculty Mentor: Dr. Becky Talyn

Title: *Toxicologic effects of the glyphosate-based herbicide Roundup® on Canton-S *Drosophila melanogaster* reproductive function.*

Abstract: Glyphosate is the active ingredient in widely used herbicides, including Roundup®. Evidence shows that glyphosate, although effective, is toxic to some organisms and their endocrine systems; however, its

toxicity to humans remains unclear. This study utilized a Canton-S strain of *Drosophila melanogaster* to explore the effects of glyphosate exposure on reproductive anatomy and function. Flies were exposed to organic medium with or without one of two homeowner grade Roundup® formulations containing glyphosate with pelargonic acid or with POEA. Each formulation was administered at glyphosate concentrations of 0.0 g/L, 0.5 g/L, 1.0 g/L, and 2.0 g/L. After 7 days of exposure, the organism's ovaries, oocytes, and spermatheca were dissected and scored, in addition to mortality. Flies exposed to Roundup® with pelargonic acid at 2 g/L experienced decreased survival, a lower concentration than decreased survival when other Roundup® formulations were used. With repeated trials, we expect that this concentration of Roundup® with pelargonic acid will yield the highest mortality rate of *Drosophila*. Literature from studies about other species suggests that glyphosate will decrease *Drosophila* ovary size, number of oocytes, and presence of sperm in the spermatheca. If the expected results are found after the completion of 25 female *Drosophila* dissections per treatment, we will conclude that glyphosate based herbicide in the form of Roundup® is toxic to *Drosophila melanogaster*, specifically affecting reproductive anatomy, function and success.

Presenter(s): Juan Nevares

Major: Computer Science

Faculty Mentor: Dr. Alison Petty Ragguette

Title: *Exploring virtual reality and ceramics*

Abstract: We will be conducting experimentation with ceramics and a virtual reality headset. The Oculus Rift is a cutting edge piece of equipment worn by an artist on their face with sensors attached to their hands to manipulate objects in virtual reality that would not be feasible by traditional methods. The Oculus Rift gives the artist a tactile sensation while manipulating the model which can closely mimic handling actual clay and enable modifications that are not feasible through traditional methods. This is an important addition to our expanding

digital ceramics lab. This project will result in creating 3D prints of student's objects. Learning to use this virtual reality headset will advance our skills in digital ceramics, expand our technical vocabulary, and create more innovative options for ceramics students.

Presenter(s): Kerri O'Keefe

Major: Geology

Faculty Mentor: Dr. Kerry Cato

Title: *Characterization of the 2017 mass movement episode in Snow Creek Canyon, Forest Falls, San Bernardino County, California*

Abstract: A mass movement in Snow Creek Canyon, above the town of Forest Falls, occurred on February 17, 2017. The mass movement rapidly moved downslope and transported large boulders and trees approximately 610 m (2000 ft) down the narrow canyon. The purpose of this study was to characterize the mass movement in terms of materials in motion, moisture content, nature of movement, and rate of movement. The study analyzed historic aerial photographs, ground based imagery and videos, and photos obtained by UAV to understand the mode and velocity of movement. Sediment and rock samples from the source area were analyzed to determine rock type, mineral content, physical weathering and observe signs of historical tectonic activity. Meteorological and seismic databases were accessed to obtain timing and volume of precipitation as well as potential seismic activity before the movement occurred. Previous work that has been conducted within the study area was examined to compare and contrast the findings to the Snow Creek Canyon event. Data collected during the study confirmed the Snow Creek Canyon mass movement was a translational rockfall-debris-slide. The fractured-nature and weathering of the insitu material and the sudden and violent movement contribute to rapid breakdown into sediment that later appears to be remobilized down-canyon into debris flows

Presenter(s): Stephania Ortiz

Major: Chemistry

Faculty Mentor: Dr. Kimberley Cousins

Title: *Predicting Potential Polarization for Novel Fluorinated Diisopropylammonium Bromide (DIPAB) Systems*

Abstract: Diisopropylammonium bromide (DIPAB) is an organic molecular ferroelectric crystal processed from aqueous solution with a spontaneous polarization of 23 C/cm², comparable to the commercially used inorganic ferroelectric barium titanate (BTO). Ferroelectrics are highly desirable for their environment friendly quality and their commercial uses such as electro-optic materials for data storage applications, mechanical flexibility, ferroelectric thin-film memories and actuation. One of the properties of ferroelectric materials is that it exhibits spontaneous electric polarization that can be reversed by an applied electric field. The purpose of this study is to investigate if the ferroelectric properties of diisopropylammonium bromide increases by the replacement of its hydrogen atoms with a more electronegative atom such as fluorine. This task is performed by studying three different methods for calculating atomic charges available in the molecular modeling software Spartan '16, such as electrostatic, Mulliken and natural orbitals for different systems. The geometry of the system used was extracted from the crystal structure for DIPAB. The basis set study was performed by calculating energies and electron densities, using density functional (wB97x-D) theory along with two different basis sets: 6-31G* and 6-311+G**. The data was obtained for ten different molecular systems using both basis sets (6-31G* and 6-311+G**). In order to understand the data, we first focused in analyzing the three different atomic charges assignments methods for the ten systems, examining specifically the calculated charge on the nitrogen atom of the DIPAB system. The difference of the atomic charges of nitrogen atom was determined, between the original structures minus the novel fluorinated system. The Mulliken and natural orbital methods

showed the smallest differences while the electrostatic method gave the largest differences in the systems with fluorine compared to the known system DIPAB. Also, the system with the highest atomic charge difference for all methods, was the one in which all hydrogen atoms were replaced with fluorine, as predicted. In future work, larger clusters of the fluorinated DIPAB systems, along with the entire solid state system will be modelled, to predict if, indeed one or more the fluorinated derivatives will have increased polarization compared to the known system, and therefore increased spontaneous polarization needed for ferroelectric applications.

Presenter(s): Monique Quinn

Major: Biology

Faculty Mentor: Dr. Daniel Nickerson

Title: *Rab gap gyp8: determining function of a green fluorescent protein chimera and location of a gyp8 transmembrane domain*

Abstract: In the model eukaryote *Saccharomyces cerevisiae*, there are 11 Rab GTPase proteins that regulate vesicular transport between membrane-bound compartments (Zerial et al. 2001). Signaling by Rab proteins is determined by whether a Rab is bound to guanosine triphosphate (GTP, active) or guanosine diphosphate (GDP, inactive). Rabs depend on accessory proteins called GAPs (GTPase accelerating proteins) to trigger GTP hydrolysis and return the Rab to its inactive, GDP-bound state. Gyp8 is a mostly uncharacterized Rab GAP in yeast, first reported as a regulator of Rab1/Ypt1 (De Antoni et al. 2002), though the specific identity of the compartment to which Gyp8 localized was not determined. A later study (Sklan et al., 2007) identified a mammalian Gyp8 ortholog, TBC1D20, that acts on Rab1 to regulate traffic between the ER and Golgi. TBC1D20 contains a transmembrane domain that anchors the Rab GAP on membranes, but no study has experimentally investigated whether Gyp8 also contains a transmembrane domain. We sought to determine which cellular compartment(s) in yeast contain Gyp8 and whether Gyp8 is anchored by a transmembrane

domain. We observed a chimera of green fluorescent protein (GFP) fused to Gyp8 co-localizes with markers of peroxisomes, but localization of GFP-Gyp8 shifts to the ER when peroxisomes were eliminated from cells. There may be a previously unknown role for Gyp8 in managing vesicular transport between the ER and peroxisomes. Truncation mutations of GFP-Gyp8 indicate that a C-terminal domain that contains a computationally predicted transmembrane domain is necessary and sufficient for localization of GFP-Gyp8 to peroxisomes.

Presenter(s): Miranda Reid

Major: Kinesiology

Faculty Mentor: Dr. Nicole Dabbs

Title: *The effects of motorized vs. non-motorized treadmill on voluntary oxygen consumption, heart rate and rate of perceived exertion in collegiate cross-country females: A preliminary analysis*

Abstract: PURPOSE: Recently, there has been an introduction of non-motorized treadmills (NMT) in athlete training settings, however there are few studies examining the training benefits of non-motorized treadmills. Therefore, the purpose of our study was to compare the effects of a motorized treadmill (MT) versus a NMT on the volume of oxygen consumption (VO₂), heart rate (HR) and rate of perceived exertion (RPE). METHODS: Eight female cross-country Division II athletes participated in 3 testing days, consisting of one familiarization, and two testing days. Speed was recorded each minute for walk and jog trial during familiarization, then averaged for testing trials speed. Paired sample t-tests were used to analyze the difference in means between NMT and MT during steady state in walking and running for VO₂, HR, and RPE. RESULTS: There was significant differences for both walking ($p < 0.001$) and running ($p = 0.003$), where NMT VO₂ was significantly greater than MT. There were significant differences for both walking ($p < 0.001$) and running ($p < 0.001$) for HR with being greater than MT. There were also significant differences for both walking ($p = 0.001$) and running ($p = 0.001$) RPE with NMT being greater. CONCLUSIONS: These results indicate that VO₂

consumption, HR, and RPE are higher when walking and jogging on the NMT. The increased VO₂ and HR are physiological markers of increased workload, while the increased RPE shows the participants perceived intensity was higher on the NMT. It is likely that the curve of the NMT influences users to forefoot strike, activating more muscles and potentially improving running form.

Presenter(s): Joshua Robert Dimapilis

Major: Biology

Faculty Mentor: Dr. Jeremy Dodsworth

Title: *Characterization of the Nitrogen-fixing, Hyperthermophilic Methanogen Methanocaldococcus strain FS406-22*

Abstract: Methanocaldococcus FS406-22 is a methanogenic archaeon that was previously isolated from a deep-sea hydrothermal vent. It was experimentally determined to perform nitrogen fixation at 92°C, 28°C higher than the previously known upper temperature limit of biological nitrogen fixation. The initial study reporting strain FS406-22 characterized its growth rates at different temperatures under nitrogen fixing conditions, but a thorough characterization has yet to be determined. This study aims to further characterize FS406-22 using phenotypic tests and comparative genomic analysis, so that it can be formally described as a new taxon. Growth characterization of FS406-22 included determining pH range, utilization of potential electron donors other than molecular hydrogen, and specific growth rates at different temperatures. These tests performed under ammonia grown conditions further physiologically distinguish FS406-22 from other Methanocaldococcus species. Growth under ammonia grown conditions was observed between 60°C and 92°C with optimal growth at 85°C and 87.5°C (doubling time 40 minutes), and growth under nitrogen fixing conditions was not observed above 90°C. FS406-22 grew between a pH of 4.5 and 6.5. Formate is utilized as an alternate carbon substrate. The genome sequence of FS406-22 consists of a 1.76 Mb circular chromosome and a 12.2 kb plasmid. The genome of FS406-22 shares between 28.3-33.5% in silico DNA-DNA

cross-hybridization (DDH) to all other described species in the genus *Methanocaldococcus*, indicating that FS406-22 represents a distinct species (<70% DDH). This work paves the way for study of the genetics and biochemistry of nitrogen fixation at high temperatures.

Presenter(s): Rachele Rapanut, Nick Ruelas, and Chiwon Kang

Major: Kinesiology

Faculty Mentor: Dr. Guillermo Escalante

Title: *Blood Flow Restriction Improves Vascular Circulation*

Abstract: Purpose - The present study aimed to investigate the effects of low-intensity resistance training with blood flow restriction (BFR resistance training) on vascular endothelial function and peripheral blood circulation. Methods - Forty healthy elderly volunteers aged 71 ± 4 years were divided into two training groups. Twenty subjects performed BFR resistance training (BFR group), and the remaining 20 performed ordinary resistance training without BFR. Resistance training was performed at 20 % of each estimated one-repetition maximum for 4 weeks. Measurements were taken for lactate (Lac), norepinephrine (NE), vascular endothelial growth factor (VEGF) and growth hormone (GH) before and after the initial resistance training. Results - Lac, NE, VEGF and GH increased significantly from 8.2 ± 3.6 mg/dLm, 619.5 ± 243.7 pg/mL, 43.3 ± 15.9 pg/mL, and 0.9 ± 0.7 ng/mL to 49.2 ± 16.1 mg/dL, 960.2 ± 373.7 pg/mL, 61.6 ± 19.5 pg/mL and 3.1 ± 1.3 ng/mL, respectively, in the BFR group (each $P < 0.01$). RHI and Foot-tcPO₂ increased significantly from 1.8 ± 0.2 and 62.4 ± 5.3 mmHg to 2.1 ± 0.3 and 68.9 ± 5.8 mmHg, respectively, in the BFR group (each $P < 0.01$). VWF decreased significantly from 175.7 ± 20.3 to $156.3 \pm 38.1\%$ in the BFR group ($P < 0.05$).

