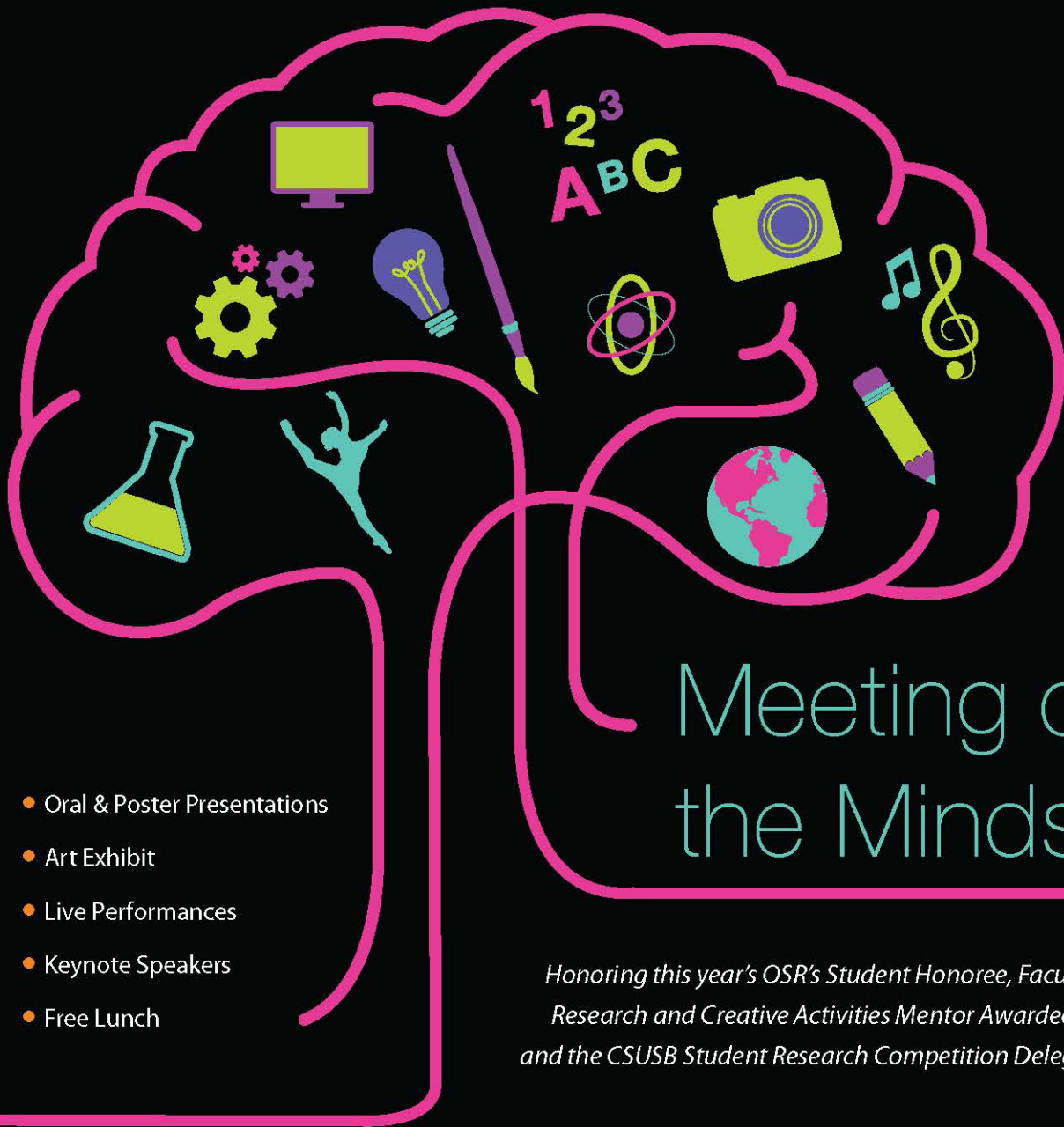


The Office of Student Research & The Office of Graduate Studies Present the

6th Annual Student Research Symposium



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

Meeting of the Minds

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



May 18, 2017 • 9:30 a.m.–7 p.m. • Santos Manuel Student Union
For more information, visit osr.csusb.edu or call (909) 537-5058



CALIFORNIA STATE UNIVERSITY, SAN BERNARDINO

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Welcome Message



It is with great pleasure that we welcome students and faculty of California State University, San Bernardino to our 6th annual “Meeting of the Minds” Student Research Symposium- the university-wide event that highlights the outstanding research and creative projects of our students and their faculty mentors. This event is an opportunity to celebrate the creativity, innovation, and academic scholarship of undergraduate and graduate students and provide a platform in which they can share with the campus community.

Over the past five years, this symposium has seen tremendous growth, from the number of students that have given presentations, to the number of faculty who have served as moderators and who encourage their students to participate. This year, there are over 250 student participants- that’s 17 percent more students presenting than the last academic year. To the faculty, we thank you for your contribution, and we congratulate the students for your eagerness to share your hard work with your peers. The OSR has supported well over 1000 students this academic year, by way of research and travel funding, various employment opportunities, and workshops, with many new developments on the horizon. The focal point of our department is, and will always be, to facilitate student support and growth.

With an unprecedented number of student applications, our presentation agenda showcases a superb representation of each of the academic colleges and their departments. Furthermore, this year’s symposium will acknowledge Student Honoree Diana Robinson, who will provide a presentation on her research titled “Women Who Perpetrate Partner Violence: The Role of Emotion Regulation and Attachment Insecurity.” Dr. Stacey Fraser and her students will give a special performance titled, “Monkey See, Monkey Do,” and Dr. Juan Delgado’s poetry students will give a reading entitled “Three Voices in Poetry.” Also, a very special presentation will be given from Sheren Shihadeh regarding refugees entitled “Social and Cultural Integration Process Among Syrian Refugees in the United States,” followed by a recognition of the 2017 Research and Creative Activity Mentor Awards.

We thank you for your support and hope you enjoy the symposium.

Sincerely,
Francisca and Christina

Faculty Moderators

College of Arts & Letters

Dr. Todd Johnson
Dr. Jennifer Andersen

College of Business & Public Administration

Dr. Marc Fudge
Dr. Victoria Seitz
Dr. Yongseok Jang

College of Education

Dr. Donna Schnorr

College of Natural Sciences

Dr. Kimberley Cousins
Dr. Jason Ng
Dr. Tomasz Owerkowicz
Dr. Laura Newcomb
Dr. Tim Usher
Dr. Jeremy Dodsworth

College of Social & Behavioral Sciences

Dr. Donna Garcia
Dr. Cherstin Lyon
Dr. Nerea Marteache
Dr. Emily Shum
Dr. Manijeh Badiee
Dr. Robert Ricco
Dr. Richard Addante

Agenda

9:00-9:30 a.m.

Registration
Event Center

Special Guest Speaker, Sheren Shihadeh: "Social and Cultural Integration Process among Syrian Refugees in the United States"

1:00-2:20 p.m.

Student Presentations I
RM 215-218, 207-208

9:30-11:00 a.m.

Opening Ceremony
Theatre, SMSU 107

2:30-3:50 p.m.

Student Presentations II
RM 215-218, 207-208

Special Performance by Dr. Kathryn Ervin and Students

Welcome Remarks, Drs. Francisca Beer and Christina Hassija

4:00 -5:20 p.m.

Student Presentations III
RM 215-218, 207-208

President Tomás D. Morales

Student Honoree, Diana Robinson: "Women Who Perpetrate Partner Violence: The Role of Emotion Regulation and Attachment Insecurity"

5:30-7:00 p.m.

Reception/Award Ceremony
Event Center AB

Karen Chapero, Tiffany Keeler, and Berlyn Trostle: "Three Voices in Poetry"

Faculty Summer Fellowship Recognition

Dr. Annie Buckley, Jessica Agustin, Diana Hernandez, and Lindsey McDonald: "Transforming Communities: Inside and Out"

Theatrical Performance, Dr. Stacey Fraser and students: "Monkey See, Monkey Do"

CSUSB Student Research Competition Recognition

Faculty Research and Creative Activities Mentor Awardees

11:00- 12:00 p.m.

Poster Presentations & Art Exhibits
Event Center BC

Special Performance by Yajaira Avila

Award Ceremony

12:00-1:00 p.m.

Lunch
Event Center A

Special Performance by Sean Reno

2017 Student Research Honoree



Diana Robinson

Major: Psychology, MS

Department of Psychology, CSUSB

Presenting: *Women Who Perpetrate Partner Violence: The Role of Emotion Regulation and Attachment Insecurity*

Selected as 2017's Student Research Honoree, Diana A. Robinson is an Experimental Psychology Master's student and CSUSB alumna. As an undergraduate and graduate student at CSUSB, she has been actively involved in various research activities. Robinson's overarching research interests are interpersonal violence, trauma, and resiliency. Specifically, her interests include identifying and understanding cognitive and behavioral factors that contribute to intimate partner violence and sexual assault (e.g., emotion regulation, attachment insecurity, substance use), as well as the psychosocial factors that lead to the positive and/or negative trajectory of recovery from such traumas (e.g., post-traumatic growth vs. post-traumatic stress).

Under the supervision of Dr. Christina Hassija, Robinson has worked on independent research projects focusing on intimate partner violence perpetration and victimization among college populations. For example, her Master's thesis examines the role of adult attachment insecurity and emotion regulation strategies in the perpetration of intimate partner violence among college women. Together, Robinson's research activities have resulted in eight poster presentations and three oral presentations at regional, national, and international conferences. Robinson recently accepted an offer of admittance from Northern Illinois University's Clinical Psychology Doctoral Program with the goals of becoming a university professor, a productive contributor to scholarly research, and a clinician serving trauma-impacted populations.

Highlights in Research



Student(s): Jessica Agustin, Diana Hernandez, and Lindsay MacDonald

Faculty Mentor: Dr. Annie Buckley

Title: *Transforming Communities: Inside and Out*

In this symposium we will present work from CSUSB's Community-based Art (CBA) initiative in which students, alumni, faculty, and volunteers collaborate to facilitate art classes and programs in local community sites that otherwise would not have access to art. Our classes, projects, and programs are based on a philosophy of collaboration, interdependence, and mutuality. CBA offers a vibrant and effective approach to rehabilitation through visual arts and creative writing. The Prison Arts Collective (PAC) grows out of our work in the local community and responds to a specific need for immersive arts and higher education in correctional institutions. PAC, is our approach to Arts-in Corrections with an emphasis on collaboration and self-expression. We engage participants, institutional partners, and teaching artists in planning and implementation and develop unique programs for each site.

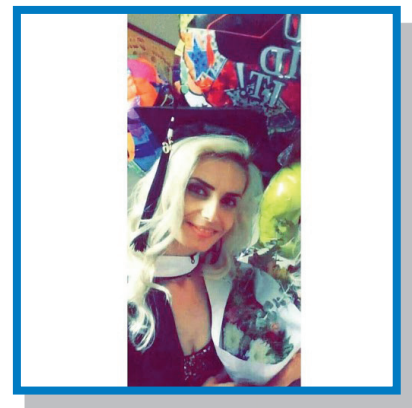
CBA/PAC has achieved desired objectives with the help of previous work our team did for the OSR Summer Research Program in 2016. PAC developed a yearlong certificate program, the "Certificate of Visual Arts and Creative Writing," in which approximately 12 of 25 registered participants will be receiving by Spring 2017. PAC has also started new programs at two new institutional sites: California Institution for Men (CIM) - Facility A and California Rehabilitation Center (CRC). We have published a new website about our program and have several upcoming projects in development including a Facilitator Training at Chuckwalla Valley State Prison and Ironwood State Prison in Blythe, CA. Our presentation will present the work CBA/PAC does, artwork from our participants as well as discuss the impact this has had on our participants.

Student(s): Sheren Shihadeh

Faculty Mentor: Dr. Dany Doueiri

Title: *Social and Cultural Integration Process among Syrian Refugees in the United States*

Ms. Sheren. Iskandar. Shihadeh obtained a M.A. Degree in Interdisciplinary Studies: Applied Linguistics, Focus on TESOL and Arabic in 2016, and a B.A. Degree in the Arabic Language, Literature, and Culture along with a Minor in Criminal Justice in 2015 from CSUSB. She worked as an Arabic tutor in the Department of World Languages and Literature, an Arabic tutor and a teacher assistant at the Summer Language Intensive Program, CSUSB. She also interned at Hillside Elementary, San Bernardino District, teaching Arabic for kindergarten students. Currently, she is working as an Adjunct Arabic Instructor at Chaffey Community College, Rancho Cucamonga.



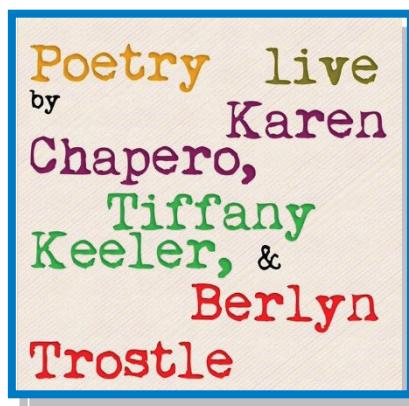
Special Performances

Student(s): Karen Chapero, Tiffany Keeler, and Beryln Trostle

Faculty Mentor: Dr. Juan Delgado

Title: *Three Voices in Poetry*

"Three Voices in Poetry" will feature poets from English 507, Advanced Poetry; they will read their poetry and share their unique style and themes. During this presentation, the poets will begin by introducing themselves and talking about their poetry, their thematic interests, and their particular poetic style. Ms. Trostle will be reading two poems titled, "Napa Drive" and "You Cradle the Bottle." These poems will deal with themes of abandonment, alcoholism, and coping. She writes in a free verse. She tends to write about her Grandfather often because that is a great loss in her life that she still has not fully overcome. Ms. Keeler will read three short poems: "Mirror Image," "Longing for," and "Olive Oil." Her poetry explores issues of abuse, trauma, and how recovery and resiliency allow us to remake ourselves. She writes under the pen name Tiffany Elliott. Ms. Chapero will read: "American," "Pretty Words Can't Save Ya," and "Fragrance." Each poem deals with a particular theme such as culture and heritage, hypocrisy and lies of political, social, or personal means, and she also writes about the memory of past relationships or addiction struggles. Her writing usually touches on a variety of different topics but tend to reflect on the human experience, nature, or personal encounters through the use of imagery, mood, and voice. All three poets are excited to share their artistic vision at CSUSB's symposium.



Student(s): (Performers) Keinan Hernandez, Olivia Clark, Daniel Ramon, Rianne Mitchell, Desihre Manuel, Rick Arriaga, Cheyenne Villegas, Rachel Dandridge, Freddie Garcia, Michael Garcia, Twila Fraser, Sophie Sooter, Sam Sooter, Simon Sooter, Estrella Silva, Teryn Carlson, Jessica Moc, Andrew Toro, Lizzie Stewart. (Running Crew) Kayla Shadal (ASM), John Gerling, Nancy Mazon, Nerieda Sanchez, Jocelyn Esparza

Faculty Mentor: Dr. Stacey Fraser

Title: *Monkey See, Monkey Do*

Monkey See, Monkey Do (1986) is a delightful half-hour six-character chamber opera for children based on a traditional Mexican folk tale. An Opera America survey, published in Opera News, listed Monkey See, Monkey Do as the fourth most often-performed contemporary opera in America, with over 2000 performances throughout the United States, Canada and Mexico to date. The work was created for family audiences and may be toured with puppets, singing actors or both.

“Meeting of the Minds” Oral Presentation Schedule

Session I

Location: RM 215

Time: 1-2:20 p.m.

Moderator: Dr. Donna Garcia

College: Social and Behavioral Sciences

1:00

Silvana Johnston

Associations between Familism and Quality of Interaction with Primary Caregivers; Hispanic and Non-Hispanic White Emerging Adults

1:20

Tanya Patterson

Examining Masculinity Threats: Impact On Perceptions Of Psychological And Physical Intimate Partner Violence

1:40

Natalie Callely

Overcoming Trauma: Utilizing Existential Anxiety to Stimulate Posttraumatic Growth

2:00

Krystalyn Marquez, Sarah McMullen, and Martin Rojas

The Relationship between Community Action and Queer Youth Empowerment

Location: RM 216

Time: 1-2:20 p.m.

Moderator: Dr. Cherstin Lyon

College: Social and Behavioral Sciences

1:00

Josue Becerra

Confronting Discrimination: Latina Women’s Beliefs vs Behaviors

1:20

Alana Muller and Victoria Yang

Latinos Reactions to In-group and Outgroup Sexism Claimants

1:40

Christopher Mendez and Adam Beam

LGBTQA+: Derogating or Supporting an In-group Member’s Response to Discrimination

2:00

Pedre Bravo, Monique Lopez, and Jazmin Fernandez

Presidential Unilateralism, and the Role of Institutional Checks

Location: RM 217

Time: 1-2:20 p.m.

Moderator: Dr. Nerea Marteache

College: Social and Behavioral Sciences

1:00

Kliff Cramer

Preventing IUU Fishing From A Situational Crime Prevention Perspective

1:20

Athahn Steinback

Downfall: 1933

1:40

Jodi Buckley

Japan: Developing Nuclear Weapons to Improve Self-Defense Capabilities

Location: RM 218

Time: 1-2:20 p.m.

Moderator: Dr. Emily Shum

College: Social and Behavioral Sciences

1:00

Shannon Clarendon

Fire Affected Rock: An Investigation into Diagnostic Utility

1:20

'Janhavi Dhargalkar'

Effects Of Repeated Paroxetine And Fluoxetine Exposure On Hippocampal Bdnf Functioning In Adolescent Rats

1:40

Lindsey Sirianni

How effective are Measures that Predict Fiscal Stress? A Retrospective Examination of California Cities

Location: RM 207

Time: 1-2:20 p.m.

Moderator: Dr. Manijeh Badiee

College: Social and Behavioral Sciences

1:00

Sarah Hernandez, Kamiya Stewart, Monica Biernat and Christina Vieux

The Consequences of Social Exclusion on Self-Regulation of Unhealthy Eating Behavior

1:20

Nina Acosta

Pride And Prejudice: The Effects Of The "Proud To Be" PSA on Attitudes toward the Redskins Logo

1:40

Jessenia Oertel

Bachaqueros: Food Smuggling in Venezuela

Location: RM 208

Time: 1-2:20 p.m.

Moderator: Dr. Robert Ricco

College: Social and Behavioral Sciences

1:00

Nuttacha Vaitayavijit, Estefania Galvez and Tanisha Flowers

Instant Connections Among Same-Sex Pairs: Why Do We Like Who We Like?

1:20

Zachary Harmony and Israel Garcia

Effects of Nicotine Exposure on Methamphetamine Oral Self-Administration, Extinction, and Reinstatement in Adolescent Rats

1:40

Khalil San Martin

Assessment of Acrophobia: A Comparison of Using Virtual Reality and in Vivo

Session II

Location: RM 215

Time: 2:30-3:50 p.m.

Moderator: Dr. Kimberley Cousins

College: Natural Sciences

2:30

Colomba Sanchez

Subset System Study Of Diisopropylammonium Bromide: An Organic Ferroelectric Crystal

2:50

Moises Romero

Charge Analysis of Electronic Organoferroelectrics

3:10

Maressah Ynfante-Corral

Hydrogen Placement on Potential Organic Ferroelectric NUBHOH

3:30

Sergio Jacinto

Synthesis and Structure Prediction of a Novel, Potentially Electroactive Organic Material

3:50

Francisco Guzman

Fabricating High-Quality Ultra-Thin Croconic Acid Film Using Electric Field Guidance

Location: RM 216

Time: 2:30-3:50 p.m.

Moderators: Dr. Jeremy Dodsworth/
Richard Addante

College: Natural Sciences

2:30

**Michael Butros, Robert Bloom, Cynthia Saenz,
Zachary Houghton and Yoonkwon Lee**

Wave Equation and Soliton

2:50

Zachary Parsons

Wide Band Artificial Pulsar

3:10

**Nicholas Sabala, Brandon Marin, John
Hoskins, Thomas Kennedy and Daniel Garcia**

The Optimization for the Isolation and Purification of Alcohol Dehydrogenase Utilizing Aqueous Polyphase Solutions

3:30

Erika Sanchez

Room Temperature Growth Of Organic Ferroelectric Croconic Acid Thin Films

3:50

Adrien Arias

Effects Of Exogenous Acetazolamide On Growth And Calcium Flux In Alligator Embryos

Location: RM 217

Time: 2:30-3:50 p.m.

Moderator: Dr. Jason Ng

College: Natural Sciences

2:30

Rachael Lemon

Effects Of Glyphosate On Drosophila Melanogaster Ovaries

2:50

Karah Shouse

Can All Your Shots Come True? A Comparison Of Self-Modeling Techniques On Free Throw Performance

3:10

Larry Lopez and Edmar Aquino

Characterization Of Influenza Virus Nonstructural Protein (Ns1) Effect On Viral RNA Expression

3:30

Patrick Bryan and Juan Rodriguez

The Effects Of Topical Aminophylline, Yohimbe, L-Carnitine, Caffeine, And Gotu Kola On Thigh Girth, Skinfold Thickness, And Fat Mass In Sedentary Females

3:50

Jared Lin

Role of N-terminus of Nucleoprotein in Influenza RNA expression

Location: RM 218

Time: 2:30-3:50 p.m.

Moderator: Dr. Tomasz Owerkowicz

College: Natural Sciences

2:30

Dylan Enright

Neonicotinoid Interaction With A Selectively Enriched Soil Microbe

2:50

Lizett Gonzalez, Joshua Dimapilis, Cristina Gonzalez, and Marlene Noriega

Cultivation and Detection of Novel Archaea from Great Boiling Springs

3:10

Jesse Argueta and Anel Torres

Assessment of Developmental Toxicity Potential of Glyphosate-Based Herbicides Using Drosophila melanogaster Primary Embryonic Stem Cell Cultures

3:30

Alexander Beechko

Changes In Muscle Properties As A Function Of Age And Training In Mice

3:50

Liane Greaver

Describing Species Status Of Rhinichthys Osculus, The Santa Ana Speckled Dace, Among The Watersheds Of Southern California Using Nuclear Dna Introns

Location: RM 207

Time: 2:30-3:50 p.m.

Moderator: Dr. Laura Newcomb

College: Natural Sciences

2:30

Teresa Ubina

An Isogenic Human Stem Cell Model Of Alzheimer's Disease: Direct Expression Of Amyloid-Beta

2:50

Leny Diaz-Martinez, Karah Shouse and Jake Lopez

Functions of Observational Learning

3:10

Connie Marmolejo

Relationship Between Mental Illness And Discrimination Among College Studentscultures

3:30

Nelson Membreno

Effect Of Embryonic Calcium Constraint On Post-Hatching Growth And Bone Microstructure In The American Alligator (Alligator Mississippiensis)

Location: RM 207

Time: 2:30-3:50 p.m.

Moderator: Dr. Tim Usher

College: Natural Sciences

2:30

Joel Salazar and Yazmin Estrada

Radio Number for Even Square Cycles

2:50

Michael Thompson

RNA Interference to Evaluate Role of Host Factors in Influenza RNA expression

3:10

Alexa Reyes

Emergency Department Visits Due To Clostridium Difficile

3:30

Beverly Abadines

Using Glove Sensory for Data Acquisition and Processing of Hand Movements

Session III

Location: RM 215

Time: 4:10-5:30 p.m.

Moderator: Dr. Todd Johnson

College: Arts and Letters

4:10

Sandi Harageones

Men Want to Be Looked At

4:30

Jordan Mitchell

Interns on Television: How Pop Culture Shapes Our Understanding

4:50

Angelina Burkhart

A Guidebook for the Graduate Teaching Associate

5:10

Theodore Baylis and Jeremy Lunasco

Yeah-No That Was a Great Idea: A Discourse Analysis of yeah-no Yeah-No

Location: RM 216

Time: 4:10-5:30 p.m.

Moderator: Dr. Jennifer Andersen

College: Arts and Letters

4:10

Megan Davis

The Madness of the Gold Bug: A Troublesome Reordering of Species and Specie

4:30

James Maya

Hockey: Canada's Pastime- America's Cultural Sport

4:50

Ryan Miller

Stereotypical Canadian: If and only If

5:10

Dustin Shepherd

Oh Canada

5:30

Jenna Bozarth

A Call to Investigation: The Discovery of Lost British History through Oral Traditions in Detective Fiction

Location: RM 217

Time: 4:10-5:30 p.m.

Moderator: Dr. Marc Fudge

College: Business and Public Administration

4:10

Mary Elizabeth Bucayu and Fatimah Safari

What Have California Cities Learned As a Result of the Great Recession? The Impact of the Local Option Sales Tax on Rainy Day Stabilization Funds

4:30

Rudy Morales Gamez

Conducting A Social Network Analysis In The California-Baja California Border Region

4:50

Brenda Ochoa and Ambre-Marie Starzyk

Sustainability: Developing a Model of Practice

5:10

Sydney MacWhorter

Active Versus Passive Investment Strategy: Evidence From Public Pension Plans

Location: RM 218

Time: 4:10-5:30 p.m.

Moderator: Dr. Donna Schnorr

College: Education

4:10

Elisa Sequeira, Carol Castillo, Edit Cebreros and Jaclyn Contreras

CSU Early Start: Examining Student Experiences in a Developmental Education Residential Program

4:30

Qi Guo

The Effect of Online Pediatric Courses for Parents: Parents Knowledge of Pediatric Diseases and Their Perception of the Online Courses

4:50

Luquanda Hawkins

The Achievement Gap

5:10

Rae Lynn Kit

Future Continuation High School Students

Location: RM 207

Time: 4:10-5:30 p.m.

Moderator: Dr. Victoria Seitz/

Dr. Yongseok Jang

College: Education

4:10

Onome Uyovbiebo

Linking Organizational Socially Responsible Behavior to Leader's Socio-Economic Background

4:30

Ariana Cano

Cultural Value in Instant Messenger: An Analysis between Mexico and the U.S.

4:50

Sonya Gonzales

The Visual Rhetoric of Women's Tattoos: Constructing Identity, Reclaiming Power, and Writing a New Feminism through the Carnavalesque

5:10

Ashley Rhodes

From Selling Art To Creating Art

5:30

Sofia Benitez

El Santo, El Enmascarado de Plata Vs. The Logic of Coloniality



Student Abstracts

Disclaimer: All student abstracts have been written and approved by the student authors before publication.

Arts & Letters



Presenter(s): Alcira Mendoza

Faculty Mentor: Dr. Alison Petty

Department: Studio Art, Biology

Title: *Art, Science, and Technology*

Abstract: The purpose of this project is to explore the relationship between science, art, and technology. Objects were 3-D printed using the printers in the Innovation Lab located in the Pfau Library. The objects were either found, made or altered using Thingiverse and Tinkercad. The objects were printed and were used to make a plaster mold. From the plaster mold they were made into ceramic pieces. The process took time and patience from waiting for the object to be printed to transforming into ceramics. Both subjects teach critical problem solving along with trial and error, but it's safe to say that the outcome of this research was great.

Presenter(s): Isaac Garcia

Faculty Mentor: Dr. Alison Petty

Department: Studio Art

Title: *Ceramics Translations*

Abstract: This project is focused on the inherent nature of ceramic processes and its migration into video. The exploration between the two mediums will seek to bridge the artist visions, concept, process and perspective in a nontraditional, organic video. The video becomes part of the work itself, not just a marketing tool or source of documentation. The ephemeral value of ceramic mediums and processes has become a recent

online sensation, and these videos help to explore why.

Presenter(s): Mariah Conner

Faculty Mentor: Dr. Katherine Gray

Department: Studio Art

Title: *Investigation of the Physical and Aesthetic Possibilities of Electroforming*

Abstract: The purpose of my research is to discover how the process of electroplating/electroforming can be used transform glass, found objects, and other non-conductive surfaces to a metal finish. For my work in the Master of Fine Arts program, I have been combining multi-media with glass, and transforming found objects through a variety of processes including growing crystals onto marine debris by immersing it in a solution of sodium tetraborate. Another part of my research has been to determine the best techniques for stabilizing these crystals once they are formed. I find the transformation of initially worthless items, such as marine detritus, to be an interesting approach for exploring concepts such as global interconnectivity and value systems. My research is allowing me expand these possibilities to metal through the process of electroforming.

Presenter(s): Malaysia Parris

Faculty Mentor: Dr. Kathryn Ervin

Department: Graphic Design & Marketing

Title: *Tracing the African Diaspora through the Arts*

Abstract: In hopes of finding and exploring the presence and influence of the African Diaspora, I embarked on a journey to Costa Rica unlike one I'd ever imagined. With the unfortunate atrocities and confusion from the Transatlantic Slave Trade, Pan-African art has been, and continues to be one of the last few, but most important pieces of history left behind. With these pieces and customs, a true and accurate knowledge of cultural identity can both be understood and accepted, ultimately allowing POC (People of Color) to trace their African lineage. This scrapbook is a compilation of my experience through capturing the similarities in art between Central America and Africa.