Presenter(s): Sarah Rodriguez

Major: Biochemistry

Faculty Mentor: Dr. Kimberley Cousins

Title: *Method for Screening New Charge Transfer Organic Ferroelectric Systems*

Abstract: The goal of this study is to develop a method to screen for new charge transfer organic ferroelectric systems utilizing user friendly software. Ferroelectric materials have a switchable dipole in the presence of a sufficiently coercive electric field. Traditional ferroelectrics have varied applications such as solid state memory and capacitors. However, they can be toxic and brittle. In recent years, organic ferroelectrics have been an exciting area of research in materials science because they can be more flexible and alleviate the environmental impact of traditional ferroelectric materials. There are several types of ferroelectric materials; this study specifically examines electronic ferroelectrics. The charge transfer (CT) systems are studied as dimers with one molecule acting as an electron donor while the other accepts electron density. To find new organic CT systems with the potential for ferroelectricity, the study began with tetrathiafulvalene chloranil (TTFCAN), a reported electronic ferroelectric. Database searches were performed to find TTFCAN analogs and the CT monomers they pair with. SPARTAN '16 was used to quantify the charge transfer of TTFCAN, as well as dimers identified via the database search, using a difference in partial atomic charges between dimer and monomer molecules. There is a tentative linear correlation between the calculated charge transfer using SPARTAN '16 and the reported remnant polarization of known organic charge transfer ferroelectric systems. In future work, crystallization and study of the systems which show comparable charge transfer to TTFCAN will be used to confirm the accuracy of predictions using this method

Presenter(s): Johnathan Ramirez and Darren Favela

Major: Kinesiology

Faculty Mentor: Dr. Nicole Dabbs

Title: *The Acute Effects of Mini-Trampoline Jumping On Jump Performance in Recreationally Trained Individuals*

Abstract: The purpose of our investigation was to determine the acute effects of jumping on a mini-trampoline to improve vertical jump performance. **Methods:** Twenty-one recreationally trained college students volunteered for two testing days. Day one, participants signed the IRB approved informed consent and were randomized into one of two groups, control group (CG) or trampoline group (TG). Participants completed a dynamic warm up and were familiarized with all countermovement vertical jumps (CMVJ) procedures. On day two, participants completed dynamic warm-up followed by three pre CMVJ's. The TG then completed six CMVJ on the trampoline as high as possible whereas the CG rested for 20s before having to immediately complete post CMVJ's and were reassessed every minute up to 5mins. A group by time mixed factor ANOVA was used to compare group and times differences for each dependent variable. **Results:** There was no significance ($p > 0.05$) interaction of time and groups for all dependent variable. There was no significant ($p > 0.05$) effect of time for peak force, peak velocity, rate of force development, and no significant ($p > 0.05$) group effect for all the variables. However, there was a significant ($p < 0.001$) time effect for vertical jump height, where baseline condition was significantly ($p < 0.05$) less than all other time points. **Conclusion:** These results suggest that although no group differences were found, there was an increased VJH from baseline measures, indicating a learning effect over time. Incorporating the mini-trampoline into an individual's daily routine will not hinder performance and may have similar effects as another form of warm-up.

Presenter(s): Sajida Sayed

Major: Biology-Premed

Faculty Mentor: Dr. Daniel Nickerson

Title: *Constitutive signaling by an endosomal Rab5 isoform causes lipid metabolism dysfunction and 'obesity' in *S. cerevisiae**

Abstract: Yeast cells build lipid droplets (LDs) in anticipation of starvation. LDs consist of amphipathic lipid monolayers surrounding a neutral lipid interior. Surface proteins allow lipid droplets to dock with other cellular compartments, but the unusual structure of LDs prevents compartments from fusing together. Instead, LDs are thought to dock with other organelles in order to enable lipid exchange between organelles. Identifying the proteins that mediate interactions between LDs and other organelles is a priority for understanding lipid metabolism and transport. The Rab GTPase Vps21 (yeast ortholog of human Rab5) controls endosomal tethering and vesicle fusion. In the signaling-active, GTP-bound state, Vps21 interacts with a set of effector proteins that function as endosome membrane tethers. The Vps21 mutant Vps21Q66L cannot hydrolyze GTP and is therefore 'locked' in the active, GTP-bound state and (it is thought) locked in interactions with effector protein tethers. We analyzed yeast cells expressing signaling-active Vps21Q66L using quantifiable enzyme-coupled endosomal cargo transport assays (e.g. CPY-invertase and Sna3-FLuciferase) and were surprised to find little to no misregulation of endosomal cargo transport. However, we observed vps21Q66L mutants display a pronounced cellular growth defect compared to wild type VPS21 cells. Because the vps21Q66L growth defect first as yeast exit logarithmic phase and should begin adaptation to starvation conditions, we investigated whether or not vps21Q66L mutants correctly build LDs. Using the LD marker Erg6-GFP, we observed by fluorescence microscopy that vps21Q66L mutants display higher LD signal than wild type cells, and vps21Q66L LDs possess an aberrant, distended LD morphology. Biochemical analysis (gas chromatography-mass spectrometry) of lipid content from vps21Q66L mutants indicates

an 'obese' phenotype in which cells accumulate an overabundance of neutral lipids. These phenotypic data suggest a new link between Rab signaling at endosomes and cellular lipid metabolism. Ongoing studies are investigating whether the obese phenotype is a result of increased synthesis of neutral lipids or slower consumption. Also, we are pursuing both genetic and biochemical approaches to identify proteins that interact with GTP-bound Vps21 to trigger aberrant lipid metabolism and LD morphology.

Presenter(s): Joel Salazar

Major: Mathematics

Faculty Mentor: Dr. Min-Lin Lo

Title: *Radio Number for Ninth Power Paths*

Abstract: Let G be a connected graph. The distance between two vertices u and v in G is defined by the length of the shortest path in G between u and v , which we denote $d(u,v)$. The diameter of G , denoted $\text{diam}(G)$, is the maximum distance between any two vertices in G . A radio labeling of G is a function f that assigns each vertex a distinct non-negative integer such that $|f(u)-f(v)|$ greater than or equal to $[\text{diam}(G)-d(u,v)+1]$ holds for any two distinct vertices u and v in G . The span of f is the difference between the largest and smallest channels used. The radio number of G , denoted $\text{rn}(G)$, is defined as the minimum span of all radio labelings of G . f is said to be an optimal radio labeling of G if the span of f equals the radio number of G . The ninth power of G is a graph constructed from G by adding edges between vertices of distance nine or less apart in G . We will deal with finding the radio number for ninth power n -vertex path graphs.

Presenter(s): Margarita Serrano

Major: Kinesiology

Faculty Mentor: Dr. Hyun-Kyoung Oh

Title: *Muscle Strength and Endurance in Individuals with Cystic Fibrosis*

Abstract: More than 30,000 people in the U.S. live with Cystic Fibrosis (CF) that is a known of. CF is a non-contagious medical disease characterized by its inability to maintain a clear air pathway due to the loss of pulmonary function caused by abnormal production of mucus. The objective of this study to review literatures related muscle strength and endurance of individuals with CF. Further, establishing an effective study protocol for the future study. Recent studies examined healthy individuals and CF patients' muscle strength and endurance by measuring respiratory and peripheral muscle strength, examining other pulmonary function parameters such as FEV1, total lung capacity and airway resistance (Vendrusculo, Heinzmann-Filho, Piva, Marostica, & Donadio, 2016). However, individuals with pseudomonas aeruginosa and reduction of FEV1 show no difference when resembled with healthy subjects. Researchers found that there was not a significant difference in endurance found in individuals with CF and individuals who are healthy. The findings on the various research done on CF seems controversial. Similarities between muscle endurance and strength between healthy individuals and patients with CF are shocking due to how it would be expected that people with CF are weaker in some aspects. However, even people suffering from CF can be physically active and live a much more stable life. More research is needed for a better understanding of inspiratory muscle strength and endurance that could contribute to the development of earlier preventive measures and help in the therapeutic intervention process in CF.

Presenter(s): Hau Tao

Major: Computer Science

Faculty Mentor: Dr. Qingquan Sun

Title: *Study on the Pattern Recognition Enhancement for Matrix Factorizations with Automatic Relevance Determination*

Abstract: Machines learning the parts of objects have become more attention in computer science recently, and they have been playing the important role in computer applications such as object recognition, self-driving cars, and image processing, etc... However, the existing research such as traditional non-negative matrix factorization (NMF), principal component analysis (PCA), and vector quantitation (VQ) [1] has not been discovering the ground-truth bases which are basic components representing objects. For example, in face recognition application, it is supposed that a human face is composed of four basic components: mouth, nose, eyes, and eyebrows that are ground-truth bases to represent a face. If an algorithm could discover correctly four above components, it can represent a face. In contrast, if an algorithm extracts components rather than four, it means that a face is composed by other parts that are not intrinsic features [2]. Indeed, PCA and VQ only discovered a whole face instead of ground-truth bases while traditional NMF discovered basic components that are redundant. In practice, an algorithm fails to extract basic components leading to not recognize correctly objects, not detect motions in video, and camera processing. If it is applied in real time applications: self-driving car, face recognition, it will cause serious issues related to security and safety. Therefore, finding correctly the number of ground truth bases is significant in extracting the hidden structures of investigated data, and improving a performance.

Presenter(s): Saxxie Tran, Maricela Torres, Erika Giron, Bianca Castro, Jayme Ung

Major: Nursing

Faculty Mentor: Dr. Claudia Davis

Title: *Sad Dads a Literature Review*

Abstract: Background: Paternal Postpartum Depression (PPD) is a relatively new phenomenon in the realm of health, specifically mental health. Depression for men is a component of health that needs to be further researched. The postnatal period is vital in children's development, as well as the health of the family as a unit. Paternal PPD is closely associated with maternal PPD, putting infants at greater risks for negative outcomes. The objective of this literature review is to gain a comprehensive understanding of what current literature reveals about this phenomenon. Methods: Using a systematic approach, we searched CINAHL, PubMed, and PSYCHinfo databases for articles published between 2012 to 2018. Key words included: postpartum/postnatal depression, treatment, paternal effects, wellness, family, child outcomes, men/father, and mental health. A critical appraisal of each article was conducted, totaling 32 retrieved and 17 utilized. Results: Results revealed that PPPD does occur and parents experiencing PPD correlated with negative long-term effects of children. There is a 24-50% chance of one parent developing depression, if the other parent already has depression. The Edinburgh Postnatal Depression Scale (EPDS) may produce contradictory results as it was validated on women but appears to be unreliable on men. Risk factors to developing Paternal PPD include: culture, social economic status, marital status, employment, biology, and health care providers' role in educating parents. Conclusion: Limited research on this topic shows a gap in the literature. PPPD is misunderstood, leading to misdiagnosis. Development of a valid scale for fathers is needed as well as additional research.

Presenter(s): Jose Uribe

Major: Chemistry

Faculty Mentor: Dr. Kimberley Cousins

Title: *Croconic Acid: Surface and Electric Field Influence on Deposition*

Abstract: Crystalline croconic Acid (CA) has been the focus of study due to its ferroelectric properties. In this study, croconic acid was modelled in combination with efforts to extend this function to thin films. Originally, CA properties were studied on an ideal silica surface, and models were developed to explain the fundamental differences in deposition properties on silica, with and without an applied electric field. The calculations provided theory to support the experimental observation of needle-like structures that CA forms in the absence of an electric field, while an ordered thin film forms with a strong electric field. Plane wave density functional theory within the VASP program was used to calculate surface structures. Recently, the models were extended to CA on other surfaces of interest to experimentalists. In the study of CA on gold with an initial canted motif and a strong electric field, croconic acid tries to keep itself in a canted motif during its movement across the gold surface. This is consistent with the polarization behavior observed by experimentalists. The opposite is true in the absence of a field, where the molecule moves more neutral to the surface, with no specific orientation. This agrees with previous experimental work, in which no polarization was observed, because of the cancellation of molecular dipoles due to flat dimerization of CA in respect to the gold surface. To further our study of CA on a silica surface, a hydrogenated silicon dioxide surface, more similar to the experimental sample, was used as the insulating surface. This was done to observe the hydrogen bonding behavior of CA under the presence or absence of an electric field. Relative energies were calculated among the reactive sites of CA to observe the favored motif and how it affects the dimerization of the molecule to form an ordered thin film.

Presenter(s): Lauren Vasquez

Major: Biology

Faculty Mentor: Dr. Michael Chao

Title: *Utilizing CRISPR to visualize the dopamine receptors DOP-1 and DOP-4 in *Caenorhabditis elegans**

Abstract: Dopamine (DA) is a neurotransmitter with many important functions including movement, reward, and cognition. Studying dopamine signaling at multiple levels allows us to understand the underlying pathologies of dopamine-related disorders. We study dopamine in the nematode *Caenorhabditis elegans* because of its relatively simple and well-characterized nervous system. Prior studies have shown that DA is involved in regulating chemosensory behaviors in *C. elegans*. The purpose of this research project is to definitively answer the following question: are the dopamine receptors DOP-1 and DOP-4 expressed in chemosensory neurons? Previous research suggested that neither of these receptors are located in neurons in the chemosensory response circuit (Sugiura et al., 2005), although behavioral assays involving knockouts of the genes encoding these receptors showed behavioral deficits (Ezcurra et al., 2011). Classic transgenic techniques, such as those used originally to visualize the locations of dopamine receptors, involved injecting plasmid DNA containing promoter-reporter gene fusions into worm gonads to be expressed in offspring (Mello et al., 1991). However, these reporter genes may exhibit different expression patterns than endogenous genes. We will attempt to circumvent this problem with a gene knock-in (or gene replacement) approach. By using CRISPR/Cas9 technology to target the *dop-1* and *dop-4* genes encoding their respective dopamine receptors, I will replace the coding sequence of these genes with that of a reporter gene to visualize where exactly these genes are expressed in their native chromosomal context, with specific attention to neurons involved in chemosensory behavior.

Presenter(s): Kathryn VonSydow

Major: Geology

Faculty Mentor: Dr. Joan Fryxell

Title: *Evidence for Cold, Hydrous Parental Magma on Dominica: Petrology of the Foundland Basalts*

Abstract: Dominica is dominated by andesite, dacite, and ignimbrite deposits. Foundland, in the southeast, is dominated by basalt flows, which are likely the most primitive magmas on Dominica. Here, we conducted a study of field relations and detailed petrology of those basalts. Each sample from Foundland is saturated in the same phases: plagioclase + clinopyroxene + titanomagnetite \pm ilmenite \pm olivine \pm orthopyroxene. Sample FB-9 also contains highly reacted amphibole. Most samples are porphyritic with phenocrysts of plagioclase and clinopyroxene. Compared to other basalts on the island, the basalts of Foundland contain little to no olivine. Plagioclase composition ranges from An60 to an extraordinarily calcic An97. The absence of olivine as a phenocryst phase and the presence of anorthite-rich plagioclase, in the context of phase equilibrium experiments on basaltic liquids from the literature, suggest that this phase assemblage is consistent with cold pre-eruptive temperatures (\sim 1000 $^{\circ}$ C) and elevated H₂O contents (\geq 6wt%). Moreover, the sample containing the most calcic plagioclase also featured large grains of reacted amphibole, further supports these basalts having formed under extremely hydrous conditions. The phase assemblage of Foundland basalts is compared with a series of mafic to intermediate magmas erupted in the northern part of Dominica, proto-Morne aux Diabes (pMAD); an outstanding question in the literature is whether both eruptive events had the same source. Samples from both pMAD and Foundland contain amphiboles, little to no olivine, and an abundance of pyroxene, which suggests that magmatism in both Foundland and pMAD originated from a similar cold, hydrous source.

Presenter(s): Chad Wagner

Major: Geology

Faculty Mentor: Dr. Kerry Cato

Title: *Debris Flow Recurrence On The Upper Snow Creek Alluvial Fan, Forest Falls, San Bernardino County, California*

Abstract: Forest Falls, California is subject to destructive debris flows due to the town being built upon a large alluvial fan at the base of a steep mountain slope. During monsoon storms, characterized by extreme, short-duration, rainfall events, the area is subjected to floods and debris flows. Previous work has documented that monsoon events occur on average every 3.5 years, but damaging debris flows occur less frequently, perhaps with returns every decade or longer. The purpose of this study was to characterize debris flow deposition on the upper alluvial fan in terms of change over time. Using modern and historical photographs along with recorded data, one alluvial fan was mapped to determine how the distributary debris-flow channels occur and change over time and, importantly, how these channel patterns and deposition establish a feedback loop that influence the location and patterns of future stream courses. There is evidence of the existence of older channels that no longer flow due to newer debris flows overtopping levees and creating new channels. Results suggest that

Social & Behavioral Sciences



Presenter(s): Julian Acuna

Major: Archaeology

Faculty Mentor: Dr. Guy Hepp

Title: *Early Formative Period Exchange, Crafting, and Subsistence: An analysis of La Consentida's chipped stone assemblage*

Abstract: The primary concern of this research is to quantify and analyze the lithic (chipped stone) assemblage previously excavated by Hepp (2015) at the archaeological site of La Consentida in Oaxaca, Mexico. The lithic assemblage is comprised mainly of obsidian and chert. Both materials were widely used in the ancient world for tool manufacture. The artifacts I propose to examine are crucial to determining the economic practices of this Early Formative period (2000–1000 B.C.) site. Generating data from these artifacts requires the analysis of over 500 lithics comprising various methods including physical measurements, provenience information, artifact classification, and manufacturing techniques among many other analysis (approximately 20 variables in total). Ascertaining how lithic artifacts were distributed throughout the site will help expand current understandings of Early Formative period exchange, crafting, and subsistence practices. Furthermore, these results may have implications for developing our understanding of social organization at the earliest known settled village in coastal Oaxaca. Preliminary analysis of the lithic assemblage resulted in being able to relate chipped stone, ceramic, and

ground stone artifact use in specific areas of the site. Additionally, the association of various artifact types within the same contexts may reveal specialized activities (i.e. subsistence or crafting) conducted in designated areas and may also expand current understandings of daily life at La Consentida.

Presenter(s): Adam Beam and Christopher Mendez

Major: Psychology

Faculty Mentor: Dr. Joseph Wellman

Title: *Masculinity Threat Increases Bias and Negative Anticipated Emotions towards Gay Men*

Abstract: Threats to masculinity have been suggested to promote anti-gay attitudes and discrimination among men. We examine how threats to masculinity impact heterosexual men's evaluation and anticipated emotion response to a masculine or feminine target who is either gay or straight. Study 1, heterosexual males completed a "personality test" and either received masculinity-threatening feedback or no feedback. There was a significant 3-way interaction (threat x sexuality x masculinity/femininity) which suggested that, when threatened, heterosexual men evaluated the feminine gay men less favorably and expressed greater anticipated negative emotions when thinking about interacting with him relative to the no threat condition. Anticipate emotions mediated the negative evaluation of the feminine gay target. Study 2, replicates

our results and shows that a self-affirmation eliminated the negative response. Study 3, demonstrated that findings were specific to gay male targets and did not replicate when examining lesbian targets. Implications for masculinity threat and stereotype congruency theory are discussed

Presenter(s): Javeen Beard

Major: Psychology

Faculty Mentor: Dr. Michael Lewin

Title: *The Relationship between Early Maladaptive Schemas and Depression: The Mediation Role of Psychological Inflexibility*

Abstract: Cognitive models of psychopathology have become ubiquitous in the clinical literature and have led to the proliferation of cognitive therapies for numerous psychological disorders. A more recent model, the Schema Model (Young, et al., 2004) proposes that negative early developmental experiences (e.g., dysfunctional parenting, abuse, trauma) leads to the development of Early Maladaptive Schemas (EMS) which serve as a cognitive vulnerability mechanism through which future life experiences are viewed negatively. Although the relationship between EMS and depression has received much attention in the literature, less is known about the potential mechanisms for this relationship. In the current study, we proposed a model in which the relationship between EMS and depression is indirect and mediated by psychological inflexibility (i.e., low acceptance, low commitment and cognitive fusion). Participants consisted of undergraduate students who completed the Schema Questionnaire (SQ-SF3; Young, 2003); Acceptance and Action Questionnaire-II (AAQ; Bond, et al., 2011); Committed Action Questionnaire (CAQ-8; McCracken et al, 2014), Cognitive Fusion Questionnaire (CFQ; Mahony, 2016) and the Center for Epidemiological Studies Depression Scale (CESD; Radlof, 1977). Results revealed that EMS and depression symptoms are related ($r = .57, p < .001$) and results of parallel mediation analyses using PROCESS (Hayes, 2008) revealed that EMS—depression model ($R^2 = .65; F(4, 135) = 63.05, p < .001$) was mediated by

psychological inflexibility [95% CI: LL = .05, UL = .18] and cognitive fusion [95% CI: LL = .04, UL = .12]. Implications for future research and psychotherapeutic interventions will be discussed.

Presenter(s): Shirley Begay and Jennifer Wilczynsk

Major: Social Work

Faculty Mentor: Dr. Deirdre Laneskog

Title: *Barriers to Recruiting Native American Foster Homes in Urban Areas*

Abstract: It was the intention of this study to gain a better understanding of the current practice of, and barriers specific to, recruiting Native American foster homes in urban areas. It was predicted that themes in barriers would include historical, cultural, and bureaucratic factors. The qualitative design was chosen for this research due to the very limited literature on the topic. Using a semi-structured interview guide, the researchers interviewed approximately 10 individuals who were currently employed within a foster family agency, county agency, or partner agency servicing the Los Angeles or San Francisco Bay Areas and whose responsibility it was to recruit foster homes. The research exposed a serious deficiency in the recruitment of Native American foster homes throughout all agencies interviewed and identified several obstacles faced by Native Americans who attempt to become foster parents. The results from this study have the potential to influence changes in policy and guide future recruitment efforts.

Presenter(s): Eric Berru and Alana Muller

Major: Psychology

Faculty Mentor: Dr. Joseph Wellman

Title: *Perceived Weight Discrimination Predicts Exercise and Unhealthy Food Frequency among White but not Latina Women.*

Abstract: Often issues of weight stigma are examined among White women. Given this it is uncertain if ethnic minority women will demonstrate similar responses

to White women. In the current study we examine how perceptions of weight discrimination relate to exercise goals, self-reported exercise, and self-reported consumption of unhealthy food. A sample of undergraduate students was collected as part of a larger project on student health and well-being. Perceived weight discrimination was positively related to exercise goals ($b=.35$, $p=.01$) but negatively related to exercise behavior ($b=-.36$, $p=.03$) among White women. Additionally, among White women, perceived weight discrimination was related to increase self-reported consumption of unhealthy foods ($b=.20$, $p=.001$). None of these relationships however emerged among Latina women ($p>.63$). This data is important as it suggest that greater research examining possible racial/ethnic differences in the impact of experiences of weight discrimination among women.

Presenter(s): Natascha Bolden

Major: National Security Studies

Faculty Mentor: Dr. Gisela Bichler

Title: *Information and Communication Technologies (ICT) and Violent Extremism in the Middle East: A Complex Systems Analysis of Loyalty and Intransigence*

Abstract: Internet Communication Technologies (ICT) are changing the way that people learn, do business, build relationships and manage their lives. The interaction between governing systems within a state and the residents within that state are considered complex adaptive systems (CAS). Thomas Homer-Dixon (1999) asserts that CAS are primarily driven by feedback mechanisms that determine the nature of the activity while perpetuating interactions within the system. The collection of states in the Middle East regulated by the Gulf Cooperation Council (GCC), including Qatar, have been especially adept at engaging the world and each other through the internet. This interplay constitutes a complex adaptive system, where one mechanism (the internet) interacts with a diverse population, resulting in emergent outcomes. Civilians under the leadership of oppressive regimes are finding new ways to solve

problems of corruption, poverty, unemployment and opportunity constraints. This fluidity of thought in problem solving, innovation and creative reform is due, in part, to a global culture that regularly utilizes ICT's. There are, however, those who remained fixed; unwilling to shape new policies to accommodate a new psychosocial, global and technological landscape. This study examines the correlation between ICT's, education, unemployment and propensity to resort to violence in response to oppression through the lens of loyalty (fixed perspectives aligned with oppressive governance) and 'relative' intransigence against loyalist perspectives that reflect fluidity and openness to experience aligned with healthy reform. It also tests Thomas Homer-Dixon's approach to examining complex adaptive systems (CAS) using Social Network Analysis and Social Ecology Theory.

Presenter(s): Kaela Bonafede

Major: Psychology

Faculty Mentor: Dr. Kelly Campbell

Title: *The Impact of Optimism on Relationship Commitment*

Abstract: The present study examined whether dispositional and relationship-specific optimism mediated the association between the Investment Model predictors of satisfaction, investment size, and quality of alternatives, with relationship commitment. Optimism is positively associated with a variety of intra- and interpersonal outcomes including good physical and psychological health, life satisfaction, and relationship satisfaction with relatives and co-workers. The effect of optimism on romantic relationships is relatively understudied, yet is worthy of investigation given its demonstrated positive outcomes in other domains. This leads to the question: How does optimism affect the persistence of romantic relationships? Participants were recruited using SONA Systems, an online participant management tool. They had to be at least 18 years old and currently involved in a committed romantic relationship in order to participate. Participants

(N = 180) completed an online survey that included the Revised Life-Orientation, Relationship-specific optimism scale, the Investment Model Scale, and demographic questions. Participants then completed a three-month follow-up survey to assess their current relationship status and commitment level. We found support for one of our hypotheses; the association between the investment model predictors and commitment was partially mediated by relationship-specific optimism. Dispositional optimism did not mediate the investment model associations. We found a positive correlation between both types of optimism—relationship and dispositional—with commitment at Time 2 suggesting that optimism bolsters romantic relationship persistence. The findings are discussed using social exchange theory and concepts from positive psychology.

Presenter(s): Brittney Boyd and Citlalik Figueroa

Major: Criminal Justice

Faculty Mentor: Dr. Gisela Bichler

Title: *The Quest for Entity Resolution*

Abstract: Stopping gang violence is important for people living in communities suffering from entrenched gang conflict. Understanding how violence spreads through social networks, improves focused-deterrent tactics aimed at reducing conflict and improving public safety. Efforts to apply social network analysis (SNA) to violent conflict, however, are challenged by the difficulties associated with assembling relational information. The purpose of our research is to solve issues concerning entity resolution to generate more complete networks, specifically those representing gang violence. We demonstrate how a two-step sampling process, beginning with focal seed gangs and expanding with a search of secondary gangs found in connection with those in step one, can generate more information. This presentation provides an integrated approach for how the methodological limitations can be addressed.

Presenter(s): Natalie Callely

Major: Psychology- Clinical Counseling

Faculty Mentor: Dr. Christina Hassija

Title: *Examining the Role of Existential Anxiety and Posttraumatic Growth within Sexual Assault Survivors*

Abstract: Posttraumatic stress disorder (PTSD) and posttraumatic growth (PTG) are common outcomes after exposure to a traumatic event. Existential anxiety (EA) involves apprehension regarding purpose of life and death and may be associated with posttraumatic experiences. Although existential anxiety has been studied in relation to PTSD, it has yet to be looked at in regards to PTG. Prior research suggests that existential anxiety is differentially associated with psychological symptoms (Scott & Weems, 2012). The purpose of the current study is to examine the role of EA and PTG in sexual assault survivors. Participants (n = 95) were recruited from undergraduate psychology courses for the present study. Participants were prescreened to determine sexual trauma history using an online mass testing procedure. Eligible participants were invited to participate in the present study where they were asked to complete the Existential Anxiety Questionnaire (EAQ; Weems et al., 2004), the PTSD Checklist for DSM-5 (PCL-5; Weathers et al., 2013), and the Posttraumatic Growth Inventory (PGI; Tedeschi & Calhaun, 1996). Analyses revealed a positive correlation between EA and PTSD symptoms, $r = .50$, $p < 0.01$. Additionally, a positive correlation was found between PTG and PTSD symptoms, $r = .22$, $p < 0.05$. After looking at specific factors of PTG, it was found that Spiritual Change significantly predicted existential anxiety ($\beta = .44$, $p < .05$). Perhaps survivors experiencing a change in spirituality may experience existential anxiety, which may lead to growth after trauma.

Presenter(s): Claudia Castaneda

Major: Political Science

Faculty Mentor: Dr. Jennifer Alford

Title: *Resilient CSUSB Water Conservation and Resource Management Strategies*

Abstract: As the global human population grows, it will become increasingly important to understand how humans manage natural resources for current and future generations. The management of water resources is of growing concern because water supports atmospheric, aquatic and lithospheric resources that sustain human, ecological and biological functions. Regions with relatively dry climates and growing human populations, such as San Bernardino, represent challenging settings for addressing water resource management. California State University at San Bernardino (CSUSB) is located near the headwaters of the Santa Ana River Basin; the most populated river basin in southern CA that traverses numerous biological, urban and rural communities as it flows from the mountains to the Pacific Ocean. In an effort to address CSUSB's impact on Earth systems, a comprehensive sustainability plan, Resilient CSUSB, was developed to reduce the university's strain on environmental resources, while simultaneously working to improve consumer behavioral patterns through education and research based programs. One of the preliminary strategies of the plan was to establish a baseline regarding the consumption of water resources. As part of this strategy, a water audit was implemented to identify the types of water usage on campus, and their relation to aquifer and municipal water resources to develop possible strategies to educate the community on ways to reduce water consumptive activities on campus. Findings suggest that water consumption activities (i.e. landscaping, drinking water, etc.) are highly variable over time and failure in infrastructure has resulted in activities that are not conducive in promoting water conservation.