Presenter(s): Michael Millenheft

Faculty Mentor: Dr. Todd Johnson

Department: Music

Title: *Mbira dzavadzimu*

Abstract: The Mbira dzavadzimu is a lamellophone used by the Shona people originating in Zimbabwe. I conducted research on the Mbira to understand both the cultural significance and the expertise required to play the instrument. Gathering sources and texts was the first step in my research. I then received Mbira lessons from Erica Azim who has traveled to Zimbabwe many times and learned the instrument directly from native Zimbabweans. Learning to play the instrument helped further my understanding of the instrument in Shona culture. Finally, I researched the singing that accompanies Mbira music. I sought out the lyrics to many Mbira songs and analyzed their meanings.

Presenter(s): Sandi Harageones

Faculty Mentor: Dr. Jane Chin Davidson

Department: Studio Art

Title: *Men Want to Be Looked At*

Abstract: The interchanging of the male gaze and the new female gaze has influenced how men, both heterosexual and homosexual, see themselves as objects of desire—especially depicted in popular culture. If the male nude in photography were as commonly accepted as the female nude, would our culturally constructed gaze become more comfortable with him? When most people think of the word “nude” in art, they think of the female nude. For nearly 2,000 years, the male nude overshadowed the female nude since Greek antiquity. The beauty of the male body was honored and shown with pride and confidence until the 19th century when the male nude faded and the female nude became the central focus in art. Today, the male nude is mostly associated with homo-eroticism. My research along with my own photographic exploration is used to discover the changes in “the gazes” that may be leading to a transformation of the heterosexual toward the male nude.

Presenter(s): Jenna Bozarth

Faculty Mentor: Dr. Elena Ramirez

Department: English

Title: *A Call to Investigation: The Discovery of Lost British History through Oral Traditions in Detective Fiction*

Abstract: The British are known to be great collectors of ancient artifacts and are deeply interested in their own connections to the past. Though, when a nation is faced with the loss of documented history through destructive events all that remains are oral accounts of the past. Oral literature is often painted as less valid than its written counterpart, but Two British writers M.R. James and Arthur Conan Doyle use detective fiction to acknowledge that oral traditions can be the key to discovering lost history. This paper argues that the authors use a ‘call to investigate’ rather than the better known ‘call to adventure’ to appeal to late 19th and early 20th century sentiments of British

nationalism. Previously, this search for lost origins has been manifested in literature as British lost world fiction novels where characters find similarities between their counterparts abroad and their British brethren through shared concepts of masculinity and imperialism (Deane). This presentation however, will analyze how M.R. James' "A Warning to the Curious" (1925) and Arthur Conan Doyle's "The Adventure of the Musgrave Ritual" (1893) validate seemingly trivial oral traditions that ultimately lead to the discoveries of ancient artifacts from the Medieval and Restoration periods respectively. Although, the research centers on fiction the model set by James and Doyle for discovering real elements of the past by investigating folktales and other oral traditions as containing truths can be applied to the present-day search for lost history.

Presenter(s): Sonya Gonzales

Faculty Mentor: Dr. Alexandra Cavallaro

Department: English Composition

Title: *The Visual Rhetoric of Women's Tattoos: Constructing Identity, Reclaiming Power, and Writing a New Feminism through the Carnavalesque*

Abstract: As a visual rhetoric, tattoos provide a means for women to claim power and agency over their selves and their bodies, destabilizing the conventional expectations of women as passive, through their socially constructed narratives, in the creation and interpretation of the written artifact that is the tattoo. In this presentation, I will show that studying tattoos as a visual rhetoric through the carnivalesque can change the way we view composition and writing studies, creating a capacity for change in rhetoric and writing, studying tattoos as a visual text. I propose that tattooed women exist in a carnivalesque liminality between binaries – masculine or feminine, conformist or marginalized – oscillating between the traditional world, in which women might feel pressured to hide their tattoos or risk ridicule, and an unconventional world, in which they reveal their true selves through the visual texts written on their bodies. Tattoos can facilitate how we interpret tattooed women's creation of identities

and occupancy of a liminal space between dominant society and tattoo culture, constructing an embodied feminism in the images inscribed on their bodies and changing the way we think of visual rhetoric in composition studies. Through reading the carnivalesque images of women's tattoos we can interpret the ways in which they communicate new meaning in creating individualism and agency of one's body, challenging societal notions of feminine beauty and binaries as visual texts. The embodied texts of tattooed women challenge traditional ideologies of composition and rhetoric studies, establishing new occasions for reading and writing visual text.

Presenter(s): Ryan Miller

Faculty Mentor: Dr. Jennifer Andersen

Department: English Composition

Title: *Stereotypical Canadian: If and only If*

Abstract: Being Canadian, as a nationality, is something that has a very niche place within American Pop Culture. This project will focus on the American Film Industry, looking at the representation and personification of being Canadian as a stereotypical and comedic factor that carries no value or weight as a nationality, beyond as such. This will be done by comparing the careers of 6 Canadian citizens in total, 3 Comedians and 3 non-comedic actors.

Presenter(s): Theodore Baylis, Jeremy Lunasco

Faculty Mentor: Dr. Parastou Feiz

Department: English Composition

Title: *Yeah-No That Was a Great Idea: A Discourse Analysis of "yeah-no"*

Abstract: Discourse markers are words or phrases that affect and manage the structure of a conversation. What's unique about discourse markers is how they tend to go beyond lexical or grammatical constructions, enriching discourse analysis. They relate to the placement of conversational utterances such as yeah or no within a given context. Studying the pragmatic nuances of discourse markers will not only help us understand semantic implications, but will also show how they are transmitted. This project seeks to examine the usage of year and no as they are uttered concurrently (e.g. yeah-no that was a great idea). We have speculated that this construction, in any given context is some sort of face-saving action. Research on these particular concurrent markers is relatively new, but seems to reflect our pre-conceived sentiments that the utterance of yeah-no effects intonation, turn-taking, and even has age and gender implications. In order to discern their functionality, we plan to examine varying data sets from online corpuses. From those examinations we are aiming to trace the regional origins and social landscape of these discourse markers. This study will further suggest the high frequency of yeah-no occurring in informal political conversations and aspects of institutional talk. Perhaps one of the most common utterances in modern spoken languages, yeah and no have a multitude of pragmatic functions. More often than not, the placement of these markers in conversations deviate from there nominal context. The occasions and audiences are the pretext for the linguistic patterns we will be observing.

Presenter(s): Megan Davis

Faculty Mentor: Dr. Chad Luck

Department: English Composition

Title: *The Madness of the Gold Bug: A Troublesome Reordering of Species and Specie*

Abstract: If one were to begin a literary exploration into the works of Edgar Allan Poe, one needn't look far or with care to see a parade of stories speaking to and from the concept of madness. Human madness and its vulnerability to paranoia and violence is quite commonplace in his works, including but not limited to *The Cask of Amontillado* and *The Tell-Tale Heart*. And yet, his piece *The Gold Bug* seems to be lending itself to the notion of madness in a queer way, one that is not solely begotten from an exclusively human condition or emotion. *The Gold Bug*. The story follows one William Legrand, and his downward spiral of obsessiveness with a slew of cryptography that he believes will lead him to a pirated fortune. This encrypted message comes to him vis-à-vis a scrap of parchment, parchment that was originally used to draw a picture of a strange bug he had found. This bug boasted a gold coloring and markings in the shape of a human skull. Legrand however, discovers the symbols and thus begins his fanatical quest to unlock the code and follow its instructions to a hidden fortune, thus disregarding the story's namesake nearly altogether. This madness, however, this obsession with the elusive treasure, seems to indicate that Legrand inhabits his psychosis from a distinctly inorganic and unnatural trepidation. His character was so enamored by symbols, money, and the distinctly inorganic (a marked disconnectedness from nature), that one can wonder if his madness was linked to the explicit rejection (of the gold bug) in favor of a type of commodified notion of value, wasn't indicative of a blatant rejection of the natural world. If one can assume this, it is possible that Legrand's madness foretells of a larger anxiety in response to a rapid deterioration of appreciation for the natural world, in favor of a larger fetishization with an impending commodified culture.

Presenter(s): Dustin Shepherd
Faculty Mentor: Dr. Jennifer Andersen
Department: English Composition
Title: *Oh Canada*

Abstract: There are numerous perceptions of Canada and Canadian culture. This paper looks at two major perceptions and portrayals of Canada in American popular culture: Canada as being culturally backwards from American standards, or as an Elysian paradise. This adds up to an illustration of a lack of understanding of our northern neighbors. By analyzing the function of Canadians in American popular culture, we can learn how Canadians are used to reaffirm American values of America for Americans.

Presenter(s): James Maya
Faculty Mentor: Dr. Jennifer Andersen
Department: English Composition
Title: *Hockey: Canada's Pastime- America's Cultural Sport*

Abstract: It is known that Canada's sport and pastime is Hockey, however, we see in pop culture that this is undermined by America laying claim to the sport. In movies such as *Miracle on Ice*, *Goon*, *The Mighty Ducks*, and *Slap Shot*, we see America's claim to Canada's sport—Hockey, by suggesting that America is the greatest on ice. In this presentation, I will critique the usage of Hockey in the aforementioned films and the exploitation of Canada's greatest gift to the world.

Presenter(s): Angelina Burkhart
Faculty Mentor: Dr. Donna Gotch
Department: Communication Studies
Title: *A Guidebook for the Graduate Teaching Associate*

Abstract: With a large number of graduate teaching associates (GTAs) occupying roles as educators, many of whom continue these roles in higher education long after they graduate, our attention to the instructional effectiveness and well-being of this group is not only warranted, but vital to both the success of GTAs and the many students who occupy their classrooms over the course of their teaching careers. When we look beyond the basic training, which often covers administrative duties, course content, and basic teaching skills such as creating syllabi and lesson plans, we can acknowledge that there are several other important topics that would be beneficial to visit during GTA training. There is a large body of instructional communication literature that would prove fruitful in the hands of GTAs, some of which is never visited in training. The purpose of this project is to create a guidebook for GTAs, one of which may be implemented or referenced in training sessions, or simply used as a supplemental resource to the GTA's discretion. The lack of existing content designed specifically for GTAs which compiles both instructional communication-based teaching strategies, and wavers attention to the multiple identities and professional socialization of the GTA, presents an opportunity for this guidebook to fill the gap. This guidebook will strive to provide GTAs with a strong foundation in instructional communication teaching strategies, as well as guidance on understanding identity development, particularly balancing multiple identities/roles and forming and maintaining professional identities in their departments.

Presenter(s): Jordan Mitchell

Faculty Mentor: Dr. Thomas Corrigan

Department: Communication Studies

Title: *Interns on Television: How Pop Culture Shapes Our Understanding*

Abstract: It is increasingly expected that aspiring professionals complete internships before entering their careers. However, the nature and purpose of internships is ambiguous and ill defined. Where have we, as a society, developed our understanding of internships? Surely popular culture plays a role. Many popular U.S. television shows unfold in an office environment. Whether office comedy or drama, these shows often depict an office intern, typically a young professional pursuing knowledge and experience to further his or her career opportunities. Using thematic textual analysis – a qualitative approach – this study examines the portrayal of intern characters on eight prime-time, U.S. network television shows to determine what audience members may learn about internships from those programs. Those shows include *Seinfeld*, *Parks & Rec*, *Friends*, *The West Wing*, *Gossip Girl*, *Gilmore Girls*, *Friday Night Lights*, and *The Office*. Each researcher independently watched the episodes in which interns appeared, took detailed screening notes, and systematically coded the episode. Analysis of those data is ongoing; however, several themes have been identified, including interns' competency levels, their work ethic and attitude, and expectations about compensation (or lack thereof). The researchers argue that these themes both reflect and shape society's assumptions about internships.

Presenter(s): Ariana Cano

Faculty Mentor: Dr. Fred Jandt

Department: Communication Studies

Title: *Cultural Value in Instant Messenger: An Analysis Between Mexico and The U.S.*

Abstract: The research study is focused on the cultural value of Instant Messenger between the U.S. and Mexico. The purpose of this project is to examine the cultural differences between Mexico and the U.S. and how those differences might affect the cultures use of Instant Messenger. This paper presents a country's generalized culture, thus using the terms country(s) and culture(s) interchangeably. Contemporary media devices provide innovative tools that were non-existing in traditional media. Given that people worldwide are using Instant Messenger in large numbers (Li, 2016) this topic is important to study in the intercultural field because various cultures might be accepting the usage of Instant Messenger differently. It is important to fill in the gap between cultures and the acceptance of Instant Messenger because of its prevalence in society. The research study will first identify the difference between Instant Messenger, and traditional media, while defining what is meant by Instant Messenger. It will also explain the term national culture and provide the four dimensions in which Mexico and the U.S. have the greatest cultural differences. Third, the research also includes methods, such as Technology Acceptance Model, in order to analyze how cultural differences shape the value, acceptance, and use of Instant Messenger. Lastly, I will look at this social phenomena through the lens of Durfee, Shinnar, & Gonzalez (2006) and Heales, McCoy, and Xu (2005) to provide a deeper understanding on the use of Instant Messenger in Mexico and the U.S.

Business & Public Administration



Presenter(s): Sandra Jimenez

Faculty Mentor: Dr. Jonathan Anderson

Department: Public Administration

Title: *Volfe Watershed Rainfall/Runoff in Southern California*

Abstract: Water is a limiting commodity in arid regions worldwide, including Southern California. If more water supplies could be developed locally, less would be needed via expensive water delivery systems. However, supplies are variable annually with unpredictable rainfall. If rainfall/runoff relationships were better understood, perhaps variable supplies could be better estimated for agricultural, domestic, and industrial water supply. By studying Volfe watershed in the San Gabriel Mountains we can obtain an estimate of how much water is being provided and additionally predict how neighboring watersheds in Southern California are expected to behave. The stream flow was calculated by manually reading historical stream charts and rainfall available from previous work. Annual graphs were generated comparing and calculating the runoff ratios to the annual rainfall. When measuring water stage height and comparing it to existing rating curve I can determine the volume of water over the course of a year. These readings indicate that runoff water is only a small percentage (< 10) of rainfall in Volfe watershed. Additionally, plotting the runoff ratio against the same year's rainfall shows no pattern, but when, plotting the runoff ratio against the previous year's rainfall shows a better pattern. This

science allows for estimates of the water runoff to be used to better predict water drought for the year. If the predictions for the year consist of abundance of water than we can prepare/manage to store water, but if we predict drought for the year then we must limit water use in our communities.


Rudy Morales-Gamez

Faculty Mentor: Dr. Kimberly Collins

Department: Public Administration

Title: *Conducting a Social Network Analysis in the California-Baja California Border Region*

Abstract: This research project is analyzing social networks in the California-Baja California border region. Social networks are the connections and interactions among local agencies and actors. Most connections within the border region are primarily informal, but there are also a few examples of formal interactions. We are currently surveying agencies using Qualtrics to ascertain the depth and breadth of the network between governments, non-profits, and business officials in the region. With the results of this study, a better understanding of regional connections and strengths will be developed; providing a guideline to better cooperation and collaboration in the region.



Presenter(s): Sydney Macwhorter
Faculty Mentor: Dr. Brandy Hadley

Department: Finance

Title: *Active versus Passive Investment Strategy: Evidence from Public Pension Plans*

Abstract: Using a database of the 160 largest U.S. public pension plans over the fifteen year period from 2001 through 2015, we evaluate the Efficient Markets Hypothesis and its implication that it is difficult for active strategies to outperform passive strategies. Specifically, we compare the performance of public pension plans' active strategies with an estimated, less expensive, passive strategy on an annual basis. Potential passive strategy performance is calculated using a weighted average return. Pension plan provided asset allocations are utilized for weights and the performance of related, common, indexed exchange traded funds (ETFs) are used for returns. In addition, we consider the impact of plan size on performance to evaluate the potential benefit of additional resources. Finally, we illustrate the significant management expenses and fees paid by public pension plans and investigate their relation with pension plans' performance to evaluate the implication that professional managers are worth their pay because they can "beat the market".

Presenter(s): Brenda Ochoa, Ambre-Marie Starzyk
Faculty Mentor: Dr. Alexandru Roman

Department: Finance

Title: *Sustainability: Developing a Model of Practice*

Abstract: This project is a survey-based (perception) research study on sustainability practices in California. The project has a three-fold scope. First, it seeks to establish a cross-sectional evaluation (snapshot) of sustainability practices by mid-size and large organizations/companies/agencies located in California. Second, the project intends to develop a comprehensive list of challenges and best practices as they pertain to sustainability. Finally, the project seeks to test two hypotheses as they related to organizational size and organizational leadership vectors.

Education



Presenter(s): Qi Guo

Faculty Mentor: Dr. Eun-Ok Baek

Department: Educational Instructional Technology

Title: *The Effect of Online Pediatric Courses: Parents' Knowledge of Pediatric Diseases and their Perception of the Online Courses*

Abstract: This research study examines the effect of online pediatric courses for parents' knowledge of pediatric diseases and their perception of the online courses. The study was guided by the following research questions. 1. Is there any effect of online pediatric courses for parents to increase their knowledge about pediatric diseases? 2. What are the parent's perceptions of online pediatric course? This is an explanatory sequential mix method research. The participants consisted with 34 Chinese parents. In order to evaluate the pediatric knowledge of parents, pretest and posttest have been done. The pre and posttest used the same questions. The data description and dependent t-test were employed to analyze the numerical data. Moreover, pre and post surveys were involved to evaluate the parent's perception of the online courses. Again, the pre and post surveys shared the same questions for comparison. In order to further investigate the parent's perception towards the online courses, I conducted semi-structured interviews with three selected parents based on the classification of their test scores. The research is in progress, I collected pre-test and pre survey. The scores of participants practically fit for normal distribution, after the post-test

and post survey data collected, I can use dependent t test to assess whether there are statistical significance. The data collection and analysis will be finished on Mar. 8, 2017. This study will conclude with a discussion in relation to literatures, the implications of the findings on the effect of online pediatric courses, limitations, and recommendations for future research.

Presenter(s): Jared Becknell

Faculty Mentor: Dr. John Beckenbach

Department: Counseling and Guidance

Title: *Leaving the Coliseum: A Masculinity Workshop Deconstructing Social Norms*

Abstract: In this presentation, I will be outlining a structured eight-day Male Development workshop to create a space for attendees to learn, obtain and eventually teach a more preferred identity without the social constructs or negative discourses surrounding masculinity. The main approach to this workshop will be re-authoring through narrative practices and personal reconciliation about past, present and/or future events that have/will be affected by masculine ideals. Grounded in narrative strategies, attendees of this workshop will explore, re-evaluate and deconstruct individual, group, and social construction of what it means to be a man. The use of motivational interviewing/outsider witnessing techniques will be used to expand on the language, actions and thoughts regarding masculine behavior. By utilizing short-term

motivational interviewing small manageable goals can be created throughout the workshop and discussed the following session. The concept of reconciliation will be implemented in letter writing to make amends for past indiscretions of former relationships or to create promissory letters to loved ones or to the future self. The goals for this workshop is to rethink these barriers, improve family dynamics, relieve past relational burden, culpability and invite different perspectives to societal influences that cause these discourses amongst men. In turn this greatly reduces the overall stigma that has been created surrounding mental health systems and providing a more manageable life for those struggling within these norms.

Presenter(s): Malena Vitela and Desiree Jaramillo

Faculty Mentor: Not Indicated

Department: Counseling and Guidance

Title: *Identifying and Combating Compassion Fatigue*

Abstract: This poster examines the roots, risk factors, and resiliencies surrounding Compassion Fatigue, and ponders at the impact professional counselors can have in alleviating Compassion Fatigue in other helping professionals. It has been found in several studies that young males in public mental health fields are more prone to burnout and Compassion Fatigue than their female peers and male counterparts working in the private sector. The private sector allows for more autonomy and leads to greater Compassion Satisfaction among those in the helping profession. Perceived degree of autonomy and individual coping skills add to Compassion Satisfaction and decreased risk of burnout. Individual coping skills such as mindfulness, social and professional support, and mentoring all help to mitigate Compassion Fatigue.

Presenter(s): Courtnee Reis

Faculty Mentor: Dr. Daniel Stewart

Department: Counseling and Guidance

Title: *Connections using Play Therapy*

Abstract: Through the use of play therapy, counselors

can build a stronger therapeutic alliance with their clients of all ages.

Presenter(s): Jeara Romasanta and Kaila Gray

Faculty Mentor: Dr. Shawn Patrick

Department: Counseling and Guidance

Title: *Narrative Therapy Based School Counseling: The Energy Bus*

Abstract: As part of the graduation requirements for a Master of Science in Counseling and Guidance, graduate students were tasked with creating and implementing a special project that was both effective and easy for other school counselors to replicate. This case study highlighted the implementation of a counseling group that was based on the book, *The Energy Bus for Kids*. Graduate students created school counseling curriculum based on the five rules provided in the story. This counseling group focused on coping skills to help students overcome negativity, bullies, and everyday challenges. This group was implemented at two elementary schools. At one school, the participants were five, 4th-5th grade girls at a Title I school. The other group was comprised of 3rd grade GATE students with a mix of boys and girls. Based on teacher and counselor supervisor observations, students who participated in *The Energy Bus* group tended to use the skills they learned in the group to solve problems on the playground, in class, and at home.

Presenter(s): Juliet Makapugay

Faculty Mentor: Not Indicated

Department: Educational Leadership

Title: *Evidence Based Practices for Children with Autism*

Abstract: Children in the United States are being diagnosed with Autism Spectrum Disorder (ASD) at a rapidly increasing rate. One in sixty eight children are now estimated to be diagnosed with ASD, a seventy-eight percent increase in the rate of diagnosis during the time period of 2002-2008. Autism Spectrum Disorder is a developmental disability characterized by delays in communication, social interaction, repetitive

actions and limited interests. Approximately eight percent of students receiving special education services in the United States educational system qualify under this eligibility. Symptom severity varies in children identified with Autism Spectrum Disorder (ASD). Factors affecting severity include cognitive ability, and deficits in the areas of language and behavior. Collaboration across content areas and among designated instructional service providers is necessary in implementing effective interventions due to the pervasiveness of Autism Spectrum Disorder across all areas of development. Evidence-based practices are identified as interventions supported by research. The criteria for inclusion as an evidence-based practice will be analyzed. Evidence-based practices will be introduced. Suggestions for future research are discussed.

Presenter(s): Luquanda Hawkins

Faculty Mentor: Not Indicated

Department: Educational Leadership

Title: *The Achievement Gap*

Abstract: There is a problem in the K-12 schooling system and it pertains to the academic achievement gap between black and white students; despite the tremendous amounts of research that have been done over the years and numerous programs created for this specific purpose. There continues to be a decline in the number of urban black students specifically in the high school of Southern California who are in 'college readiness' courses, maintaining high GPAs, graduating and entering college. White students are excelling in every area mentioned in the gap between the accomplishments of both groups widening. This problem has negatively impacted the black community, causing an increase in poverty due to a lack of job placement/security, financial freedom, and economic opportunities. Black people have lost hope, turning to lives of crime, acting out in waves of violence and being crippled under the depraved states in which they live (Ladson-Billings 2006). This depraved state has also caused our black students to act out in ways of violence

and aggression (Basch, C.E. 2011), it is the reason for the state of many of our urban cities being a place infested with criminal behavior (Bowen, N. K & Bowen, G.L. 1999), why so many of our black students have lost hope (Bolland, J. M., Lian, B. E., & Formichella, C.M. 2005) and why so many of our Urban Black students are dealing with chronic stress having a hard time self-regulating and coping (Evans, G. W., & Kim, P. 2013). Perhaps this study could provide a few answers to some longstanding questions. The purpose of this study is to investigate effective ways to shorten the achievement gap between black and white students by performing a mixed method synthesis. This study has the ability to provide hope, heal hurting people and remedy an ongoing problem in America; that problem is called the achievement gap.

Presenter(s): Kahadda Poston and LeAnna Pollard

Faculty Mentor: Not Indicated

Department: Rehabilitation Counseling

Title: *The Power of Neurofeedback*

Abstract: The purpose of the poster board is to show what Neurofeedback is, how Neurofeedback works, and what disabilities, or behaviors neurofeedback aids the in brain modifying.

Natural Sciences



Presenter(s): Karah Shouse

Faculty Mentor: Dr. Mandy Rymal

Department: Kinesiology

Title: *Can All Your Shots Come True? A Comparison Of Self-Modeling Techniques On Free Throw Performance*

Abstract: Research has displayed that athletes, coaches, and practitioners use observation as a means to convey information to aid in the learning of motor skills. A specific form of observation, as well as the field of interest in this research study, is self-modeling. Self-modeling is an instructional technique in which one views them self on video showing only desired behavior (Dowrick, 1999). In this research we focused on whether mirror reversal of the dominant arm, which appeared as though it is the non-dominant arm, or an unedited video of the non-dominant arm showing the individual's best performance (i.e., positive self-review) had an effect on free throw success. Participants were assigned to either the positive self-review (PSR) group, mirror reversal (MR) group, or control (C) group. The primary study aim was to assess the effectiveness of different types of self-modeling with regards to performance. Participants (n = 81) took part in a four week protocol in which their free throw performance was measured; baseline, acquisition one, acquisition two, and retention. Results showed that there was a significant main effect for time ($[F(1,2) = 6.037]$, $p = .001$, $\eta_2 = 0.72$, $\beta - 1 = 0.957$), due to a learning effect. However, there were no significant main effect with regards to the group and

no significant interactions. Based on the results, it was concluded that different types of self-observation had no effect on free throw performance. Limitations and future considerations will be discussed.

Presenter(s): Rafael Alamilla

Faculty Mentor: Dr. Jason Ng

Department: Kinesiology

Title: *Effect Of Standardized Encapsulated Caffeine On Cardiovascular, Metabolic, And Perceptual Responses During Steady State Exercise In Average College-Age Men*

Abstract: **PURPOSE:** Due to easy accessibility, caffeine is a highly used ergogenic aid. Many studies have investigated the ingestion of caffeine as a dosage relative to body mass, but fewer investigations have featured absolute dosages of caffeine. The purpose of this study was to examine the effect of an absolute dose of caffeine on heart rate (HR), oxygen uptake (VO₂), and rating of perceived exertion (RPE) during exercise. **METHODS:** A double blind crossover design was implemented for this study. Five men completed a pretest session to measure maximal oxygen uptake (VO₂max). Then on two separate experimental trials, subjects ingested either 600 mg of encapsulated caffeine (CAF) or placebo (PLA), rested for one hour, then exercised on a cycle ergometer at 50% VO₂max for 45 min. Measurements were recorded at rest, 15 min, 30 min, and 45 min during each trial. **RESULTS:** A treatment × time interaction approached significance

($p=0.07$), suggesting lower HR during PLA trials compared to CAF trials. VO_2 increased ($p < 0.001$) from rest then remained steady during exercise but was not different between treatments ($p=0.69$ for interaction). RPE increased ($p < 0.001$) from rest then remained steady during exercise but was not different between treatments ($p=0.65$ for interaction). **CONCLUSIONS:** These preliminary results suggest that caffeine ingestion might result in elevated heart rate without decreasing ratings of perceived exertion during exercise. However, these are preliminary results on college-age men with average level fitness. Future studies should investigate this effect among different fitness levels and sexes.

Presenter(s): Kong Tu

Faculty Mentor: Dr. Jason Ng

Department: Kinesiology

Title: *Effect of an Absolute Dose of Encapsulated Caffeine on Cycling Time Trial Performance in Average College-age Women*

Abstract: Few studies have examined ingestion of an absolute dose of caffeine in capsule form on the exercise performance of women with an average fitness level. **PURPOSE:** To investigate the effect of an absolute dose of encapsulated caffeine on cycling time-trial performance in women of average fitness level. **METHODS:** Four women (mean \pm SD; age: 23 ± 3 y, height: 164.2 ± 6.0 cm, weight: 63.2 ± 3.2 kg, body fat: $22.0 \pm 2.2\%$, VO_{2max} : 35.1 ± 5.9 mL/kg/min) participated in a pretest to assess VO_{2max} followed by two experimental trials assigned in a double-blind, crossover design. During experimental trials, participants ingested either 600 mg of encapsulated caffeine or a placebo, followed by 60 min of seated rest. Then, 45 minutes of steady-state cycling at 50% VO_{2max} was performed, immediately followed by a 15-min time trial to complete as much work as possible. **RESULTS:** There was no significant difference between trials in total work completed (caffeine: 123.7 ± 20.4 kJ, placebo: 121.5 ± 19.3 kJ; $p=0.45$), mean power output (caffeine: 137.5 ± 22.6 kJ, placebo: 134.7 ± 22.3 kJ; $p=0.19$), and peak power output (caffeine: 210.8 ± 15.2 kJ, placebo: 213.8 ± 34.0 kJ; $p=0.82$).

There was no significant difference between trials in rating of perceived exertion at the end of the 15-min time trial (caffeine: 17.8 ± 2.6 , placebo: 18.8 ± 1.3 ; $p=0.25$). **CONCLUSIONS:** Preliminary results of the current study did not show an ergogenic effect of an absolute dose of encapsulated caffeine on a 15-min cycling time trial performance in women of average aerobic fitness.