Presenter(s): Jessica Clemons

Major: Psychology- Industrial Organizational

Faculty Mentor: Dr. Kenneth Shultz

Title: *Investigating Work Engagement and Affective Commitment Through Work Underload and Work-related Boredom*

Abstract: Previous research on workload has overwhelmingly approached work underload as unidimensional focusing on either repetitive monotonous tasks or the employee's perception of their current workload. Literature has focused on work related outcomes, such as job engagement and organizational commitment, as consequences of those perceptions. Recently, work related boredom has been measured alongside work underload as precursors to aforementioned outcomes. This current study will investigate if a recently developed more complex, multidimensional scale of work underload, including desire for more work and expectation of more work, will better explain the relationship between perceived work underload, and work related boredom, job engagement, and affective organizational commitment. Participants will be recruited from the MTurk and will include full time working adults from around the United States. Hierarchical multiple regressions will be conducted to test for significant changes when desires and expectations are added to a model with perceived work underload. Furthermore, this study will examine the mediating effect of work related boredom between the multidimensional work underload scale and job engagement and affective organizational commitment. Implications from this study could suggest whether researchers should consider the effects of desires and expectations along with perceptions of workload. In practice, these results could emphasize the importance employee's expectations and desires play in how they perceive their job, particularly when they are experiencing work underload.

Presenter(s): Koressa Castillo

Major: Social Work

Faculty Mentor: Dr. Deirdre Lanesskog

Title: *Client-Worker Linguistic Matching at a California Child Welfare Agency*

Abstract: Client-Worker Linguistic Matching at a California Child Welfare Agency Koressa Castillo Abstract With the growing presence of Latino families across the United States, service providers must remain cognizant of this group's unique sociocultural characteristics. Culturally competent service provision requires child welfare professionals to remain aware of the stressors often faced by this population. Immigration and acculturation issues, language and cultural barriers, poverty, discrimination, fear of deportation, and lack of access to a variety of services are a few of the stressors that are commonly experienced by this group. Linguistic competent practice requires service provision to be in a families' native language; however, there are many other factors to consider even when doing so. Cultural unfamiliarity, inadequate bi-lingual worker training in professional terminology, and issues with translators and interpreters are all factors to be considered. It was hypothesized that the relationships between clients and workers may depend on shared culture, that cultural differences due to different backgrounds and countries of origin may hinder working relationships. Through qualitative face to face interviews, the proposed research study seeks to gain insight into Spanish-speaking client and worker perspectives on their working relationships. The study aims to understand the advantages and limitations to matching clients and workers solely on shared language. Preliminary findings suggest that cultural similarities or differences were not the primary relationship concerns for either workers or clients. Rather, both clients and workers expressed more salient concerns related to clients' citizenship status, the lack of resources for translation and interpretation, and clients' limited willingness/ability to advocate for themselves

Presenter(s): Heather Carrasco

Major: Psychology- Industrial Organizational

Faculty Mentor: Dr. Mark Agars

Title: *Early Childhood Educators Barriers to Job Satisfaction*

Abstract: One of the challenges early childhood educators' (ECE) experience is the public's perception of the career field early childhood education. Despite having the responsibility of teaching and caring for the youngest and most vulnerable members of our society (i.e., infants, toddlers, and children), early childhood educators (ECEs) face a challenging and often unsupportive work environment. Early care sites are often understaffed with limited resources, while ECEs receive few work-benefits and are typically paid at near-poverty wages. Working with young children can be demanding and emotionally and physically exhausting work, yet ECEs remain vastly underappreciated. Given these challenges, what can be done to ensure that quality professionals join and remain in the ECE workforce? The present study seeks to investigate the work environment for ECEs as well as individual factors that impact the job and career outcomes. Specifically, we seek to identify the factors that relate to stress, burnout, and lower work attitudes, as well as questions about retention and long-term commitment to an ECE career. The primary objective of this study is to identify the barriers to job and career outcomes (e.g., job satisfaction, turnover intention, burnout, etc.) in early childhood educators. Early childhood educators are defined as individuals teaching children from the age range of birth to 5 years old and work in child care programs. A second objective is to explore the work environment supports such as wage, paid leave, benefits, and educational incentives currently available to early childhood teachers.

Presenter(s): Jasmine Clark

Major: Psychology

Faculty Mentor: Dr. Sharon Ward

Title: *Stressed Out Before Kindergarten*

Abstract: The purpose of this study was to examine stress levels presented in prekindergarten readiness assessment. Research findings suggests that kindergarten readiness assessment is highly predictive of later school outcomes yet reliability coefficients in traditional preschool assessments are lower than desired. One hypothesis on why reliability is low is that the child is unfamiliar with the examiner and the testing situation. As previous research indicates a need for better understanding of what factors influence prekindergarten testing performance this study examined how stress was impacted by rapport with the examiner, the amount of preschool experience and prekindergarten readiness skills. Participants included 44 preschool aged children (Mean age = 58 months) and their parents. The demographics match the local community with 55% Hispanic, 5% African American, 32% Caucasian, and 8% other. Procedures: Fifteen minutes after arrival to an assessment laboratory, a saliva cortisol sample was taken from the child. Following the baseline stress sample, the child was allowed to establish rapport with the examiner. Once the examiner felt the child was comfortable in the testing environment, the examiner administered the Pre-Kindergarten Screen. Following the child being asked to identify random letters of the alphabet, a second saliva cortisol sample was obtained. At the end of the assessment the examiner informed the child that they had finished for the day and allowed the child 15 minutes of free play. At the end of free play the final saliva cortisol sample was obtained. Results: A significant reduction in stress over time was found with the highest levels of stress being recorded before rapport was established and the lowest levels of stress being reported at the end of the assessment. The addition of academic testing did not significantly raise stress levels. Children with higher pre-kindergarten skills did not differ in stress levels from those children with

lower pre-academic skills. No significant differences were found based on 1) gender or ethnicity, 2) the amount of preschool experience, or 3) the types of preschool attended. We believe these findings highlight the importance of establishing rapport with young children prior to assessment starting.

Presenter(s): Yvette Diaz

Major: Sociology

Faculty Mentor: Dr. Karen Robinson

Title: *Sex Frequency: Evidence for Double Standards*

Abstract: People experience and express themselves through sexuality. There are many stereotypical differences when talking about the sexual behaviors and attitudes based on gender. I am interested in examining what factors explains why males and females tend to be more sexually active. I hypothesized that those with more education are having less sex than those with less education. Although education was not significant it was supported by females. I hypothesized that those who are non-married have more sex than those who are married. Marital Status was also not significant but was supported by males and females. I hypothesized that those who were pro premarital sex had more sex than those that oppose. Pro premarital sex was supported by males and females. I hypothesized that those who are generally happy will have more frequency of sex than those unhappy with life. Unhappiness was supported and significant for females, meaning happiness means more sex. I hypothesized that females who are feminist are less likely to be having sex. Feminist beliefs was supported by females, meaning less sex for them. These findings are consistent in showing that there is a double standard on sex frequency. Females continue to be more conventional than males in their attitudes towards sex.

Presenter(s): Jesse Duro

Major: Biological Psychology

Faculty Mentor: Dr. Dionisio Amodeo

Title: *The 5-HT6 receptor BGC 20-761 attenuates repetitive behaviors in the BTBR mouse model of autism spectrum disorder*

Abstract: Autism spectrum disorder (ASD) is defined by two core symptoms of restricted, repetitive behaviors (RRBs) and social-communication deficits. The BTBR T+ tf/J (BTBR) mouse, like ASD individuals, exhibits increased stereotypic motor behaviors and an impaired behavioral flexibility. In the search of new therapeutic pharmacological targets for these repetitive behaviors, the 5-hydroxytryptamine 6 (5-HT6) receptor is of interest because blockade has shown to be pro-cognitive while showing promise as a treatment in the attenuation of behavioral inflexibility. The current study aimed to better understand how 5-HT6 receptor blockade may attenuate repetitive grooming and behavioral inflexibility in BTBR mice. Mice were treated with the 5-HT6 receptor antagonist BGC 20-761 then tested for repetitive grooming behavior and performance on the radial 8-arm memory task, a test of behavioral flexibility. We predicted that the 5-HT6 receptor antagonist would attenuate both repetitive grooming and spatial 8-arm memory performance. Results indicate that vehicle treated BTBR mice expressed elevated levels of grooming compared to vehicle treated C57BL/6J mice. BTBR mice treated with the 5-HT6 receptor antagonist BGC 20-761 groomed less compared to vehicle treated BTBR mice. Initial data suggests that BGC 20-761 treatment attenuates behavioral inflexibility in BTBR mice compared to vehicle treated BTBR mice. Together, BGC 20-761 treatment reduced repetitive grooming behavior and behavior inflexibility in the BTBR mouse model of ASD. Therefore, 5-HT6 receptor blockade is a novel therapeutic aimed at attenuating RRBs in ASD.

Presenter(s): Bridget Eriksen

Major: Psychology

Faculty Mentor: Dr. Joseph Wellman

Title: *Reactions to Palliative Care Stigma (Healthcare decision making)*

Abstract: Although palliative care is critical managing symptoms, pain, and potentially transitions to end-of-life care among those facing serious or chronic illness, it is often underutilized which may be due to stigma associated with palliative care. In Study 1, participants (n=152) read an oncologist describe two treatment options to a terminally ill cancer patient: 1) palliative care and 2) chemotherapy. Participants were then randomly assigned to read that the patient chose either palliative care or chemotherapy. Those in the palliative care condition endorsed significantly higher levels of negative stereotypes about the patient, viewed their decision more negatively, and saw the patient as less afraid of death. In Study 2, these stereotypes about those receiving palliative care were examined as a potential mediator between perceived palliative care stigma and prospective palliative care use. Participants (n=199) completed self-report measures of palliative care stigma, negative stereotypes about palliative care users, and prospective use of palliative care. Mediation analysis was used to test the mediational effects of stereotypes on the relationship between palliative care stigma and prospective usage of palliative care. Results indicate palliative care stigma was associated with less prospective usage of palliative care for self and for one's family member. This relationship was mediated by negative stereotypes about individuals receiving palliative care. Results suggest that palliative care stigma exists (Study 1) and that this stigma may be a barrier to the utilization of palliative care (Study 2). Future research should examine stigma reduction as a potential intervention target to improve palliative care utilization.

Presenter(s): Norma Fernandez

Major: Psychology

Faculty Mentor: Dr. David Chavez

Title: *Youth Advisory Boards: Collaborative practices that strengthen resilience and empower at-risk youth*

Abstract: A community-based approach was utilized by the implementation of a Youth Advisory Board (YAB) as an effective methodological approach to work collaboratively with youth in marginalized communities. The aim of the study was to cultivate the youths' voice through meaningful participation in a YAB and essentially create an environment that is responsive to young people's interest and representative of their views and community concerns. The board was youth-led as evidenced by (1) discussion topics (2) self-nomination of board members (3) and recorded transcripts. Furthermore, young people initiated ideas from discussion and shared decision-making with Community and Relationship Enhancement (CARE) research team facilitators. Participants consisted of a group of diverse early adolescents attending the Boys and Girls Club. A mixed-method design was used to explore the effects of a YAB on adolescents' sense of psychological empowerment and resiliency as measured by the Psychological Empowerment Scale (PES) (Ozer, & Schotland, 2011) and the Connor-Davidson Resiliency Scale (CD-RISC) (Connor & Davidson, 2003). It was hypothesized that youth that participate in the YAB would yield a positive increase in psychological empowerment and resiliency. Results indicated that the hypothesis was supported. Positive outcomes were found among youth that participated in the YAB as indicated by significantly higher perceived psychological empowerment and resiliency. Furthermore, the findings suggest that using a YAB as a means to amplify youths' voice as agents for change in the community should be an integral component in implementing future programs that are geared to promote healthy youth development and overall well-being.

Presenter(s): Hector Garcia, Osmara Cortez, and Maria Lias Moreno

Major: Psychology

Faculty Mentor: Dr. Nancy Acevedo-Gil

Title: *A Critical Race Analysis of Latinx Students' College Choices and Pathways*

Abstract: Despite experiencing inequitable access to educational resources (Rogers, Fanelli, Freelon, Medina, Bertrand, & Del Razo, 2010), Latinx students maintain high educational aspirations, with 95% of female students and 84% of male students aspiring to earn a college degree (Taylor, Kochhar, Livingston, Lopez, & Morin, 2009). There is a gap between Latinx students and their peers who: enroll in a four-year college (Lopez & Fry, 2013), persist in the second-year of college (ACT, 2010), and graduate (NCES, 2015; Perez Huber, et al., 2015); resulting in an urgency to increase the transition experiences for Latinx students (Lee, et al., 2011). Recent research documents that students who graduate from policed under-resourced high schools believe that college preparation in high school will hinder college transition (Blinded for Review, Year). This qualitative study aims to connect the preparation and socialization that Students of Color experience in high school with their transition and persistence at four-year colleges. This SRP project examined the college choices and transitions of Latinx students. Using quantitative IPEDS data, we used statistics to examine the college choices of Latinx students nationwide. The study addressed implications of attending high schools that juxtaposed limited college preparation alongside criminalizing practices for Latinx students as they transitioned into four-year colleges. The qualitative component of the study was guided by critical race theory and sense of belonging to examine how Latinx students, who graduated from a high school-prison nexus, experienced transitions to and persistence in four-year colleges. Qualitative data consisted of photovoice interviews with Latinx students.

Presenter(s): Kaleb Garcia

Major: Psychology

Faculty Mentor: Dr. Ismael Diaz

Title: *Leadership Style in Retail*

Abstract: We expect that transformational leadership in retail stores will have a strong positive correlation with performance. We expect that transformational leadership in retail stores will have a strong positive correlation with life satisfaction. We expect that transformational leadership in retail stores will have a strong positive correlation with job satisfaction. We expect that transformational leadership in retail stores will have a negative correlation with burnout. We expect transactional leadership in retail stores will positively predict performance. We expect transactional leadership in retail stores will positively predict life satisfaction. We expect transactional leadership in retail stores will positively predict job satisfaction. We expect transactional leadership in retail stores negatively predict burnout. We expect that transformational leadership in retail stores will produce stronger positive relationships with performance, life satisfaction, and job satisfaction than transactional leadership in retail and a stronger negative correlation with burnout. We will collect data by surveying CSUSB students currently working in retail, as well as those working in retail in Southern California retail chains. Students will take the survey through Sona, while other employees will be given a paper and pencil version of the survey. Data collection will begin in the spring.