Presenter(s): Christina Cooper

Faculty Mentor: Dr. Nicole Dabbs

Department: Kinesiology

Title: *The Effects Of Lower Body Fatigue On Vertical Jump Ground Reaction Forces*

Abstract: Purpose: Ground reaction forces and a decrease in muscular force-generating capacity can both be used to measure fatigue. Therefore, the purpose of this study is to determine the effects of lower body fatigue on ground reaction force measures. **Methods:** Nineteen recreationally trained males and females participated in a combined familiarization and testing session. Participants were familiarized with two types of vertical jumps and fatiguing protocol. Three trials for both the static jump (SJ) and countermovement vertical jump (CMVJ) were performed on a force plate, pre and post Bosco Protocol. The dependent variables calculated from the force plate were rate of velocity development (RVD), peak force (PF), impact force (IF), peak velocity (PV), and peak power (PP). Paired-sampled t-tests were used to analyze pre/post differences for each dependent variable. **Results:** There was a significant difference between pre and post PF ($p=0.003$; pre= $1,523.68 \pm 360.65$ N; post= $1,464.03 \pm 342.24$ N), IF ($p=0.001$; pre= $1,175.02 \pm 1142.37$ N; post= 1355.05 ± 987.34 N), PV ($p=0.002$; $2.63 \pm .36$; post= $2.38 \pm .51$ m/s), and PP ($p=0.001$; pre= 3373.09 ± 1088.92 m/s; post= 2922.89 ± 1100.00 m/s) measures for CMVJ. There was a significant difference pre and post measures for SJ peak force ($p=0.001$; pre= 1298.95 ± 261.97 N; post= 1230.60 ± 261.97 N). **Conclusion:** Bosco protocol showed a significant decreased in PF, IF, PV, and PP for CMVJ and a significant decrease in PF for SJ. Results showed that performing a high-intensity multi joint activity, Bosco

protocol, can lead to muscle fatigue and significantly alter force production recreationally trained populations.

Presenter(s): Jasmine Wimbish and Pedro Hughes

Faculty Mentor: Dr. Nicole Dabbs

Department: Kinesiology

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*

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 participant's 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): Patrick Bryan and Juan Rodriguez

Faculty Mentor: Dr. Guillermo Escalante

Department: Kinesiology

Title: *The Effects of Topical Aminophylline, Yohimbe, L-carnitine, Caffeine, and Gotu Kola on Thigh Girth, Skinfold Thickness, and Fat Mass in Sedentary Females*

Abstract: The objective of this study is to investigate the effectiveness of Lipoxyderm™ at regional reduction of thigh fat mass and girth. Although regional fat loss of the thigh and the abdominal region have been demonstrated with the use of aminophylline alone (3, 24), research on the effectiveness of a topical multi-ingredient formula has not been performed. This study will be a double-blind, placebo controlled study designed to investigate the effects of topical Lipoxyderm™ on thigh fat mass, thigh muscle mass, thigh girth, and measurement of subcutaneous thigh skinfolds in healthy, sedentary, and overweight women between the ages of 18-54 years of age.

Presenter(s): Javier Romero

Faculty Mentor: Dr. Jason Ng

Department: Kinesiology

Title: *Effect Of An Absolute Dose Of Caffeine On Cycling Time Trial Performance In Average College-Age Men*

Abstract: Caffeine is widely used during exercise to reduce fatigue. Few studies have investigated the effect of an absolute dose of encapsulated caffeine on exercise performance. PURPOSE: To investigate an absolute dose of encapsulated caffeine on a 15-min cycling time trial performance in college-age men with an average level of fitness. METHODS: On two separate occasions, five male subjects ingested either a 600 mg dose of encapsulated caffeine (CAF) or a placebo (PLA) in a double-blind design. Then, after one hour of seated rest, subjects exercised on a cycle ergometer for 45 min at 50%VO₂max immediately followed by a 15-min time trial to complete as much work as possible. RESULTS: During the 15-min time trial, there was no significant difference between treatments in total work completed (CAF = 148.9 ± 36.1 kJ, PLA = 140.0 ± 29.7 kJ;

$p=0.35$). The difference between treatments in rating of perceived exertion approached significance ($p=0.05$) at the end of the 15-min time trial (CAF = 18.4 ± 1.1 , PLA = 17.0 ± 0.7). A significant main effect of treatment existed between caffeine and placebo trials in heart rate (CAF = 156 ± 10 beats/min, PLA = 146 ± 11 beats/min; $p=0.03$). **CONCLUSIONS:** Preliminary results of this group of college-age men with an average fitness level did not show an ergogenic effect of caffeine on 15-min time trial. Heart rate appeared elevated during caffeine trials compared to placebo trials, which might indicate increased cardiovascular strain, although these results are preliminary and require continued investigation.

Presenter(s): Leny Diaz Martinez, Karah Shouse, and Jake Lopez

Faculty Mentor: Dr. Mandy Rymal

Department: Kinesiology

Title: *Functions of Observational Learning*

Abstract: Visual cues are an efficient means of conveying information, typically more efficient than verbal cues. This is evident when learning new skills or enhancing skill performance as it is common practice to observe a model in an effort to obtain the requisite knowledge to reproduce the action. When this occurs, the learner is engaged in 'observational learning' (OL). OL is recognized as a powerful method of transmitting beliefs, attitudes, thoughts, and behaviors (Bandura, 1986). Cumming and colleagues (2005) developed a Functions of Observational Learning Questionnaire (FOLQ) in which they identified three reasons for which athletes use observation: (a) skill, (b) strategy, and (c) performance. However, research to date has not investigated how athletes with disabilities use observation and whether it differs from able-bodied athletes. Thus, a goal of the proposed research is to examine and quantify the functions of observational learning in sport participants with physical disabilities. Additionally, we will examine the effects of moderating variables on the functions of OL; that is, if gender, level of sport competition, type of physical disability, and sport type impact the amount or type of OL that one

engages in. Participants will complete the 17-item FOLQ. We hypothesize that athletes in the area of disability sports will use all three functions of observation; however, this is an exploratory study and thus specific hypotheses have not been made regarding which function will be most dominant. Preliminary results will be presented and a discussion on limitations, practical applications, and future directions will be included.

Presenter(s): Jonathan Aquino

Faculty Mentor: Dr. Jenevieve Roper

Department: Kinesiology

Title: *Comparing Smart Apparel Muscle Activity Measurements to Surface Electromyography During Exercise*

Abstract: Purpose: The purpose of the study is to compare smart apparel (SA) muscle activity measurements to surface electromyography (sEMG) measurements during exercise, and determine if any systematic bias of the apparel exists. Methods: Thirty-five male participants (Ages 23.1 ± 2.92 yrs, Height 178 ± 0.09 cm, Mass 81.14 ± 10.59 kg, body fat percentage 15.44.79%) provided informed consent to participate. During two testing sessions on two separate days, participants performed a three-minute standardized warm-up, followed by maximal voluntary contractions for selected muscles. Subsequently, participants performed three sets of 12 bodyweight squats and pushups. Conditions (sEMG or SA) were randomly counterbalanced among participants. Percent of maximal voluntary contractions (%MVC) were calculated for the selected muscle groups. Paired t-test were used to analyze group mean differences in %MVC between conditions. Bland & Altman plots were created to determine if any systematic bias exists. A Pearson's product correlation was run to determine if there was an association with intertrial variability and body fat percentage. Results: There were no significant differences between %MVC in the SA and sEMG for the RPEC, RQUAD, and RHAM muscles, as well as no significant correlation between intertrial variability and body fat percentage ($p > 0.05$). There was a

significant difference in %MVC measured in the SA and sEMG for the RDEL (p= 0.02). Conclusion: While there is no significant difference in %MVC in RPEC, RQUAD, and RDEL, there was a significant difference in %MVC for RDEL. It appears no systematic bias is present and intertrial differences are not associated with body fat percentage.

Presenter(s): Michael Thompson

Faculty Mentor: Dr. Laura Newcomb

Department: Biology

Title: *RNA Interference to Evaluate Role of Host Factors in Influenza RNA Expression*

Abstract: Influenza virus causes health and economic hardships worldwide. Influenza is controlled with annual vaccine of variable efficacy, and antivirals that become ineffective with use due to selection of resistance. Host proteins are integral for viral replication; host proteins that are essential for viral replication but redundant for the host cell represent a novel class of antiviral targets. As Peer Research Consultant for BIO 592, I led students to employ RNA interference to knockdown host factors and determine the effect on influenza virus RNA expression. Student's transfected cells with siRNA or no siRNA control for 48 hours prior to infection for 4 hours. I collected cells and students isolated and analyzed RNA by reverse transcription-quantitative PCR. Influenza transcription occurs in the nucleus, so student groups examined host RNA nuclear export factors, including Nxf1, responsible for mRNA nuclear export, Crm1, responsible for rRNA nuclear export, XpoT, responsible for tRNA nuclear export, and Xpo5, responsible for microRNA nuclear export. Each siRNA treated sample demonstrated a decrease in target mRNA, as expected. We found Nxf1 inhibition results in a severe decrease in viral RNA expression, verifying previous results. Interestingly, Xpo5 inhibition showed an increase in viral RNA expression, supporting the idea microRNAs function to counter influenza replication. One group targeted host RNA helicases, UAP56 and URH49, paralogs implicated in influenza replication. Unfortunately, URH49 siRNA cross-reacts with UAP56,

limiting our conclusions. Future studies will continue to use RNA technologies with the aim to identify host factors as viable antiviral targets to counter influenza.

Presenter(s): Alexander Beechko

Faculty Mentor: Dr. Angela Horner

Department: Biology

Title: *Changes in Muscle Properties as a Function of Age and Training in Mice*

Abstract: Muscles adapt quickly to perturbations such as exercise training, disuse, or aging. Advanced aging is associated with a decline of muscle performance, whereas training results in enhanced contractile properties of muscle and metabolic changes that benefit performance. While numerous studies have documented age-related declines in muscle and locomotor performance, it is still unclear how factors such as extreme, lifelong aerobic training and genetics can impact the timing and trajectory of muscle aging. Here we use mice from two genetic lines (control and mice selected for high levels of wheel running over 70 generations, or HR mice) to better understand the effect of high levels of aerobic activity on age-related declines in muscle performance. Mice were divided into four cohorts (Ctrl/wheel access, Ctrl/no wheel access, HR/wheel access, HR/no wheel access) and muscle contractile properties were obtained from mice at time points spanning two years for each cohort. In order to characterize contractile performance we used an in situ preparation to measure the force, velocity, power, and passive properties of the triceps surae complex. We found that, without training, control mice had significantly higher shortening velocities than HR mice, regardless of age. There were no significant differences in power production, force, or resilience across any line or treatment cohort. We found that passive stiffness significantly declined across all mice with wheel access in late ontogeny. This study informs our understanding the role of endurance training in preserving a healthy muscle phenotype throughout ontogeny. Our results may also provide insight into relative contributions of genotype and phenotypic plasticity as mechanisms that

determine how muscles respond to training and aging.

Presenter(s): Cory Pagne-Andenoro and Obiel Hernandez

Faculty Mentor: Not Indicated

Department: Biology

Title: *Developing Chemical Inhibitors to Investigate the Function of Falcilysin, a Malarial Protease*

Abstract: Plasmodium falciparum is one of five species of malaria parasite that infects people, and causes over 500,000 deaths annually. After entering the human host, P. falciparum infects red blood cells (RBCs) where the parasite grows and replicates for approximately 48 hours before lysing the host cells and starting a new round of infection. The parasite relies on a range of proteases in order to infect and grow within RBCs, though the functions of some of these proteases are not well characterized. Our research is investigating the function of an essential but poorly understood parasite protease called falcilysin (FLN). We are working towards the development of specific and potent chemical inhibitors of FLN. These inhibitors will provide much-needed tools to study FLN loss-of-function phenotypes in cultured parasites. Our inhibitors are based on a piperazine ring backbone with a hydroxamic acid moiety. Our current inhibitor panel is investigating how different substitution patterns on the piperazine ring influence inhibitor activity against FLN. Here we present the synthesis of these compounds as well their inhibitory potency against recombinant FLN protein.

Presenter(s): Raquel Elias

Faculty Mentor: Dr. Becky Talyn

Department: Biology

Title: *Observation of Fruit Flies Consuming Organic Versus Glyphosate Based Sucrose*

Abstract: Food composition is a big concern since it directly affects our well-being. Glyphosate, an herbicide residue found on many conventional food sources, can potentially damage organs and health. The current

study is a continuation of a previous experiment, which involved allowing *Drosophila melanogaster* to choose different sources of corn, three conventional and one organic. Two corn sources, organic and one type of conventional corn, were presented in a t-tube, and flies were given fifteen minutes to choose a side. Organic food was not more attractive, which could have been due to the unknown concentration of glyphosate in the conventional corn. In this experiment, a more direct approach to measuring the fruit fly's food consumption was used. Feeding tubes composed of a capillary tube in a micropipette contain a 5% sucrose solution, along with red or blue dye to keep track of whether the food is being consumed, and either 10 g, 1g, 100 mg or 0 mg of glyphosate from round-up. Flies were starved 24 hours before the start of the assay and then given 24 hours to consume the food. This will demonstrate whether glyphosate concentration influences food consumption.

Presenter(s): Dylan Enright

Faculty Mentor: Dr. Paul Orwin

Department: Biology

Title: *Neonicotinoid Interaction with a Selectively Enriched Soil Microbe*

Abstract: Imidacloprid is a pesticide belonging to the neonicotinoid pesticide family. It is the slowest of the neonicotinoids to biodegrade under natural conditions without bacterial assistance. It has also been largely linked to honeybee colony collapse disorder (CCD). Very few bacterial species have been identified thus far as resistant to imidacloprid and even fewer have been identified as degraders of the pesticide. A soil microbe was selectively enriched for the ability to resist or potentially degrade an imidacloprid based commercial pesticide. Once abnormal ability to resist imidacloprid was established, growth experiments were conducted to define the specific ability of the bacteria to survive in an imidacloprid-rich environment. These included attempted growth with imidacloprid as a sole carbon or nitrogen source. Following growth studies, testing was conducted to determine if the bacteria was only resisting imidacloprid or if degradation was occurring.

Genomic experiments were also undertaken to better identify the microbe.