Presenter(s): Rita Garcia

Major: Psychology

Faculty Mentor: Dr. Mark Agars

Title: *Dual Earners Negative Spillover Effects on Parent Child Relationship Outcomes*

Abstract: The U.S. population of dual earner families has risen over the years. Currently 60% of households are dual earners compared to 37% are single family ("The rise in dual income earners household", 2015). Due to this increase of dual earner families there has been

a shift in how family dynamics are shaped. Parents are having to juggle family and work roles, which can create stress that spills into the family domain known as Work Family Conflict (WFC). WFC can affect the current mood of an individual and cause negative spillover. Negative spillover is displacement of emotional processes in which moods or psychological arousals are experienced into the family domain, although they originate outside of the family domain (Repetti, Wang, & Saxbe, 2009). Work family conflict and negative spillover together can negatively impact the parent-child relationship outcomes. The purpose of this study is to examine the negative spillover effects on dual earner families and its impact on parent-child relationships. And further explore the negative spillover differences between mother and fathers. This study will help us gain a better understanding of negative spillover and its effects on parent child relationships outcomes.

Presenter(s): Kori Gearhart

Major: Psychology- General Experimental

Faculty Mentor: Dr. Donna Garcia

Title: *Consuming and Sexualizing Women in Advertisements*

Abstract: In this research, I am focusing on young women and the consequences of being exposed to sexist advertisements. These participants are between the ages of 18-22 and are students at California State University, San Bernardino. There is not a specific ethnicity being investigated. In fact, I wanted to see how sexist advertisements affect self-esteem and self-regulation in women across cultural groups. Participants are non-diabetic and willing to consume sugar. Participants who met the requirements were asked to come to the research lab at CSUSB. They were told that they are completing two short studies about sensory perception (in actuality, they are completing one study).

Presenter(s): Celene Gonzalez

Major: Psychology

Faculty Mentor: Dr. Richard Addante

Title: *Electrophysiology of Non-Conscious Memory Contributions to Free Recall*

Abstract: In traditional episodic memory paradigms, free recall tasks are widely used to investigate memory processes between explicit memory (i.e., declaratively recollecting information) and implicit memory (i.e., recognizing information based on familiarity). This approach for contrasting recollection to recognition has provided key insights into memory system dissociations in neuropsychological patients (e.g.: Yonelinas et al., 2002). However, recent research has yielded conflicting results. For instance, in a free recall task, individuals correctly recalled and recognized words that were studied beforehand (hits); while on other occasions individuals correctly recalled words, but, failed to recognize that these words were from a list studied beforehand (misses) (Ozubko et al., submitted). Thus, these recognition failures or “misses” represent a unique paradox in recall; were words recollected by their recall success or were words forgotten by their recognition – and what processes underlie this paradoxical combination of responses? The current study was designed to directly test these questions by simultaneously recording electrophysiological (EEG) signals from the scalp during memory judgements. In this novel and innovative cued semantic associated paradigm, we included a voice-key response device to time lock EEG signals during memory. In our task, participants studied a list of words during an encoding phase and were subsequently tested on a new list of semantically associated words intermixed with new words during the retrieval phase. This pilot study, identified key factors required for implementing this innovative approach in next-stage studies, currently being conducted. Furthermore, pilot data enabled us to form new hypotheses for EEG effects of explicit and implicit memory.

Presenter(s): Stephanie Gomez

Major: Psychology- Industrial Organizational

Faculty Mentor: Dr. Mark Agars

Title: *How the Structural and Psychological Boundary at Work Influence Experiences of Work-Family Conflict*

Abstract: The current study was designed to investigate the influence of the structural boundary at work as defined by job autonomy and job flexibility has on the degree of work-family conflict experienced by workers. It was predicted that the more solidified the structural boundary is the less work-family conflict one would be experienced. Also, the psychological boundary, as defined by work flexibility-ability and work flexibility-willingness, would mediate the relationship between the structural boundary and work-family conflict. The study will recruit working adults to answer various survey questions that consist of four different scales. The scales used will measure the degree of job autonomy and job flexibility one already has in their current employment, the degree of work flexibility-ability and their work flexibility-willingness, and finally one’s experience of work-family conflict. The study looks to find how influential the psychological boundary is on people’s experience of work-family conflict given the nature of their work structure, and as such workers should take charge in understanding this phenomenon to better their experiences of work-family conflict.

Presenter(s): Jennifer Hackett

Major: Social Work

Faculty Mentor: Dr. Erica Lizano

Title: *The Impact of Traumatic Events on Psychosocial Impairment in Individuals with an Eating Disorder*

Abstract: Research suggests that trauma has an impact on eating disorders. While prior research has demonstrated that the trauma from abuse has a significant impact on eating disorders, research has failed to explore other types of trauma. The purpose of this study is to examine whether traumatic life events impact psychosocial functioning among individuals

living with an eating disorder. Furthermore, this study aimed to identify which traumas are shown to have the strongest impact on psychosocial functioning. A quantitative design was used for this investigation, using measurement scales that have been shown to be valid and reliable in measuring the constructs of trauma and psychosocial functioning among individuals with an eating disorder. Participants completed a single survey of the combined measurement scales. A non-random purposive sample of 2,312 participants was collected from online social media sites Tumblr, Facebook, eating disorder message boards, and an outpatient eating disorder treatment center. Descriptive statistics and multivariate analysis was conducted using SPSS. Based on the variables being examined, ANOVA and multiple regression was used to analyze the data. The findings of this study indicate there is a significant relationship between traumatic life events and impairment among individuals with an eating disorder. Specifically, reported incidence of general trauma, as well as reported incidence of physical and sexual trauma were found to be related to higher levels of impairment. Thus, future research and clinical practice should take into account various types of trauma when working with individuals who have an eating disorder.

Presenter(s): Jeffrey Hutchinson

Major: Geography

Faculty Mentor: Dr. Jennifer Alford

Title: *Race to Zero: Identifying strategies to achieve Zero Waste*

Abstract: Zero Waste (ZW) is a goal in which zero waste is sent to the landfill. This strategy aims to reduce land use and related greenhouse gas emissions associated with landfills and waste transportation while providing opportunities for innovative ways to divert waste. California State University, San Bernardino (CSUSB) represents a large and diverse waste stream that results in varied environmental impacts for present and future generations. Currently, the CSUSB campus has no comprehensive data on the amount, type, and diversion

rate (i.e. waste diverted from landfills) of the campus waste streams, making it necessary to pilot a waste audit. The pilot was intended to provide data on the campus waste stream and to establish best practices for future audits on campus. Waste was collected by custodial staff from University Hall from February 14th-16th, except for bathroom waste, which was just weighed. A total of 1058.6 pounds of waste were collected over the three-day period, and 898.5 pounds of waste was sorted. Results indicate the diversion rate was only 30.23%. Furthermore, the contamination rates for trash bins (i.e. recyclables in trash) was 37.15%, and 58.26% in recycling bins (i.e. trash in recycle). Bottles- and Cans-only bins had 6% contamination rates. The diversion and contamination rates suggest that CSUSB should develop comprehensive policies that promote educating the campus on waste diversion strategies in order to reach ZW. Achieving ZW could reduce environmental impacts to the Inland Empire region while providing resources and educational opportunities for the campus and surrounding community.

Presenter(s): Julieta Hernandez

Major: Geography

Faculty Mentor: Dr. Jennifer Alford

Title: *A Time Series Assessment of Water Conservation Strategies for the San Bernardino Mountain Communities*

Abstract: With prevalent drought conditions impacting California over the past several decades, the uncertainty of water availability to support a growing human population and diverse ecosystems should be addressed through multiple strategies. The major supply of water to Southern California comes from groundwater and surface water imported from North of California through the Sacramento-San Joaquin Delta through the State Water Project infrastructure (Crider, 2014). Annual water allocations are primarily linked to snow pack conditions in the Sierra Mountains and the water needs of local populations. Due to the complexities of these allocations, the water districts of Big Bear, Crestline and Arrowhead have adopted various techniques to reduce their water

consumption. (Crestline-Arrowhead Water District). The goal is for these techniques to more effectively help manage their water allocations in times of drought. This study looked at multiple factors including climatic conditions, SWP annual allocations and when and to what extent these districts implement water conservation strategies over a 10-year period. Results of this study are important because they may assist districts in identifying potential lag times between when drought conditions are present and when they require water conservation regulations to be implemented. Identifying these temporal characteristics may lead to more efficient conservation strategies that protect water resources during and between climatic droughts.

Presenter(s): Vivian Hurtado

Major: Psychology

Faculty Mentor: Dr. Joseph Wellman

Title: *Physiological Responses and Weight Salience*

Abstract: Obesity has been on the rise in the United States and as the obesity rate grows, so does the discrimination towards these individuals. With discrimination becoming a more prevalent and unavoidable part of life, serious consequences may arise varying from stress to even impaired cognitive functioning. Perceived weight stigmatization, which is an individual's expectation that they will be discriminated against due to their weight, and stereotype threat, which is when a person fears confirming pre-existing stereotypes of their group, greatly affect an individual's reactions and behaviors. Depending on how the individual perceives a situation, stress responses vary from a positive challenge response to a negative threat response, which affects the person's ability to react and behave. While little research is out there presenting perceived weight stigmatization as a moderator, it is predicted that perceived weight stigmatization will greatly affect stereotype threat and overall influence other aspects such as stress and cognitive abilities. Specifically, the salience of weight stigmatization would increase the threat responses in individuals who are

already self-aware of weight stigmatization, leading to lower cognitive test scores compared to the performance of other individuals who may be aware of weight stigmatization but did not have weight stigmatization made salient. Participants will have both blood pressure and cardiac output measured to determine their stress responses. Methods of investigation and pilot data will be presented.

Presenter(s): Citlalik Ibarra Figueroa and Brittney Boyd

Major: Criminal Justice

Faculty Mentor: Dr. Gisela Bichler

Title: *The Quest for Entity Resolution*

Abstract: Stopping gang violence is important for people living in communities suffering from entrenched gang conflict. Understanding how violence spreads through social networks, improves focused-deterrent tactics aimed at reducing conflict and improving public safety. Efforts to apply social network analysis (SNA) to violent conflict, however, are challenged by the difficulties associated with assembling relational information. As such, we demonstrate how a two-step sampling process, beginning with focal seed gangs and expanding with a search of secondary gangs found in connection with those in step one, can generate more information. Notably, several issues remain: source limitations, entity resolution problems, and lack of current information about gang characteristics. After describing the data collection process, this presentation provides an integrated approach for how the methodological limitations can be addressed.

Presenter(s): Ivette Jimenez

Major: Criminal Justice

Faculty Mentor: Dr. Nerea Marteache

Title: *Crimemapping.com: The Holy Grail?*

Abstract: In the digital age, where every click, purchase, or activity is systematically-recorded and analyzed, in

what appears to be a coordinated fashion, it is surprising to discover how fragmented criminal justice data systems continue to be. This paper reports on efforts to examine the correlation between five different dimensions of train station design and maintenance, and crime around stations of Southern California's commuter rail system, Metrolink. Collecting data on crimes around this system is challenging, as Metrolink trains operate on seven routes across a six-county, 538 route-mile network, and its stations are located in over 50 different cities. This presentation will detail the steps taken to gather crime data around Metrolink stations, what obstacles were encountered, and how researchers adapted to be able to conduct the study.

Presenter(s): D'Andra Johnson, Crystal Ruedas, Ivan Aguirre, Trae Schnieder, Liliana Contreras, and Norma Fernandez

Major: Psychology

Faculty Mentor: Dr. David Chavez

Title: *Influence of Youth Advisory Boards on Psychological Empowerment and Self-esteem in Adolescents*

Abstract: Youth advisory boards aim to examine the issues that youth view as a part of their community through youth-led discussion and action. This study used a mixed methods quantitative and qualitative design to explore the effects of a youth advisory board on adolescents' sense of psychological empowerment and self-esteem. This study engaged youth in the San Bernardino community through the use of discussion groups and facilitator training. CSU San Bernardino's Community and Relationship Enhancement (CARE) research team successfully utilized a youth advisory board with middle and high school aged teenagers attending the Waterman Gardens Boys and Girls Club. It was hypothesized that a youth-led programming intervention, such as a youth advisory board, would lead to higher levels of self-esteem and psychological empowerment in participating youth. The Psychological Empowerment Scale (PES) and the Self-Esteem Questionnaire (SEQ) were

administered to establish baseline scores for each child prior to participation in the youth advisory board. After completion of the youth advisory board, the PES and SEQ were administered a second time to establish the effects on self-esteem and psychological empowerment. The qualitative data was collected via prompts, prepared by the teenage facilitators to create discussion. The meetings were recorded and transcribed to find recurring themes. This data is presented in a different report. Quantitative data, with regard to youth advisory board participation, psychological empowerment, and self-esteem was analyzed. The results of the study revealed psychological empowerment and self-esteem were influenced in the expected direction as a function of youth advisory board participation.

Presenter(s): Rubina Khanam and Gregory Foent Gallegos

Major: Social Science and Globalization

Faculty Mentor: Dr. Kevin Grisham

Title: *Role of International Community to Address Rohingya Refugee Issue*

Abstract: The current refugee crisis in Bangladesh is a result of the crisis in Myanmar, driven by conflict, is a pressing global humanitarian issue that has not yet been addressed effectively in international politics. While this crisis is currently one of the worst in the world at this moment, Bangladesh Government and non-government agencies are struggling to keep up with the demand. As a result, the various international and domestic agencies are facing challenges in trying to work together are not entirely unique. The research project will concentrate on finding a legal framework for the required intervention for the international community to address the refugee issue like Rohingya in Bangladesh. The research project promotes a healthy environment for dialogue among policymakers, legal practitioners, international communities, and NGO-stakeholders. Information gathering workshop & policy advocacy meeting will interconnect legal practitioners, policymakers, and

international community leaders at the national and international level, and thus, continue to generate enhanced and greater recognition of refugee crisis in Bangladesh to international communities. Enabling broad engagement of media and public officials through visibility programs will foster informed discussions and action on key Rohingya issues. Again, the development of a dedicated website, documentary and continuous blog writing regarding Rohingya issue will provide a strong virtual platform for refugee issues. In the long term, these efforts will contribute to greater stakeholder confidence and enhanced multiple-way communication create strong demand for information on international community's policies and practices to adopt and facilitate broader stakeholder engagement in providing a legal framework for resolving refugee issues.

Presenter(s): Janae Koger

Major: Psychology

Faculty Mentor: Dr. Donna Garcia

Title: *Advancing CSUSB*

Abstract: Our team, which was led by Dr. Donna Garcia, investigated gender and ethnic disparities in Science, Technology, Engineering, and Math (STEM). We were primarily interested in the disparities experienced by faculty members at CSUSB in the retention, promotion and tenure process. The research completed by this team was used to apply for a series of grants, including a one million dollar ADVANCE grant from the National Science Foundation (NSF). ADVANCE is an initiative set by NSF to expand and diversify the professorate in STEM departments within the USA. Through my involvement with the team, I served as an assistant supervisor to five undergraduate researchers. In my role as assistant supervisor, I coordinated research tasks, planned instructional workshops in Qualtrics and SPSS, advised in research methodology, and assisted in research activities with the team.

Presenter(s): Gabrielle Lautiy

Major: Psychology

Faculty Mentor: Dr. Amy VanSchagen

Title: *Factors Affecting Teacher Retention in Early Childhood Education*

Abstract: We are working with early childhood educators: family care workers, early childcare teachers, and directors of early childcare centers. Participants were to be currently employed in one of the three types of early childhood education positions previously mentioned and be at least eighteen years of age. The purpose of this project is to assess whether three categories: level of education, salary, and having sick and/or vacation time influence retention, specifically whether or not participants see themselves working in the field of early childhood education within the next three years. We contacted early childhood educators, in family care and childcare centers, in San Bernardino County, California through email, mail, and phone calls. Participants were asked to complete a survey depending on which of the three types of educators they were, the surveys were distributed either by qualtrics survey link or paper copies. The surveys assessed barriers they may have potentially faced in trying to obtain higher education. This paper looks at responses to questions 1, 2, 15, 20, 33, and 33a on the survey. Upon completing the survey, participants will receive a ten-dollar credit to Lakeshore Learning Center. We believe that all three of the factors will have an affect on retention rates. Additionally we predict that salary will be the most influential factor on whether or not the early childhood educators see themselves working in the field three years down the line.

Presenter(s): Adrianna Lopez Cota

Major: Sociology

Faculty Mentor: Dr. Karen Robinson

Title: *The HIV/AIDS Community, Stigma and Preventative Education Continues to be Overlooked*

Abstract: Since the first reported HIV/AIDS diagnosis in

the beginning of the 1980's, HIV/AIDS has been stigmatized and dismissed as a "homosexual only" virus. Many also believe and continue to believe that HIV/AIDS is a death sentence. The HIV/AIDS epidemic never ended, and unfortunately many are not educated enough about it to help prevent it. Although there has been extensive research and education surrounding HIV/AIDS, there continues to be a huge amount of misinformation and homophobia toward the HIV/AIDS community. It is important to be aware of the risks and preventative care that is now available for HIV/AIDS, as well as understanding the HIV/AIDS community. The research study asks whether the understanding of HIV/AIDS has changed or grown in the United States by using surveys as the primary method of collecting data. The population surveyed varies between the ages of eighteen and up. Research suggest that, overall, the majority of people do not believe that HIV/AIDS is not a major public health issue anymore. Therefore, people are less likely to practice preventative measures for HIV/AIDS during sexual activities, because many continue to believe that a.) HIV/AIDS is only going to be a problem if you are a homosexual and b.) HIV/AIDS is an automatic death sentence despite available treatments. Keywords: HIV, AIDS, stigma, sex education, death, homophobia.

Presenter(s): Linda Li

Major: Sociology

Faculty Mentor: Dr. Karen Robinson

Title: *Serial Cohabitation: Gender, Class and Shacking Up*

Abstract: Perspectives and patterns of cohabitation have changed recently. More couples are cohabitating now compared to the past. Thus, cohabitation has become a normative and widespread behavior among modern couples. As a result, extensive research has been done on cohabitation as well as the factors that influence cohabitation. Social scientists have recently noticed a new avenue of cohabitation that has not been studied much. This is known as serial cohabitation. Serial cohabitation is the process of dissolving one cohabitating relationship and jumping immediately into another. The previous studies on cohabitation have not shed much light on this issue as well

as what factors influence people to serially cohabit. The current studies on serial cohabitation are limited and do not provide detailed data on explaining this phenomenon. This research will utilize mixed methods to measure serial cohabitation and the factors influencing it. Using online surveys, the quantitative portion of the study will examine the relationship between serial cohabitation and income and gender. The main hypothesis is tested in this study is: women with lower income are less likely to engage in serial cohabitation compared to their counterparts. This study will use in-depth interviews of serial cohabitating women to explore how they navigate love and living arrangements.

Presenter(s): Gia Macias

Major: Psychology

Faculty Mentor: Dr. Hideya Koshino

Title: *Interactions between Anxiety and Emotional Attention*

Abstract: Recent studies have reported complex interactions between anxiety and emotional attention. Emotional stimuli have been shown to bias attention in various tasks including emotional Stroop tasks. Also, a negative mood may narrow and a positive mood may expand the attentional scope. We compared between emotional and neutral words in an emotional disruption Stroop task. Results showed that attentional capture by emotional words was greater for the high anxiety than for the low anxiety group. In an emotional flanker task, a target (happy or sad face) appeared with two flankers at near or far locations. Compatibility effects were found for both near and far conditions for the happy target but only for the near condition for the sad target, suggesting that the attentional scope was narrowed with the sad target. Implications for relations among the attentional bias, attentional scope, and attentional control models will be discussed.

Presenter(s): Krystalyn Marquez

Major: Psychology

Faculty Mentor: Dr. David Chavez

Title: *Personality Traits and Coping Mechanisms in the Development of Post-Traumatic Growth*

Abstract: In recent years the concept Post-Traumatic Growth (PTG), psychological growth, has emerged in research in addition to PTSD as a consequence of severe trauma. Those who experience PTG exhibit greater personal and spiritual strength, a greater appreciation of life, and a reprioritizing of life's priorities. Aside from "typical trauma", LGBT individuals experience a unique set of traumatic stressors. The current study examines personality traits and coping mechanisms associated with the development of PTG and PTSD in the heterosexual and LGBT community. Three hundred heterosexual and LGBT community members were given the Life Event Checklist modified to include LGBT specific stressors, the Post-Traumatic Growth Inventory, the PTSD Checklist for DSM-5, the Big Five Inventory, the Coping with Discrimination Scale, the Coping Self-Efficacy Scale and the Basic Personality Inventory. It was hypothesized that positive personality traits would be associated with PTG among both heterosexual and LGBT individuals. It was also hypothesized that negative traits would be correlated with PTSD in the heterosexual and LGBT communities. Lastly, it was hypothesized that social support, coming out, self-acceptance, and hardiness would be positively correlated with PTG in the LGBT community to a greater extent than in the heterosexual community. The findings largely support these hypotheses. Implications of this study point to the importance of assessing for individuals' strengths in addition to dysfunction following the experience of trauma. Additionally the findings suggest that members of the LGBT community may have unique strategies for coping with trauma and LGBT-focused intervention should consider bolstering these specific strategies.

Presenter(s): Alexandra Medina

Major: Psychology

Faculty Mentor: Dr. Christina Hassija

Title: *The Role of Sexual Victimization on Sexual Dysfunction Mediated between Relationship Satisfaction and Disclosure.*

Abstract: The National Crime Victimization Survey estimates that every two minutes an American is sexually assaulted. The National Intimate Partner and Sexual Violence Survey indicate that 18.3% of women have experienced rape and 16.9% have experienced sexual violence. Sexual assault can cause various psychological effects on survivors. Recent studies have shown that sexual assault can contribute to women's development of sexual dysfunction. Sexual dysfunctions are described in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) as an individual's inability to respond or experience sexual satisfaction. In addition, the DSM-5 indicates the relevant relationship, intrapersonal and interpersonal contexts can lead to sexual dysfunction. There are three types of sexual dysfunctions female can experience: female orgasmic disorder, female sexual interest/arousal disorder, and genito-pelvic pain/penetration disorder. A national probability sample found that 43% of women experience sexual dysfunction. The goal of our study was to examine the relationship between sexual victimization severity and sexual functioning and its potential mediators. Specifically, we aimed to determine if relationship satisfaction and disclosure would mediate the relationship between sexual victimization severity and sexual functioning. In addition, we aimed to determine if sexual assault survivors with more severe levels of sexual victimization would have greater sexual dysfunction as compared to those with lower levels of victimization. Participants were assessed for level of sexual victimization using the Sexual Experiences Survey, relationship satisfaction, and disclosure. Data collection is ongoing. However, preliminary findings suggest a positive relationship between sexual victimization severity and sexual functioning. Findings have possible implications for determining indicators of sexual dysfunction by the

severity of sexual victimization.

Presenter(s): Cecilia Melendez

Major: Psychology

Faculty Mentor: Dr. Michael Lewin

Title: *Is the Relationship between Early Maladaptive Schemas and Posttraumatic Stress Symptoms Indirect?*

Abstract: Cognitive models of psychopathology have received attention in the clinical research literature and have led to the proliferation of cognitive therapies for numerous psychological disorders. One such model, the Schema Model (EMS; Young, 1998), proposes that negative early developmental experiences (e.g., dysfunctional parenting, abuse, trauma) leads to the development of Early Maladaptive Schemas (EMS) which serve as a biased information processing mechanism through which future life experiences are viewed negatively. These EMS have been shown to be associated with vulnerability to various mental disorders (Young, et. al, 2004). Although prior research has demonstrated an association between EMS and psychological trauma (Karatzias, et al., 2016), there is little research on the relationship between EMS and Posttraumatic Stress Disorder (PTSD; Karatzias et al., 2016). The current study examined the relationship between EMS and PTSD in a sample of physical and sexual assault survivors. Specifically, we proposed a model in which the relationship between EMS and PTSD is indirect and mediated by psychological flexibility (acceptance, commitment and cognitive defusion). Participants consisted of undergraduate students with a history of physical or sexual assault. Results revealed that EMS and PTSD symptoms are related and moreover results of parallel mediation analyses using PROCESS (Hayes, 2008) revealed that EMS--PTSD relationship was mediated by psychological inflexibility. These results suggest that EMS (cognitive vulnerability) may be a precursor to coping with painful experience through experiential avoidance, inflexibility, and cognitive fusion with negative thoughts rendering individuals vulnerable to PTSD. Implications for future research and psychotherapeutic interventions will be

discussed.

Presenter(s): Mernyll Manalo

Major: Psychology

Faculty Mentor: Dr. Christina Hassija

Title: *Associations between PTSD Symptoms, Alcohol Misuse, Emotional Regulation Strategies and Social Support among College Student Veterans*

Abstract: Associations between PTSD symptoms (PTS) and alcohol misuse (AM) have been documented (Jakupcak et al., 2010). Two promising mechanisms of resilience are emotion regulation (ER) and perceived social support (PSS). Enhanced ER abilities and PSS may explain the association between PTS and AM. Few studies have explored mechanisms that may bolster adaptive functioning among veterans returning to college. The current study sought to identify the relationships between PTS, AM, ER strategies (i.e., cognitive reappraisal and expressive suppression), and PSS (i.e., family, friends, or significant other). Military veteran students, (N = 184) from a Western university completed measures assessing PTS, AM, ER, and PSS. Results showed significant associations between PTS and AM ($r = .31, p < .001$), the ER strategy suppression ($r = .32, p < .001$), and PSS from significant other ($r = -.20, p < .01$), family ($r = -.38, p < .001$), and friends ($r = -.29, p < .001$). Further, the relationship between PTS and AM was mediated by PSS of significant other ($b = .02; CI .004 - .037$) and family ($b = -.02; CI -.05 - .001$). Results suggest that PSS may play an important role in the association between PTS and AM.

Presenter(s): Kyle Mobly and Vanessa Carlos

Major: Psychology

Faculty Mentor: Dr. Jason Reimer

Title: *Cognitive Control and Narrative Memory*

Abstract: Studies examining the mechanisms of complex memory processing have led to a greater understanding of the role that cognitive control plays in the formation of memories. The purpose of

the present study was to examine the relationship between cognitive control and the ability to process and remember narratives. Participants were identified as either reactive or proactive based on the mode of control they used during the AX-CPT. They then read four short narratives and were given two forced-choice recognition tests, one immediately after reading and the other seven days later. The recognition data were used to identify surface form, textbase, and event model memory. For immediate testing, proactive model of control people had better memory for the event model level than reactive mode people. However, this difference was not present one week later. JERRY S. FISHER, University of Notre Dame, GABRIEL A. RADVANSKY, University of Notre Dame.

Presenter(s): Alana Muller

Major: Psychology

Faculty Mentor: Dr. Richard Addante

Title: *Exploring a novel method developed for extending the Dunning-Kruger Effect to studies of episodic memory.*

Abstract: The Dunning-Kruger effect is a social phenomenon in which individuals who perform poorly on a task believe they performed well while individuals who performed very well believe their performance was only average. To date, this effect has only been investigated in the context of performance on mathematical, logical, or lexical tasks, but has yet to be explored for its generalizability and manifestation in episodic memory task performance. In two pilot studies, we used a novel method to elicit the Dunning-Kruger effect in CSUSB students via a memory test of item recognition confidence. Participants studied lists of words and were later tested on their episodic memory of the words using a five-point confidence scale. After the test, participants were asked to estimate the percentile in which they performed compared to other students. Participants were separated into four groups based on their performance percentile. Results showed that participants in all four groups gave the same estimated percentile for their estimated performance. Participants in the bottom 25th

percentile overestimated their percentile the most, while participants in the top 75th percentile slightly underestimated their percentile. These results suggest that the participants who were the least competent in the test thought they were performing at the same level as the most competent. Findings support Dunning and Kruger's account for both low performers and high performers, in which low performers suffer from double ignorance and high performers suffer from the false consensus effect, and extend this account to a novel paradigm of episodic memory.