Presenter(s): Janelle Doyle

Faculty Mentor: Dr. Tomasz Owerkowicz

Department: Biology

Title: *Cracks In Eggshells Impair Embryonic Growth In The American Alligator*

Abstract: Late-term embryos of archosaurs mobilize calcium from their mineralized eggshells in order to support musculoskeletal development. Previous studies on the American alligator showed that full removal of the eggshell leads to undersized embryos and hatchlings with weakly mineralized skeletons. How much of that effect is due to loss of eggshell structural integrity has not been investigated to date. We compared embryonic development and growth in eight clutches (192 eggs), collected over three seasons. Eggshells were either peeled, cracked, or sham-handled (control) at embryonic stages 16-18. All eggs were incubated for 35-40 days at 30°C in full humidity. Controlling for initial egg mass, we found that cracking the eggshell reduced embryo mass by 11%, and peeling the eggshell by 30%. Controlling for embryonic mass, whole-body proportions (total, snout-vent, femur, and head 20 lengths) were similar between treatment groups. Relative to femur length, however, wet mass of the caudofemoralis muscle (a major hind limb retractor) was 15 significantly reduced in embryos from cracked (-9%) and peeled (-23%) eggs. Eggshell fracture was unlikely to compromise calcium supply, given that eggshell crystals retained an intimate association with the underlying shell membrane. Overall, we show that eggshell fracture during rough handling/transport of eggs can have deleterious effects on embryonic growth and may impair hatchling escape performance from the nest. Our findings have implications for crocodylian conservation and egg ranching efforts, and may impact egg collection methods to minimize eggshell fracture. Further, researchers working on crocodylian eggs should consider controlling for structural integrity of eggshells in their studies.

Presenter(s): Kevin Yang

Faculty Mentor: Dr. Janet Bauer

Department: Biology

Title: *Microorganisms Associated With Normal Oral Flora and the Use of Rubber Dams*

Abstract: Previous research has shown that the use of the dental dam during dental procedures reduces the bacterial load (bacterial growth) in a patient. The objective of this study was to identify and map clinical outcomes of microorganisms and their presence or absence when using the dental dam. A total of 9 articles was obtained through a literature search using search engines including Google and the CSUSB library database. Seven articles were used to quantify bacteria types during or after dental procedures. Clinical outcomes were mapped using Neo4j database principles. Data was analyzed using the Shapiro Wilks at $p=.05$ significance level. Locations in the oral cavity and on the patient chests, colony-forming units (CFUs) of microorganisms were compared with and without use of rubber dam. The percentage reduction in CFUs during the cavity preparation and restorative procedures ranged from 95% to 100% in the oral cavity and 70% to 88% reduction on the patient's chest with the use of rubber dam. Similar types of microorganisms were found with or without the use of rubber dam. Rubber dam with the use of adhesive material is believed to be more effective than use of no sealing materials to prevent saliva leakage. There was no saliva leakage in 80% of teeth with the use of adhesive and silicone materials after rubber dam application. The use of rubber dam reduces the CFU's but the type of micro-organism remains the same. Also, rubber dam application with the use of adhesives decreases the saliva leakage.

Presenter(s): Adrien Arias

Faculty Mentor: Not Indicated

Department: Biology

Title: *Effects Of Exogenous Acetazolamide On Growth And Calcium Flux In Alligator Embryos*

Abstract: For normal development and growth, archosaur embryos must rely on mobilisation of calcium from the calcareous eggshell. Dissolution of calcium depends on the enzyme carbonic anhydrase (CA) expressed in the chorioallantoic membrane (CAM). Earlier work on CA function in embryos has been limited to the domestic fowl (*Gallus gallus*), and shown that administration of the CA-inhibitor, acetazolamide (AZA), significantly decreased total calcium deposited into the yolk and embryo. We tested the effects of topical AZA administration on embryonic growth in the American alligator (*Alligator mississippiensis*), and compared its effects to that of physical eggshell removal from eggs. Over two seasons, we used six clutches (190 eggs) and administered topical solution of AZA (0, 150, 300 and 600 μg) in DMSO (20 μl) daily. AZA-treated eggs were compared to manually peeled eggs and sham-handled (unpeeled) controls. Eggs were incubated at 30°C and treatment lasted 40 days. Embryos were harvested at Ferguson stages 25-28. Like the eggshell-less group, AZA-treated groups resulted in a significant decrease (20%) in alligator embryonic growth compared to the control group, and growth restriction varied in a dose-dependent relationship. In contrast to the eggshell-less group, however, AZA-treated embryos had a significantly higher proportion of dry yolk mass and a greater fraction of yolk ash mineral. Equatorial eggshell thickness showed no significant difference between AZA and control groups. While these results suggest that topical administration of AZA has deleterious effects on embryonic growth of crocodylians, it does not appear to significantly reduce calcium transfer from the eggshell to the embryo and yolk, as observed in the domestic fowl. We conclude that AZA administration (at doses tested) does not effectively block calcium mobilisation in crocodylian eggs, and cannot be used in studies of calcium restriction on musculoskeletal development.

Presenter(s): Rachael Lemon

Faculty Mentor: Dr. Becky Talyn

Department: Biology

Title: *Effects of Glyphosate on *Drosophila melanogaster* Ovaries*

Abstract: Glyphosate is the main ingredient in roundup that is used as an herbicide in commercial agriculture. Glyphosate has been found in runoff water and to linger in the soil after being sprayed, and has major impact on the surrounding ecosystem and the organisms that occupy the space. Glyphosate causes morphological changes within organisms. In this study I will be observing a change within *Drosophila melanogaster*, Canton- S, ovaries. Recently mated *Drosophila* exposed to the glyphosate from eclosion to mating will further mature for 3 days. At the 3-day mark, the females will be anesthetized and killed in order to dissect and measure the size of the ovaries. Following similar methods practiced through Ringo's experiment, preliminary results suggest that nearly lethal exposure to glyphosate causes an abnormal increase of the size of the organ. The significance to an increase in ovary size would show that glyphosate does have effect on *Drosophila* and the reproductive system.

Presenter(s): Edna Valencia

Faculty Mentor: Dr. Renwu Zhang

Department: Biochemistry

Title: *Effects to Ferroelectric properties via Functional Group Substitution*

Abstract: Croconic acid is the first organic ferroelectric molecule to experience high polarization at room temperature. In this experiment, we want to observe the ferroelectric effects of substituting a functional group on croconic acid. Croconic acid has five different reaction sites, leaving it susceptible from multiple additions of the desired substrate, being hydroxylamine. Our approach is to substitute a carbonyl with a hydroxylamine. Due to croconic acids symmetry, methyl protecting groups must be added to force a single addition of hydroxylamine.

The methylation of disilver croconate was successful there by yielding dimethyl croconate.

Presenter(s): Larry Lopez and Edmar Jack Aquino

Faculty Mentor: Dr. Laura Newcomb

Department: Biology

Title: *Characterization Of Influenza Virus Nonstructural Protein (Ns1) Effect On Viral RNA Expression*

Abstract: Influenza is a negative single strand RNA virus of economic and global health concern because it quickly evolves to evade vaccines and adapt resistance to antiviral therapies. While yearly vaccination is required to control seasonal influenza, pandemic prevention relies on effective antivirals. Resistance has been documented for the current approved antivirals which prevent influenza. To reduce the chance of resistance, our laboratory aims to target multiple interaction domains within the influenza nucleoprotein (NP), a highly conserved protein among influenza subtypes. This project aims to establish if the viral nonstructural NS1 protein enhances viral RNA expression through interaction with the N-terminus of NP. This will be done by transfecting 293T cells with DNA plasmids to express viral ribonucleoprotein complexes, responsible for viral RNA expression, with either WT-NP or NP with deletion of the N-terminal 20 amino acids in the presence or absence of NS1 for comparison. RNA will then be isolated from the transfected cells to determine whether NS1 influences viral RNA production and if this effect requires the N-terminus of NP. Our data will determine if NS1-NP interaction is important for viral RNA expression and a potential antiviral target to facilitate development of novel antiviral therapies. If we prove this true, the next step will be to prevent the NS1-NP protein interaction and confirm inhibition of viral infection.

Presenter(s): Jared Lin

Faculty Mentor: Dr. Laura Newcomb

Department: Biology

Title: *Role of N-terminus of Nucleoprotein in Influenza RNA expression*

Abstract: The influenza viral ribonucleoprotein complexes (vRNPs) are responsible for viral RNA synthesis. Each vRNP is comprised of one vRNA segment, the viral RNA dependent RNA polymerase complex (RdRP), and multiple copies of nucleoprotein (NP). NP serves as scaffold in formation of vRNPs, but also regulates vRNP activity. The N-terminus of NP contains a nonconventional nuclear localization signal (NLS1) essential for initial vRNP nuclear import, but also interacts with host RNA helicases to enhance viral RNA replication in the nucleus. NP contains at least one additional NLS sequence, with bioinformatics revealing a third NLS in some NP proteins. To examine the role of the N-terminus of NP aside from its vRNP nuclear localization activity, we constructed N-terminal 20 amino acid deletion mutants with or without the addition of the conventional NLS from SV-40 T-antigen, termed del20NLS-NP and del20-NP. In the context of reconstituted vRNPs, both exhibit nuclear localization, consistent with NLS1 being utilized for vRNP localization but not NP localization and vRNP formation in the nucleus. Furthermore, both demonstrate decreased vRNP RNA synthesis activity, exacerbated as the vRNA template is lengthened, consistent with a lack of interaction with host RNA helicases. Interestingly, del20-NP vRNP activity is less severe than del20NLS-NP, suggesting perturbations of the N-terminus disrupt vRNP activity. Our results support the N-terminal region of NP as a flexible interaction domain important not only for initial vRNP nuclear localization at the start of infection, but also efficient viral gene expression during virus replication and support pursuing NP as an antiviral target.

Presenter(s): Valeria Mejia, Melissa Aldana, Karina Vega and Patrick Bryan

Faculty Mentor: Dr. Tomasz Owerkowicz

Department: Biology

Title: *Skin Deep: Potential Thermoregulatory Role of Osteoderms in Alligator Mississippiensis*

Abstract: The American alligator, *Alligator mississippiensis*, is recognized by its striking appearance of having “spikes” on its dorsal side. These “spikes” are called osteoderms which are scales composed of bone. Alligators belong to a clade called Archosauria and are the most closely related species to dinosaurs that are currently living. Through fossilized records, it is widely accepted that dinosaurs were found to have bony plates that resemble those of osteoderms. It has been speculated that these plates may have had some function in thermoregulation (Main 2005). Osteoderms in alligators are vascularized and can obtain blood flow from the body (Vickaryous 2008). These vascularized areas are thought to play a role in regulating body temperature, considering the ectothermic and poikilothermic metabolism of crocodylians. We used thermal infrared imaging as a non-invasive tool to determine the surface temperature of the alligator body (Tattersall 2010). By manipulating the environmental conditions that the alligator was exposed to, we recorded variation in the alligator’s surface temperature with infrared cameras. Simultaneously, we tracked the alligator’s core temperature with a cloacal thermocouple. We subjected cold-acclimated (15°C) juvenile alligators to warming conditions (35°C) in vivo and ex vivo. We found that live alligators showed a faster rise in core temperature than their carcass. We also found that live animals’ core temperature exceeded their surface temperature, a feat impossible when blood flow to the skin was stopped. Finally, we found that osteoderm surface temperature was lower than that of neighboring scales. All three results are strong evidence that vascularized osteoderms play an important role in thermoregulation in warming crocodylians.

Presenter(s): Jason Jung

Faculty Mentor: Dr. Stuart Sumida

Department: Biology

Title: *New Information On The Captorhinid Reptile Captorhinikos Chozaensis From The Lower Permian Of Texas*

Abstract: The reptilian family Captorhinidae is the most basal member of the Eureptilia and is important to understanding the radiation and relationships of the entire clade. ‘Captorhinkos’ chozaensis is a poorly known captorhinid reptile with multiple tooth rows. The species holotype is from Foard County, North-central Texas in what was originally characterized as the Lower Permian Choza Formation of the Clear Fork Group, but is now considered the upper part of the Clear Fork Group undivided. The species holotype, specimen FMNH UR 97, is a partial lower and upper jaw with associated fragmentary tooth plates. The maxilla is fragmented, and no teeth from the anterior, single rowed region are present. However the maxilla clearly carries five rows of teeth in the multiple tooth row region, with the labial-most row extending posteriorly only about half the length of the remaining tooth rows. Contrary to the original illustration, the lower jaw exhibits clear suture lines between the dentary, coronoid, angular, surangular, and the prearticular elements. The dentary carries large but broken teeth anteriorly, and posteriorly four distinct rows of smaller teeth, the lingual-most of which extends posteriorly only about half the length of the remaining tooth rows. Preliminary reassessment of the dentition of FMNH UR 97 suggests it conforms neither to the original generic diagnosis, which specifies the lingual-most and labial-most rows of teeth on the dentary never overlap, nor more recent redefinitions of the genus Captorhinikos.

Presenter(s): Nelson Membreno

Faculty Mentor: Dr. Tomasz Owerkowicz

Department: Biology

Title: *Effect of Embryonic Calcium Constraint on Post-Hatching Growth and Bone Microstructure in the American Alligator (*Alligator mississippiensis*)*

Abstract: Among oviparous reptiles, archosaurs lay eggs with the thickest and most rigid eggshells. During embryonic development, archosaurs mobilize eggshell calcium to the yolk sac, and upon hatching rely on this calcium reservoir to supplement their dietary calcium intake. This additional source of calcium may have allowed archosaurs to achieve high post-hatching growth rates. We tested this hypothesis by incubating eggs of the American alligator, and following post-hatching growth for over two months. The calcareous eggshells were either experimentally peeled or sham-handled with the fibrous shell membrane left intact in both treatment groups. At hatching, experimental animals were significantly smaller than controls. There was considerable variation in growth rates within both groups, but overall control animals grew significantly faster than experimental ones. Standardized to bone length, femora and lower jaws of three month-old experimental animals had smaller cross-sectional area, second moment of area, and polar moment of inertia. Cortical thickness was decreased, as was lacunar density. Incomplete osteone formation resulted in prominent vascular spaces in the lower jaws of experimental alligators. Considering a lower bone mineral content in the experimental group, these results suggest that insufficient calcium supply exerts negative feedback on bone tissue growth, and archosaurs cannot compensate for decreased material stiffness by augmenting the geometric properties of skeletal elements, even those critical to locomotion or feeding. We propose that selective forces on post-hatching survival drove the evolution of ever-thicker and mineralized eggshell of archosaur eggs. Eggshell and bone microstructure of extinct archosaurs may contain clues to their calcium-handling strategies.