Presenter(s): Monica Navarette

Major: Sociology

Faculty Mentor: Dr. Karen Robinson

Title: *Social Constraints of Parents Today*

Abstract: Family structure is a key factor in explaining a host of outcomes. Past research has shown that single parent households headed by females face more hardships compared to two-parent households. Additionally, children who grow up in households with a single mom are at a greater disadvantage and more likely to experience negative outcomes in terms of schooling and well-being. Clearly, lack of financial resources can account for many of the negative outcomes, but a key mechanism through which these disadvantages affect families is through parenting strategies and styles. Whether parents or guardians raise their children in an authoritarian, authoritative, permissive, or uninvolved household, the many questions that seemingly resonate are, if not only one's own upbringings influences the way a child is raised, but whether an individual's class, or race has an influence as well. Using in-depth semi-structured interviews of working class moms, both married and single, I explore whether their parenting styles differ and whether their own upbringings influence their own parenting style. In doing so, I examine if there are differences between single and married working class moms by their experience in terms of levels of stress, coping mechanisms, who they rely on for help, and their ideals of motherhood and expectations for

their children. Additionally, I explore how working class moms assess the presence of a father in terms of parenting and helping out with child rearing. Preliminary findings suggest that there will be a significant difference between single and married moms in both stress and upbringings.

Presenter(s): Kathleen O'Donnell

Major: Biological Psychology

Faculty Mentor: Dr. Hideya Koshino

Title: *Anxiety, Emotional Stimuli, and Attentional Scope.*

Abstract: Recent studies show anxiety interferes with attention. The attentional scope model (ASM) argues that negative and positive moods modulate the scope of attention: a negative affect constricts, and a positive affect expands attention scope. In the present study, we investigated interactions of state anxiety, affective (emotional) stimuli, and performance in a flanker task. Eriksen-type flanker tasks studies, with emotional faces, typically show flanker compatibility effects for positive targets but not negative targets; consistent with the ASM. However, these studies did not include mood. Therefore, we investigated effects of mood states (high vs. low state anxiety) on an emotional flanker task. Participants (n=158) were healthy college students. State anxiety was measured with the State Trait Anxiety Inventory. Participants judged whether the target face, between two flankers at near or far locations, was happy or sad: producing a 2 (Anxiety: High vs. Low) X 2 (Target face: Happy vs. Sad) X 2 (Distance: Near vs. Far) X 3 (Compatibility: Compatible vs. Neutral vs. Incompatible) mixed design. Smaller compatibility effects were found for the Sad face Near, than Happy face Near condition. Suggesting attentional scope was narrowed with Sad targets, but broadened with Happy targets. The High State Anxiety (HSA) group showed longer RTs than Low Anxiety, suggesting HSA individuals were more affected by emotional stimuli. Anxiety effected executive functions, and emotional stimuli modulated inhibitory components of attentional scope. Specifically, anxiety level effected the rate of physiological response, and emotional stimuli

produced a regulation in the range of stimuli permitted neural processing.

Presenter(s): Derrick Ocampo

Major: Psychology- General Experimental

Faculty Mentor: Dr. Janet Kottke

Title: *Infant Social Referencing Behavior After a Ten-minute Delay*

Abstract: To date, there are few published research that examined the extent to which infants can retain emotion information acquired in a social referencing encounter. The purpose of this study was to examine infants' memory process for emotion acquired in a social referencing paradigm. We predicted that infants would approach objects paired with a positive and avoid objects paired with a negative. Furthermore, we predicted there is an association between looking behaviors at encoding and subsequent behaviors during retrieval. Ten- to fourteen- month-old were initially exposed to a social referencing paradigm and their encoding behaviors were recorded on an eye tracker, then after a 10-minute delay infants were re-exposed to the event and their overt behaviors towards each object were recorded. There were no significant differences in encoding and retrieval behaviors between emotion conditions. However, there were significant correlations between encoding and retrieval behaviors. Specifically, infants touched fewer and spent less time with the target object in the positive condition and approached the target paired with a negative. Results from the study will add to our understanding of infants' memory for emotion and its processes. Key words: memory, infants, social referencing.

Presenter(s): Brandon Oliver

Major: Biopsychology

Faculty Mentor: Dr. Joseph Wellman

Title: *Gender Moderates the Relationship between Weight Stigma and Binge Eating among Individuals Higher in Body Weight*

Abstract: The vast majority of research on weight stigma and binge eating has focused on women's experiences. In the current study we examine in both men (N=135) and women (N=399) how experiences of weight discrimination and weight stigma consciousness are related to symptoms of binge eating among individuals higher in body weight (BMI>25.00). We found that experiences of weight discrimination were positively related to binge eating among both men and women and did not differ by gender ($b=3.04$, $p<.001$). However, stigma consciousness was only related to binge eating among men ($b=4.31$, $p<.001$), but not women ($b=1.02$, $p=.07$). We also examined perceived control as a possible mediator of these relationships in a moderated mediation model. Perceived control was a significant mediator of the relationship between perceived discrimination and binge eating among both men and women. Perceived control also mediated the relationship between stigma consciousness and binge eating among men. Our research suggests that different measures of weight stigma may predict different outcomes for men and women who are higher in body weight.

Presenter(s): Ashlee Pardo

Major: Psychology

Faculty Mentor: Dr. Joseph Wellman

Title: *Examining the Relationship between Perceived Weight Stigma and Unhealthy Eating Behavior*

Abstract: *Fear and stigmatization are often used as motivators for individuals to lose weight or eat healthfully. However, this strategy has been shown to be counterproductive and can lead individuals to actually gain weight. In the present study, we examined the relationship between weight-based stigmatization, fear of fat (FoF), perceived control, and eating behavior in a diverse undergraduate sample (N=647, 69.2% Latina/o, 74.8 % Female). Results showed that perceptions of weight stigma were associated with increased binge eating ($b=2.67$, $p<.001$), restrained eating ($b=.15$, $p<.01$), and emotional eating ($b=.28$, $p<.01$). FoF and perceived control were found to be significant mediators*

of these relationships. These findings have important implications for our understanding of weight stigma and its consequences for eating behavior. The current research would suggest that campaigns which stigmatize individuals may be counterproductive.

Presenter(s): Jocelyn Perez

Major: Environmental Studies

Faculty Mentor: Dr. Jennifer Alford

Title: *The Effects of Concentrated Animal Feeding Operations on Water Quality in the Santa Ana Watershed*

Abstract: The detrimental environmental effects of Concentrated Animal Farming Operations (CAFOs) are widely recognized, especially in the impairment of water. Animal waste is a source of contaminants and pathogens consequently causing many environmental and human health issues. The purpose of this study is to understand how CAFOs affect water quality in the Santa Ana Watershed. Specifically, the research spatially analyzes and discusses the association of proximity of CAFOs sites to water impairment area. In order to assess these trends, Geographic Information Systems (GIS) was used to map CAFOs sites, surface water quality data and streams under the 303d impaired waters listed, to investigate trends in distribution of pollutants in relation to CAFOs locations. The findings suggest that the proximity of CAFOs are contributing to pollution inputs into streams and degrading surface water. This study particularly analyzes the clusters of water impairment, in an aim to protect water resources through various management strategies. The management of these farming operations are key to understanding how ecosystems are being degraded and help determine which management practices are most detrimental to human health.

Presenter(s): Emily Quintana

Major: Psychology- Industrial Organizational

Faculty Mentor: Dr. Janet Kottke

Title: *The Relationship between Emotional Intelligence*

and Perceptions of Toxic Leadership Behaviors.

Abstract: For this study, I am examining the relationship between emotional intelligence and the perception of toxic leadership behaviors between supervisors and subordinates. I am also examining if emotional intelligence is a factor in participants' ratings of each actor in these scenarios. Emotional Intelligence (EI) is a mental ability that helps guide people's thinking during interactions with their environment. Past research shows gender differences in EI as well as perceptions of toxic leadership. Past research also shows that perceptions of toxic leadership behavior can impact an employee's overall well-being. If other individual differences impact perceptions of questionable leadership tactics and certain groups are at a greater risk for experiencing toxic leadership situations, it is imperative for organizations to create specific management interventions that help counteract these negative perceptions. The TEIQUE-SF survey and a series of vignettes describing leader and subordinate interactions will be used to measure EI and perceptions of toxic leaders, respectively. There is limited research addressing how different personal characteristics affect the perceptions of toxic leaders. Other researchers have called for exploring how not only gender, but other differences, such as age and culture impact how leaders are perceived. It is expected that participants with higher EI scores and marginalized groups will perceive toxic leadership scenarios more severely.

Presenter(s): Celeste Ramos

Major: Psychology

Faculty Mentor: Dr. Eugene Wong

Title: *Applying Computerized Cognitive Training to Improve Working Memory in Children within a School Setting*

Abstract: Working memory is a short-term memory process responsible for storing and manipulating information in order to complete complex cognitive tasks. As such, working memory is important to reading, learning, and problem solving. Working

memory has also been found to be predictive of mathematics and reading achievement. Additionally, students with low working memory capacity may exhibit behavioral concerns such as inattentiveness, poor attention span, and forgetfulness within the classroom. In general, students with low working memory capacity do not perform at the same level as their typically developing peers in school related tasks. Thus, an emerging body of literature has focused on the effectiveness of computerized cognitive training (CCT) programs in building working memory capacity and improving learning. CCT is an adaptive computer program that builds working memory capabilities by providing optimally challenging tasks based upon his/her current performance. The present study focuses on the effectiveness of CCT for building working memory capacity in children within a primary school setting.

Presenter(s): Jessica Razo and David Sanchez

Major: Psychology

Faculty Mentor: Dr. Cynthia Crawford

Title: *Effects of Adolescent Cannabinoid Exposure on Nicotine Reward in Young Adult Rats*

Abstract: A number of studies have demonstrated that adolescent exposure to nicotine alters the unconditioned response to cannabinoid agonists and the density of cannabinoid receptors. In a recent study it was found that adolescent nicotine exposure increased the conditioned rewarding effects of the cannabinoid agonist CP-55,940. Interestingly, there is evidence in the clinical literature suggesting reverse gateway, where cannabis use leads to greater nicotine use. This study investigated whether adolescent exposure to a synthetic cannabinoid CPP-55,940 alters the rewarding properties of nicotine.

Presenter(s): Joanna Romero

Major: Sociology

Faculty Mentor: Dr. Karen Robinson

Title: *Understandings of Race, Discrimination and Inequality in the Obama Era*

Abstract: With the election of Barack Obama as the 44th president of the United States of America, many pundits and social commentators believed America had entered a post-racial society. Such a proclamation assumes that racial discrimination was no longer the source of the inequalities in jobs, income and housing experienced by African Americans. Given that the president was black, many believed that racial discrimination was a thing of the past, and any inequalities between groups should be explained by individual inadequacies or deficiencies. Sociologists have long combated such individual level explanations and instead, promulgate more structural and institutional levels of explanation that highlight systematic and institutional racism and institutionalized practices and policies that disproportionately disadvantage African Americans. My research aims to assess how Americans explained inequalities in jobs, housing and income between African Americans and white Americans and the extent to which they believed in individual level explanations that emphasize individual inadequacies compared to more structural and institutional explanations that emphasize discrimination. Additionally, I address what factors help predict who is more likely to hold individualist explanations about inequality and who is more likely to hold structural and institutional level views on inequality. Using data from the 2012 General Social Survey, which is a nationally representative sample of non-institutionalized adult Americans, I found that non-whites, people with low levels of income, and non-college graduates are more likely to understand race and discrimination in America.

Presenter(s): Roberta Salgado

Major: Psychology- Industrial Organizational

Faculty Mentor: Dr. Mark Agars

Title: *Examining trait mindfulness as a buffer between work-family conflict and health/well-being outcomes*

Abstract: Balancing work and family responsibilities gained much interest in the recent past, especially among working adults and families. Working families

have become the most affected by the issue of work-life balance since they have to play multiple roles, making it difficult for them to strike a reasonable balance between work and family domains (Kiburz et. al, 2017). All in all, if there is difficulty in completing tasks in one domain (e.g. work) due to participating in the other domain (e.g., family), this may cause an interrole conflict, formally known as work-family conflict (Kiburz et. al, 2017) According to Allen & Paddock (2015) and Kiburz et. al (2017), work-family conflict is a mutually incompatible relationship due to role pressures/stressors (i.e. situational/external factors) from the work and family domains. Furthermore, this conflict is also bidirectional, meaning that it can occur as family interfering with work (FIW) and work interfering with family (WIF). This has led to research on possible factors that may help individuals manage this conflict/interface. One of the approaches is to observe individual difference characteristics, such as mindfulness. The purpose of this study is to examine trait mindfulness as a potential buffer to the relationship between work-family conflict and health/well-being outcomes in a population of low-income workers. Low-income workers were chosen specifically because low-wage positions typically lack certain tools, like flexibility and control, which would allow employees to manage their work-family interface. Consequently, the present study is a way to explore other possible tools, such as trait mindfulness.

Presenter(s): Khalil San Martin Rodriguez

Major: Psychology and Computer Science

Faculty Mentor: Dr. Michael Lewin

Title: *Assessment of Acrophobia: A Comparison of Virtual Reality and In Vivo Environments*

Abstract: The objective of this study is to examine the potential of virtual reality exposure to be a sufficiently similar form of assessment for people with fear of heights. The study focuses in the physiological and subjective responses to exposure to an environment with heights. We hypothesized that high anxiety participants physiological and subjective responses

would be higher than control low anxiety in both in vivo and virtual reality exposure. Also, we hypothesized the physiological and subjective responses of all participants during in vivo and virtual reality would be sufficiently similar. The study will consist of self-report and behavioral measures. First, participants will complete a series of self-reporting questionnaires to measure their fear of heights. The second part of the study will involve a lab portion in which 40 participants will be randomly selected and put in two groups based on their responses. Participants who scored high on fear of heights will be assigned to the “high anxiety” group. In contrast, participants that scored low will be assigned to the “low” group, which will also serve as a control. Each group will proceed to an in vivo and a virtual reality exposure. Findings will provide further evidence to support the innovation of future forms of assessment using virtual reality.