Presenter(s): Crystal Litak, Zachary Hackworth, and Margarete Englert

Faculty Mentor: Dr. David Rhoads

Department: Biology

Title: *Determining Patterns of Altered Gene Expression by Plant Mitochondria during Heat Stress*

Abstract: Unlike the normal flow of information from the nucleus to other parts of the cell, organelles can send signals back to the nucleus, termed retrograde regulation. Mitochondrial retrograde regulation (MRR) is seen to regulate nuclear gene expression. Abiotic stresses, such as heat, affect nuclear gene expression through multiple MRR pathways. When a plant is under heat stress or other abiotic stresses there are large changes found in the expression of heat shock proteins (HSPs), specifically small heat shock proteins (sHSPs). sHSPs interact with proteins to help stabilize and prevent other proteins from denaturing in an attempt to save the cell. *Arabidopsis thaliana* has been used as a model to study the effects -on sHSPs from a molecular genetic approach. Our hypothesis was that mitochondrial retrograde regulation leads to an increase in gene expression, increasing the amount of heat shock proteins in the cell. In our project we isolated RNA samples from a transgenic line of *Arabidopsis thaliana* (AtHSP17.4) which had a sHSP being constitutively expressed. Following isolation, we performed RNA gel analysis and blotting. This allowed us to identify if there was altered gene expression due to signaling from the mitochondria. Our results indicated more AtHSP17.4 transcript RNA in the transgenic line; this suggests an effect on nuclear gene expression from the mitochondria due to MRR.

Presenter(s): Samhan Alsolami

Faculty Mentor: Dr. Nicole Bournias-Vardiabasis

Department: Biology

Title: *Knocking down key Autophagy and Lysosome Genes in Drosophila Melanogaster to Demonstrate Their Potential Pathological Role in Alzheimer's disease*

Abstract: Alzheimer's disease (AD) is a neurodegenerative disorder that despite extensive efforts, scientists have failed to unlock its pathological mechanism. The hallmark of Alzheimer's disease is the widespread of two misfolded proteins; Amyloid beta 1-42 and Tau. The AD causes a gradual memory and motor decline and eventual death in human. Currently 5 million Americans and 35 million people worldwide are affected with AD, and those figures are predicted to double by 2050, so there a desperate need for an effective mechanism based treatment. In this study, different autophagy and lysosome genes were knocked down in amyloid beta 1-42 Drosophila model to investigate their potential role in AD. These genes are Atg16^{RNAi}, Atg16B, Atg5, Atg12, and Rab5. We have utilized the binary genetic system, Gal4-UAS to drive the expression of Amyloid beta 1-24 (A β 1-42) and knockdown these genes in cholinergic neurons. Genetic crosses were made to create the appropriate strains. Moreover, behavioral tests were performed to assess the resulted strains, both mental and motor functions under controlled and standardized conditions. Also, a robust flow cytometric analysis was performed on the strains' neuronal cells. Initial results have indicated that rab5 gene was lethal for females in F1 generation. Also, both Atg5 and Atg12 strains have poorly performed on climbing and survival assays compared to Atg16^{RNAi} and Atg16B. Cytometric analysis have indicated an increased internal complexity in neurons derived from these strains which can be attributed to A β 1-42 aggregates and its potential role in causing a dysfunctional enlarged autophagy vesicles inside neurons.

Presenter(s): Toshio Alvarado

Faculty Mentor: Dr. Jeremy Dodsworth

Department: Biology

Title: *Cultivation and Enrichment of "Caldatribacterium," a Member of the Candidate phylum Atribacteria (OP9)*

Abstract: Atribacteria (OP9) is candidate phylum with no representatives in pure culture that is found in various anaerobic environments worldwide. Although recent metagenomic and single-cell genomic data have opened a window into the physiological potential of the Atribacteria, cultivation of members of this candidate phylum would greatly enhance the ability to understand their metabolic capacity and ecology. Members of Caldatribacterium, a lineage of the Atribacteria present in some geothermal springs, were previously found to be abundant in thermophilic in situ enrichments on lignocellulosic substrates (corn stover) in Great Boiling Spring, NV. In an attempt to cultivate Caldatribacterium in the laboratory, these enrichments were used as inoculum in media with xyloglucan as a sole carbon source. This yielded stable laboratory cultures of Caldatribacterium, present at ~2-5% of the total population as assessed by fluorescence in situ hybridization (FISH) and quantitative polymerase chain reaction (qPCR). Additional enrichments were performed using different individual sugars as substrates. Of these, fucose gave the highest abundance of Caldatribacterium (~50%), and the dilution-to-extinction technique was performed to attempt to isolate Caldatribacterium. The results from (q) PCR of the dilution to extinction process indicated that the samples of bacteria could be high in abundance and possibly a pure sample. Further experimentation with FISH verified that in fact the samples were not pure, but still had significantly high percentages (>90%) of Caldatribacterium. These highly enriched will be useful in determining the metabolic capabilities of this lineage of Atribacteria.

Presenter(s): Tiffany Patel

Faculty Mentor: Dr. Angela Horner

Department: Biology

Title: *Material Properties of Mice Femora*

Abstract: The purpose of this research is to observe the effects of activity and genetic influence on the material properties of mice femora using three-point bending. A generation from high runner mice was selected where in a group of these mice were given wheel access and the remaining were sedentary along with a control group that was sedentary. The left femora of females were obtained after natural death of the mice. The dimensions of femoral length, proximal width, distal width and mid diaphysial width were measure. To take into account the loading of stress during activity on the femoral neck, the femoral neck width and mid diaphysial width were compared. Three-point bending was then used to determine the elasticity of the femora with stress and strain at break.

Presenter(s): Damon Mosier

Faculty Mentor: Dr. Jeremy Dodsworth

Department: Biology

Title: *Optimization of 'Aigarchaeota' (G1)-Specific Probes Utilizing Clone-FISH*

Abstract: 'Aigarchaeota', a currently uncultivated candidate archaeal phylum, includes both thermophilic and hyperthermophilic microorganisms that reside in terrestrial and marine geothermal environments. This archaeal phylum contains nine proposed genus-level groups that have been confirmed via 16S rRNA sequencing, with the first group (Aig G1) being the focus of this study. To better detect and quantify Aig G1 in natural samples and enrichment cultures, Clone-FISH (Fluorescence in situ hybridization) techniques were used to test possible oligonucleotide probes and to optimize hybridization conditions for FISH. A near-full length 16S rRNA gene obtained from Aig G1 was cloned into the plasmid pGEM-T. This construct was transformed into E.coli JM109 (DE3) and the Aig G1 16S rRNA was subsequently induced by treatment with isopropyl beta-D-1-thiogalactopyranoside (IPTG) and

chloramphenicol. FISH was then conducted with probes targeting the Aig G1 16S rRNA. Fluorescence signal intensities were observed using an epifluorescence microscope for induced and uninduced samples, as well as for a number of negative controls, at various formamide concentrations with fluorescently-labeled bacterial-specific (positive control for hybridization), archaeal-specific, and 'Aigarchaeota'-specific oligonucleotide probes. Induced, but not uninduced, cells were positive for the Archaea-specific probe, indicating successful induction of the Aig G1 16S rRNA gene transcript. A previously published Aig G1-specific probe showed specificity but had a relatively low signal intensity in comparison to the archaeal probe at all formamide concentrations, suggesting poor binding of this probe. Two other newly developed 'Aigarchaeota' (G1)-specific probes were observed and compared at five different formamide concentrations, one of which (Aig G1 180 Cy3) was found to have low intensity and the other (Aig G1 1012 Cy3) that was at least 4-fold brighter than the published probe, with an apparent optimal hybridization conditions at 30% formamide. This work will allow for better observation of Aig G1 in natural samples and enrichment cultures, and will facilitate use of FISH coupled with nano-scale stable isotope mass spectrometry to track the uptake of ¹³C labeled compounds by Aig G1 in future studies of their metabolic capabilities.

Presenter(s): Liane Greaver

Faculty Mentor: Dr. Tony Metcalf

Department: Biology

Title: *Describing Species Status of Rhinichthys osculus, the Santa Ana Speckled Dace, Among the Watersheds of Southern California Using Nuclear DNA Introns*

Abstract: Rhinichthys osculus, the Speckled Dace, is the most widely distributed freshwater fish in the Western United States. It inhabits small flowing streams and springs. While at one time this species was found in countless numbers in many California watersheds, its populations have been greatly reduced due to environmental and ecological factors. Locally, R. osculus,

known as the Santa Ana Speckled Dace, can be found in the Santa Ana Watershed drainages, with its nearest neighbor populations inhabiting the Colorado River, Owens Valley, and Central Coast inland waters. While mitochondrial DNA is an effective introductory look at the characterization of these varying populations, a more definitive view requires genetic information gathered from the sequencing of nuclear DNA markers. Specifically, within nuclear DNA, there exist segments called introns, which do not code for the expression of proteins. Due to this fact, they are less subject to the effects of natural selection and therefore are highly conserved regions among the species while also being highly variable between populations. By utilizing the genetic sequencing differences between populations we can show the Santa Ana Dace to be a “distinct population segment” among those throughout the most southwestern United States region.

Presenter(s): SueAnn Neal

Faculty Mentor: Dr. Tony Metcalf

Department: Biology

Title: *Population Structure of a Federally Endangered Plant (Astragalus Jaegerianus Munz Fabaceae) With a Limited Range Using Microsatellites*

Abstract: *Astragalus jaegerianus* Munz is a federal critically endangered endemic plant species found in a geographically restricted area, with a population size of approximately 5,700 plants as of a 2001 census. *A. jaegerianus* can be found in the transition zone between 3,100-4,200 feet elevation with a restricted range of 300km², but have been found to only occupy approximately 85km² within that range. (Walker & Metcalf, 2008) Endangered species within a restricted geographic range tend toward limited genetic diversity but previous work by Walker & Metcalf (2008) utilized Amplified Fragment Length Polymorphism (AFLP) markers to successfully establish the presence of high levels of genetic variation within and among *A. jaegerianus* populations. The limitations of AFLP markers are the inability to indicate genome sequence variation.

Microsatellite analysis, through the identification of highly conserved regions of genome flanking base pair tandem repeats between 75-300 base pair lengths is another avenue for research which will allow us to determine population structure within this endangered species. The process of microsatellite analysis identifies short tandem base pair repeats, two to four base pairs that are repeated for a total length between 75-300 base pairs from the genome. Through the assistance of Savannah River Ecology Lab, 26 microsatellite loci were identified (Manuscript in process) and from those loci nine optimal loci will be identified for further research on 186 distinct plant samples from 4 different subpopulations.

Presenter(s): Kaitlyn Grayson

Faculty Mentor: Dr. Nicole Bournias-Vardiabasis

Department: Biology

Title: *Bacterial Supplements -- Best Frenemies?*

Abstract: Microbiota in the gut have a symbiotic relationship with their host organisms. Some aid in digestion and the breakdown of nutrients and others can help regulate intestinal physiology. However, others may not be as beneficial and feed on the epithelial lining of the gut, which can lead to inflammation. This field of study is relatively new and the effects of microbiota are not fully understood. Therefore, previous studies have worked on measuring diversity within the microbiome, ratios of different species, and interspecies interactions. In *Drosophila*, previous studies have shown a relatively low diversity in the fruit fly's gut. In order to further current understanding, it was necessary to use probiotic cultures to alter bacterial ratios to surmise the effects various species may have on overall health.

Presenter(s): Jesse Argueta and Anel Torres

Faculty Mentor: Dr. Nicole Bournias-Vardiabasis

Department: Biology

Title: *Assessment of Developmental Toxicity Potential of Glyphosate-Based Herbicides Using Drosophila melanogaster Primary Embryonic Stem Cell Cultures*

Abstract: Glyphosate-based herbicides (GBH) are widely and most commonly used in the world of agriculture. A number of earlier developmental toxicity studies, utilizing a number of model organisms, have indicated that GBH exposure can result in neural defects and cranial malformations in the developing fetus. The *Drosophila melanogaster* embryonic cell culture system has been established as a robust in vitro assay to identify developmental toxicants (teratogens). The assay utilizes gastrula-staged *Drosophila* embryos which are homogenized into single cells, diluted into an appropriate cell density with Schneider's *Drosophila* medium that has been supplemented with FCS, and plated into 35mm dishes. Over the course of 24 hours, the embryonic stem cells go on to differentiate into a number of different cell types, but predominantly give rise to neuronal clusters (mostly cholinergic neurons) and myotubes. In this study, *Drosophila melanogaster* embryos were collected, cultured, and exposed to GBH at concentrations of 1×10^{-5} mM, 5×10^{-5} mM, and 1×10^{-4} mM. Concentrations above 1×10^{-5} mM yielded a significant decrease in the numbers of terminally differentiated neuronal clusters and myotubes and therefore identified GBH as a potential teratogen. Future studies will include identifying if GBH targets only cholinergic neurons and if GBH exposure results in the induction of hsp 70 (a major stress protein). It is hoped that this assay can be used, along with a battery of other in vitro assays, as a screen for the large number of insecticides and pesticides awaiting comprehensive testing of their teratogenic potential.

Presenter(s): Cristina Gonzalez

Faculty Mentor: Dr. Jeremy Dodsworth

Department: Biology

Title: *Cultivation And Genomics Of Members Of Group 4 Aigarchaeota*

Abstract: Aigarchaeota is a deeply branching, thermophilic clade within in the domain Archaea that has no cultivated representatives. Based on 16s rRNA phylogenies, 9 genus level groups have been identified within Aigarchaeota. This work is part of a larger project focusing on one of these groups, Group 4 Aigarchaeota (Aig G4), with the following goals: definition and analysis of an Aig G4 metagenome bin, and testing genomics-based predictions on laboratory enrichment cultures of Aig G4. Aig G4 was found to be relatively abundant in in situ lignocellulose (corn stover) enrichments established at $\sim 85^\circ\text{C}$ in Great Boiling Spring (GBS), NV. A metagenome derived from the GBS in situ enrichments, yielded an Aig G4 metagenome bin of ~ 1.48 Mb in size, and an estimated completeness of 90%. Maximum likelihood phylogenomic analysis confirmed that the selected bin from the metagenome does represent a member of Aigarchaeota. Annotation of the Aig G4 genome was done using RAST sequence database, and BLAST to compare the percent homology between AigG4 protein sequences to functional proteins identified in other archaea. From the annotation, genes to complete glycolysis and further processing of pyruvate to acetate or ethanol were identified. Genes involved in the catabolism of amino acids were found, but several genes in known amino acid catabolic pathways are missing. Tungsten aldehyde oxidoreductases (AOR) and a tungsten specific ABC transporter were identified, which may participate in sugar or amino acid catabolism. Enrichment cultures containing Aig G4 have been established in the laboratory, and were used to test various genomics-based predictions. Aig G4 can be grown in semi-synthetic media containing GBS spring water and the major growth substrate cornstover, but growth and long-term maintenance is not observed in synthetic medium containing corn stover, suggesting that a

in GBS water, resulted in consistent growth of Aig G4 at levels comparable to cultures grown on semi-synthetic medium. This suggests that tungsten may be an important trace nutrient for Aig G4, as predicted by the presence of the tungsten containing AOR, and that these genes may be critical for Aig G4 metabolism. Future experiments on these laboratory cultures will be used to determine what other component(s) of GBS spring water is useful to Aig G4 and to determine the role of tungsten AOR in Aig G4 metabolism. Stable isotope probing will also be employed to determine whether Aig G4 can use sugars and/or amino acids as growth substrates and carbon sources.