Presenter(s): Courtney Schwartz

Major: Sociology

Faculty Mentor: Dr. Karen Robinson

Title: *The American Dream May Be More Than a White Fence and a House*

Abstract: While the American Dream has had many different meanings to an array of people, the measure of happiness whether it be materialistic or emotional needs. To this, we conclude what the American Dream means to society. Upon this, quantitative research was conducted to see if there was a change in the mindset of materialistic wants compared to emotional wants when explaining the American Dream. Extensive research was made to see the effect culture, discourse on success, and millennial’s mindset have on the concept of the American Dream. Findings suggest that the age gap between millennials and what it was back in the 1900’s, the American Dream has become less materialized and more of an emotional and materialistic appeal. Education and success indicate a higher correlation between materialistic approaches on the American Dream. Findings suggest that culture indicated the want for more of an emotional American

Dream, including freedom and independence. With a new economy and advanced technology, materialistic means having money while being emotionally happy does not require money.

Presenter(s): Lindsey Sirianni

Major: Psychology

Faculty Mentor: Dr. Richard Addante

Title: *Exploring behavioral correlates of a hippocampal-dependent implicit memory measure*

Abstract: Traditional models of human memory are predicated upon the foundation that long-term declarative memory (i.e. memories recalled through conscious recollection of details) relies critically upon the integrity of the human hippocampus (a medial temporal lobe structure of the brain), whereas non-conscious or implicit memory does not. Prior findings have begun to question this core dogma of human memory and using electrophysiological methods (EEG) for capturing non-conscious memory signals, earlier work from our lab identified a hippocampal-dependent implicit memory effect that was impaired in the electrophysiology of amnesia patients (Addante, 2015, Neuroimage) but without concurrent behavioral measures to provide crucial insight into the nature of this surprising impairment. The present study explores this same physiological effect, though with the added integration of behavioral measures that are critical to linking physiological impairments at the scalp with meaningful behavioral manifestations of memory deficits. This represents an innovation of new behavioral measures for studying implicit memory, and results are discussed in regard to methodological approaches to understanding brain-behavior relationships.

Presenter(s): Athahn Steinback

Major: Social Sciences and Globalization

Faculty Mentor: Dr. Timothy Pytell

Title: *In the Name of Utopia: Social Engineering in the*

Third Reich

Abstract: As a result of the unprecedented destruction wrought by the Nazi party and Second World War, the vast majority of scholarship focused the Third Reich has centered on the military and political aspects of the regime. Consequently, fairly little attention has been paid to the astonishing breadth of the social agenda of the Nazi party's so-called 'New Order.' This paper seeks to contribute to efforts to fill this void by analyzing the dystopian social policies of the Nazi party, as articulated by the powerful oligarch, and head of the German Labor Front, Robert Ley. Ley envisioned a future German Reich that combined a sprawling welfare state, state owned industry, social leveling, omnipresent domestic surveillance, and race-based collectivism. In his mind, society itself would be fully subsumed within the Nazi party. To properly understand the role of Ley, and the social agenda he advanced, this paper draws upon both the concept of corporatism, and my own previous research classifying Nazi Germany as a revolutionary totalitarian oligarchy.

Presenter(s): Matthew Vasquez

Major: Psychology

Faculty Mentor: Dr. Cari Goetz

Title: *Underlying Mechanisms Affecting the Relationship Between Sexually Explicit Material Consumption and Relationship Satisfaction in Long-term Relationships*

Abstract: We tested the relationship between Sexually Explicit Material (SEM) consumption and relationship satisfaction in long-term relationships. Two mate value discrepancies (MVDs) were predicted to affect this relationship. Partner-potential partner MVD indexes the proportion of other potential partners in a sample that are farther away from a person's ideal mate preferences than their current mate. Partner-self MVD captures the difference in mate value between partners (Conroy-Beam, Goetz, & Buss, 2016). We hypothesized that 1) SEM consumption would positively correlate with partner-potential partner MVDs 2) SEM consumption would negatively

correlate with relationship satisfaction, mediated by partner-potential partner MVDs and 3) partner potential partner MVD would negatively correlate with relationship satisfaction, moderated by partner-self MVDs. Both men (N = 800) and women (N = 800) in long-term relationships completed measures of SEM consumption, relationship satisfaction, and a 23-item mate preference questionnaire, from previous research, used to determine MVDs (Conroy-Beam & Buss, 2017). SEM consumption was not related to either MVD. However, SEM consumption was negatively related to relationship satisfaction among heterosexual, but not gay or lesbian individuals. This study explored the processes underlying the relationship between SEM and relationship satisfaction by applying evolutionary mechanisms relevant to human mating.

Presenter(s): Andrea Vargas

Major: Psychology

Faculty Mentor: Dr. Kelly Campbell

Title: *The Impact of Attachment on Instant Friendship Connections*

Abstract: Friendship chemistry refers to a perceived instant and platonic connection that exists when meeting a person for the first time. The purpose of this research was to examine the influence of attachment style on friendship chemistry. We hypothesized that both attachment anxiety and avoidance would be negatively associated with instant friendship connections for men and women. Participants (n = 20 women; n = 18 men) were recruited from a Southern California university. They completed an online survey that included the Experiences in Close Relationship Scale-Short Form and demographic questions. They then attended a 2-hour speed-friending session in which they interacted with the same-sex others for 3-minutes each. The Social Relations Model was employed to disentangle perceiver and target variance. We found that among women, both high anxiety and avoidance negatively predicted feelings of instant connection from others whereas for men, neither attachment dimension predicted

others' perceived connections. For both genders, the attachment dimensions were not significant predictors of participants' own ratings of friendship chemistry with others. Our findings are discussed in accordance with attachment theory and the empirical literature regarding gender differences in friendship.

Presenter(s): Yesica Valenton

Major: Human Development and Psychology

Faculty Mentor: Dr. Laura Kamptner

Title: *Impact of Early Attachment Security on Academic Achievement Motivation in Young Adults*

Abstract: The purpose of the present study was to investigate the relationship between mother-child and father-child parenting quality on later academic achievement motivation in young adults. It is expected that attachment security will be positively and significantly related to intrinsic academic achievement motivation (and result in higher intrinsic than extrinsic motivation scores), and negatively and significantly related to motivation. Data were collected from two hundred male and female participants from California State University San Bernardino, aged 18-28. Participants completed the Parental Attachment Questionnaire (PAQ; Kenny, 1987) which assesses maternal and paternal attachment security, the Hazen, Shaver, and Bradshaw (1988) assessment of perceptions of mother's and father's early caregiving style, and the Academic Motivation Scale (AMS-C 28; Vallerand et al., 1992) to assess student motivation.

Presenter(s): Brittany Willams

Major: Sociology

Faculty Mentor: Dr. Karen Robinson

Title: *Domestic violence*

Abstract: This paper examines women of different ethnic groups and their experiences involving domestic violence. The research sets out to prove that different ethnic groups have different domestic violence

experiences based on childhood experiences and social factors. This paper poses several questions; how do childhood experiences contribute to the differences between ethnic groups, and why one ethnic group is more likely to victims of domestic violence than other groups. The different methods used during this research included, reviewing the previous research done on domestic violence, and qualitative interviews with women of different ethnic groups, who are all survivors of domestic violence. The interviews focused primarily on childhood experiences, and how the participants' ethnic backgrounds factored into those experiences. What was found is that Black women and Hispanic women are three times more likely to be victims of domestic violence than white women. The research will show that both ethnic backgrounds and social class contribute to an increased likelihood of being a victim of domestic violence.

Presenter(s): Stephen Ware

Major: Psychology

Faculty Mentor: Dr. Dr. Hideya Koshino

Title: *The Effects of Anxiety on Attention and Cognitive Performance*

Abstract: The present research aimed to evaluate cognitive performance in anxious individuals, using Attentional Control theory, anxiety was predicted to interact with performance in cognitive task. The ACT states that high anxious individuals are depleted on working memory resources, which can account for inconsistent findings on these individuals performing better in cognitive tasks compared to their counter parts. We hypothesized low anxious individuals to be more efficient in allocating resources, having higher accuracy and shorter reaction times. Sustained Attention to Respond (SART) was utilized to determine cognitive performance after ego depletion, giving reaction time (RT) in milliseconds and accuracy for Go and No-go trails. Participants took the State Trait Anxiety Inventory (STAI) prior to all measurements. Results showed high anxious individuals to have longer RTs and lower ACC. Efficiency coefficients were driven

by RT. Accuracy was consistently better for low anxiety group than for high anxiety group across bins; when combined with RT, efficiency increased for low state anxiety where efficiency for the high state anxiety group decreased. High anxiety group showed the fatigue effect, their reaction time increased for high anxiety group is caused by the fatigue effect. The low anxiety group efficiency showed better efficiency due to practice effect. Working memory moderated the effect between anxiety and efficiency, showing that low working memory performed with less efficiency with high state anxiety. High state anxious and high working memory participants performed with the same amount of efficiency as the low anxious groups.

Presenter(s): Sam Worrall

Major: Psychology- Clinical Counseling

Faculty Mentor: Dr. Christina Hassija

Title: *Development of the Client Treatment Orientation Scale*

Abstract: The purpose of this study is to begin development of a treatment orientation scale. Currently there is a lack of research regarding the use of client preference scales, as well as, current scales do not measure client treatment orientation and magnitude of the relationship. The only other measurement method for client preferences was an interview, which can be time consuming, but also does not clearly show strength for a preferred treatment type. This scale will seek to measure both treatment type/orientation and the magnitude of the relationship. This scale may help in deciding on therapeutic orientations or strategies for the individual client's treatment. Additionally, this scale may also bring about information that can be foci in the therapy session. Utilization of this scale may also foster greater therapeutic alliance earlier in therapy by addressing the client's preference treatment orientation during or throughout therapy. Also, if the client does prefer a treatment that is less efficacious for a specific problem, it can now be addressed earlier in treatment. English-speaking therapists will be recruited as participants to act as subject matter experts for

this study. Multiple exploratory factor analyses and reliability analyses will be used to analyze the data. Analytic information will be used to reduce the total number of questions to allow for greater applicable use for practitioners. Future research will include collection of another therapist-based sample to analyze with confirmatory factor analyses

Presenter(s): Marta Zarate, Sophie Peterson, Jordan Taylor, Alma Pauha, Rebekah Posadas

Major: Psychology

Faculty Mentor: Dr. Dionisio Amodeo

Title: *Effects of the 5-HT₆ receptor antagonist BGC 20-761 on social behaviors in the BTBR mouse model of autism spectrum disorder*

Abstract: Autism spectrum disorder (ASD) is characterized by the core symptoms of social-communication deficits and restricted, repetitive behaviors (RRBs). The BTBR T+ tf/J (BTBR) mouse, like ASD individuals, exhibits both impaired social interaction and RRBs. In the search of new therapeutic pharmacological targets aimed at attenuating the social impairments, the 5-hydroxytryptamine 6 (5-HT₆) receptor is of interest due to its pro-cognitive effects and high concentration in brain regions implicated in ASD. The current study utilized the three chambered social approach task to examine how 5-HT₆ receptor blockade may attenuate the social impairments found in the BTBR mouse model of ASD. Mice were acutely treated with the 5-HT₆ receptor antagonist BGC 20-761 then tested for social approach behaviors. We predicted that the 5-HT₆ receptor antagonist would increase BTBR preference for the stranger mouse compared to vehicle treated BTBR mice. Results indicate that vehicle treated BTBR mice did not prefer the stranger mouse compared to the novel object, consistent with previous findings. Interestingly, initial data suggests that BTBR mice treated with the 5-HT₆ receptor antagonist BGC 20-761 prefer the stranger mouse compared the novel object. These findings support the need for further examinations of 5-HT₆ receptor blockade as new therapeutic for attenuating the social impairments

found in ASD.

Presenter(s): Nelly Zambrano

Major: Social Work

Faculty Mentor: Dr. Deirdre Lanesskog

Title: *Developing a Community Plan to Prevent Child Abuse & Neglect in Rural Southern California*

Abstract: The goal of this project is to identify and mobilize resources to reduce the number of children entering the child welfare system in a rural Southern California community. The project brings together a variety of community leaders and human services professionals to examine the factors that propel children into the system in this isolated community and to pinpoint existing resources that may be better leveraged to ensure the well-being of the community's children. The project's focuses on identifying and maximizing resources already available in this community, rather than on the scarcity of resources or services. Parents and social workers often must travel to long distance to access services out of the town. Yet, there are some services available in the rural areas and additional social capital can be used as a good alternative or substitute for the absent services. The child welfare social workers can use the social capital to support families and children especially in the early stages of a child abuse investigation. Although rural areas have many challenges, there are still favorable conditions and opportunities to support new practices and the goal of this research project is to leverage the creativity, generosity, and close relationships of rural residents to support families at risk of neglect and abuse. This project uses a community based participatory approach designed to help a community organization identify the community's needs and available resources, and to establish a plan of action for reducing the number of children who enter the child welfare system.

Presenter(s): Marmar Zakher

Major: History and Arabic

Faculty Mentor: Dr. Kate Liszka

Title: *From Female Moneylenders to Church Shares: Socioeconomics in the Coptic Village of Jeme*

Abstract: There is a popular belief that during and after the Egyptian Greco-Roman Period (c.323 BCE–4th century CE), many of the economic rights and laws that ancient Egyptians had once enjoyed fell apart in the wake of foreign rule and monotheism. The archaeological site of the Coptic village of Jeme proves this theory to be incorrect. The proof is from both the archaeological and large written evidence from the Jeme Papyrus Documents. A majority of these texts date to the seventh and eighth centuries CE and are largely written in Coptic, the local script of late vernacular Egyptian which was used by the populace. These texts have opened up a wealth of knowledge to the socioeconomic lives of ordinary Copts, in regards to gender and property, during Early Islamic Egypt (c.641-969 CE). In addition, the archaeology provides evidence for the written documents by giving specific urban locations for the different houses and administrative buildings mentioned in the documents. This paper carefully examines the socioeconomic lives written in these documents in conjunction with the buildings in question in the aim of shedding light on the socioeconomic practices of ordinary Copts in Early Islamic Egypt.

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7th Annual Student Research Symposium

May 17th, 2018

Presented By

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Dr. Christina Hassija, Director of the Office of Student Research

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