Presenter(s): Lizett Gonzalez, Joshua Dimapilis, Cristina Gonzalez, and Marlene Noriega

Faculty Mentor: Dr. Jeremy Dodsworth

Department: Biology

Title: *Cultivation and Detection of Novel Archaea from Great Boiling Springs*

Abstract: Candidate phyla currently constitute a significant amount of the overall phylogenetic diversity of microbes. Because they are not closely related to cultivated microbes, their potential physiology and ecology are much more difficult to infer than for uncultivated microbes that are within a known genus or family. This project aims to cultivate a member of the archaeal candidate phylum Aigarchaeota, Group 1 Aigarchaeota (Aig G1) in the laboratory. Based on cultivation-independent genomic data available from several Aig G1 members in Great Boiling Spring, 22 different types of growth media were designed. Variables that were tested in these media included different combinations of organic and inorganic growth substrates, amounts of oxygen, and incubation temperatures. These media were inoculated in the field with freshly collected sediment, incubated in the laboratory, and transferred (1/100 volume) after 3-4 weeks of growth. At various time points, DNA was extracted from culture samples and the abundance of Aig G1 and total Bacteria and Archaea was assessed by quantitative polymerase chain reaction (qPCR). From the

22 growth conditions, two cultures yielded growth of Aig G1. These growth conditions included hot spring mat extract with 2% oxygen and casamino acids with 10% oxygen, both incubated at 80°C. Aig G1 Abundance was 1-20% of the microorganisms grown in culture where the densities reached up to 107 16S rRNA gene copies/mL, and were stably maintained after several transfers. These are the first reported stable laboratory cultures of Aig G1 and will serve as a basis for understanding the physiology of this lineage.

Presenter(s): Christopher Ramos

Faculty Mentor: Dr. Daniel Nickerson

Department: Biology

Title: *Identification of Regulators of the Rab GTPase Ypt11 Involved in Mitochondrial Inheritance*

Abstract: Eukaryotic cells possess a variety of membrane-bound organelles that house specific biochemical functions essential to maintaining cellular health. Membrane fusion events and transport of entire organelles are regulated by molecular switch proteins called Rab GTPases. In yeast cells, the Rab GTPase Ypt11 (Rab11 in humans) coordinates inheritance of both mitochondria and Golgi membranes from mother cell to daughter cell. Ypt11 coordinates with a myosin, Myo2, to help transport Golgi and mitochondria along the actin cytoskeleton, through the bud neck, and into the growing bud. Previous studies have shown overexpression of Ypt11 in yeast results in hyperaccumulation of Golgi and mitochondrial membranes in the daughter cell—a phenotype that can be monitored using fluorescence microscopy. Cells turn off signaling by Rab GTPases using negative regulator proteins called Rab GAPs (GTPase Accelerating Proteins). It is unknown which Rab GAP is responsible for regulating Ypt11 activity at Golgi or mitochondria. Identifying a Rab GAP to counteract Ypt11 signaling would be an essential foundation in understanding regulation of organelle inheritance. We hypothesize that overexpression of a Rab GAP that counteracts Ypt11 signaling should restore normal localization of mitochondria and Golgi in strains overexpressing

Ypt11. We generated high-copy plasmids to overexpress each of the nine known yeast Rab GAPs, monitoring mitochondrial localization using a yeast strain that includes a fluorescent protein tag on a mitochondrial marker protein. At the time of abstract preparation, a yeast strain appropriate for mitochondrial observation (OM45-mCherry) has been verified and experimental controls with overexpressed Ypt11 have been performed. Results of ongoing experiments examining the effects of over-expressed Rab GAPs on mitochondrial inheritance will be presented.

Presenter(s): Ivan Silva and Taj Rai

Faculty Mentor: Dr. Nicole Bournias-Vardiabasis

Department: Biology

Title: *The Use of Drosophila melanogaster as a Model to Investigate the Underlying Cellular and Molecular Basis of TBI*

Abstract: Each year in the United States, 1.7 million people experience a traumatic brain injury (TBI). A TBI is characterized by the severe impact to the cranial region in which the brain consequently slams against the inside of the skull. This can result in swelling and bruising of the brain, which can lead to decreased brain function. TBI is a substantial health issue worldwide, yet the mechanism responsible for its complex spectrum of pathologies remains largely unknown. Sustained TBI's have been shown to increase the likelihood of developing Alzheimer's and other neurodegenerative diseases. Our research aims to identify some of the possible cellular and molecular mechanisms of TBI by utilizing the model organism *Drosophila melanogaster*. Two strains of *D. melanogaster* were used in this study, a transgenic AB 42 strain that expresses a 42 amino acid long peptide that has been reported as a possible cause of Alzheimer's disease, and a genetically matched 00C strain that serves as the control. The TBI model for *D. melanogaster* consists of the use of a spring action apparatus that delivers a strong jolt of 0.1 sec. The experimental design included: 00C untreated flies, 00C treated with 5 daily TBI's, 00C treated with 10 daily TBI's, AB 42 untreated flies, AB 42 treated with 5 daily TBI's, and AB 42 treated

with 10 daily TBI's. Lifespan, cognitive ability (negative-geotaxis assay), neuron viability (GFP), and neuron quantity were analyzed to assess the effects of TBI. Although it was found that the AB 42 strain and the 00C strain showed the same inverse relationship between TBI treatments and lifespan, the AB 42 strain experienced a shorter lifespan than the 00C strain. Results from the climbing assay show the same trend for both strains in that increased daily TBI inducing treatments resulted in decreased climbing ability, however, each treatment group in the AB 42 strain showed a greater decreased climbing ability than that of the 00C strain. In terms of cholinergic neuron function, groups treated with ten daily TBI's experienced the sharpest decline. Neuronal function assessment indicates the AB 42 strain had a lower average and lower deviation in measured intensity of GFP expression, whereas the 00C strain had a higher average and higher deviation in measured intensity of GFP expression. In future studies, behavioral assessments could also be incorporated such as a sugar preference assay or odor avoidance assay as they might give us a better insight on the behavioral pathologies identified in humans.

Presenter(s): Peter Braun

Faculty Mentor: Dr. John Skillman

Department: Plant Physiology

Title: *Physiological Integration and inducible Crassulacean Acid Metabolism: Possible Drought Stress Response Mechanisms in the California Invasive Clonal Plant *Carpobrotus edulis**

Abstract: *Carpobrotus edulis*, an introduced succulent species, poses a serious threat to native plant communities in coastal Mediterranean habitats around the world, including the California coast. *C. edulis* produces new plants (ramets) which are physically connected by stolons (horizontal stems). Previous studies demonstrate the ability of *C. edulis* to switch from C3 to Crassulacean Acid Metabolism (CAM) photosynthesis, allowing the plant to save water when exposed to droughted conditions. As well, previous studies have shown improved performance in *C. edulis*

stolon connected ramets. Presumably, this improved performance occurs through sharing resources like water. A previous study in 2013 on seasonal micro-climate effects on phenology and plant physiology for *C. edulis* at the San Clemente State Beach (SCSB) did not detect CAM induction for *C. edulis* in any of the seasonal micro-climates. The aim of this study is to establish *C. edulis* cuttings from the SCSB population at California State University San Bernardino (CSUSB) and expose the plants to controlled drought stress for hydrologically connected and isolated ramets in an outdoor growing facility under the warm summer conditions of inland southern California. These results may help to more completely understand the drought tolerance mechanisms involved with *C. edulis* and its invasive ecology.

Presenter(s): Erika Sanchez

Faculty Mentor: Dr. Sara Callori

Department: Physics

Title: *Room Temperature Growth of Organic Ferroelectric Croconic Acid Thin Films*

Abstract: In material science, ferroelectric materials have demonstrated diverse applications to non-volatile memory, energy harvesting, and optics. Currently, there is a higher demand for organic ferroelectrics due to their greater efficiency and economic scalable production. In order to access feasible alternatives for current inorganic ferroelectrics, the fabrication of organic ferroelectric thin films is essential. One promising material is croconic acid, which has a relatively large ferroelectric polarization. Thin films of croconic acid can be prepared via thermal vapor depositions, where the bulk material is evaporated in an ultra-high vacuum system onto a substrate. Here, we present results on room temperature growth of croconic acid films using this method. The films were prepared on various substrates and the thickness and quality were measured using the Atomic Force Microscope (AFM).

Presenter(s): Michael Butros, Robert Bloom, Cynthia Saenz, Zachary Houghton, and Yoonkwon Lee

Presenter(s): Faculty Mentor: Not Indicated

Department: Physics

Title: *Wave Equation and Solitons*

Abstract: The purpose of this research project was to investigate the nature of the wave equation as solitons and to produce models using the mathematical software Maple. Partial and ordinary differential equations that describe various linear and nonlinear wave were considered, solved, and modeled. Special attention was paid to finding and modeling the applications of solitons in the Korteweg-de Vries, Schrodinger, and Sine Gordon equations. Although solitons are used in a wide range of fields, the applications studied in this project were used to model waves in water. The models were then studied to promote a further understanding of the behavior of solitons in the forms of pulses, kinks, antikinks, breathers, bright solitons, and dark solitons.

Presenter(s): Beverly Abadines

Faculty Mentor: Dr. Tim Usher

Department: Physics

Title: *Using Glove Sensory for Data Acquisition and Processing of Hand Movements*

Abstract: The most common source of adult disability in the United States is from a stroke with nearly a hundred thousand attacks occurring yearly. The aftermath of strokes can cause spasticity, which are severe cramps or spasms muscles. Those subjected to long durations of painful muscle contractions experience retrogression with their bodily coordination, limiting their movement or locking limb positions. Therapies, which help reduce spasticity and regain control include range of motion exercises, stretching, frequent repositioning of limbs, and others. Research have shown that technologically-assisted hand therapy helps regain hand coordination in subjects, encourages increase of at-home exercises, has the potential to be low-cost and be used for generalizing hand gestures.

Although past studies exhibited successes, there is still plenty of room for improvement towards using wearable sensors for spasticity therapy. The goal of this project is to implement Virtual Motion Labs' Data Glove Lite (VMGLite) to collect spatial sensory input of hand positions and develop algorithms for gesture recognition with applications towards physical rehabilitation. This project relies on VMGLite's advanced spatial capabilities to sense the percentage of fingers bending and the overall hand movement along the roll, pitch, and yaw. This will require software, such as MATLAB and VMGLite SDK, where the latter is programmed on C++ and is editable on Visual Studios and runs through VMGLite Manager. Upon the data acquisition and calculations for gesture recognition, the algorithm is to be complimented with other devices or software to create immersive hand therapy exercises for individuals recovering from strokes.

Presenter(s): Jeffrey Salazar

Faculty Mentor: Dr. Laura Woodney

Department: Physics

Title: *TurboGenerator & SiC Inverter Modeling with an NPSS/ngSPICE DLL Interface*

Abstract: The new hybrid-electric propulsion system combines the traditional gas turbine engine with an electrically powered motor/ generator. This system can benefit from both the practicality of a gas turbine engine and the efficiency of electrical components. The reduction of fuel consumption, takeoff noise and harmful emissions are all improvements this hybrid-electric propulsion system can provide. There are many ways to begin understanding the coupled nature of these two distinct systems. NPSS (Numerical Propulsion System Simulations) is a computer software program which can help analyze the thermodynamic properties of the gas turbine engine portion of the propulsion system. To create a practical hybrid propulsion system, focus has been centered on the conversion of mechanical energy in the turbine section to electrical energy. The energy and various other properties can be quantified with NPSS in order to move on towards the

actual conversion between energy states. This project will not only contribute towards building a foundation for hybrid-electric aircrafts but as well as help the HEIST (Hybrid-Electric Integrated Systems Testbed) project at NASA Armstrong.

Presenter(s): Estefania Padilla

Faculty Mentor: Dr. Carol Hood

Department: Physics

Title: *Active Galactic Nuclei*

Abstract: Active galactic nuclei (AGN) are super-massive black holes whose gravitational effects on their surroundings cause them to give off significant amounts of light, allowing students and researchers to observe and study them. One of the most difficult characteristics of studying AGN is determining the mass of the black hole by using only the light received from the surrounding areas of the black hole. Measuring the mass of black holes is important for determining how they were originally formed. This project will be observing a sample of black holes over the course of a few months. Additional objects will be observed over many months as part of a multi-institution collaboration. Each night images are taken in multiple sections of the visible spectrum (taken in different filters typically B V R and I), also known as wavebands. By comparing the distinctions in these wavebands to one another, we will be able to determine the magnitude of the region producing the light surrounding the black hole. Once the size of the light-emitting region is determined, one can calculate the mass of the black hole by utilizing the theory of gravity. The main focus for students is to learn to plan an observing campaign, to operate the telescope, and to reduce and analyze data. The unique abilities of our observatory allow us to add new targets to our observing campaign as others prove successful. We expect to have some partial light curves by the end of the summer, although the project will not be complete.

Presenter(s): Zackary Parsons

Faculty Mentor: Not Indicated

Department: Applied Physics and Chemistry

Title: *Wide Band Artificial Pulsar*

Abstract: The Wide Band Artificial Pulsar (WBAP) is an instrument verification device designed and built by the National Radio Astronomy Observatory (NRAO) in Green Bank, West Virginia. The site currently operates the Green Bank Ultimate Pulsar Processing Instrument (GUPPI) and the Versatile Green Bank Astronomical Spectrometer (VEGAS) digital backends for their radio telescopes. The commissioning and continued support for these sophisticated backends has demonstrated a need for a device capable of producing an accurate artificial pulsar signal. The WBAP is designed to provide a very close approximation to an actual pulsar signal. This presentation is intended to provide an overview of the current hardware and software implementations and to also share the current results from testing using the WBAP.

Presenter(s): Jordan Zeman

Faculty Mentor: Dr. Sally McGill

Department: Geological Sciences

Title: *Slip Rates of the North American and Pacific Plates along the San Andreas Fault Using GPS Data*

Abstract: Global Positioning System (GPS) site velocities were utilized to reveal the nature of deformation along the boundary between the North American Plate and the Pacific Plate. The velocities of survey benchmarks measured using GPS were used to conduct elastic half-space modeling an transect across the plate boundary near Bakersfield, California. The San Andreas Fault, as well as several other prominent faults, were studied to further develop a broad understanding of the relationship between the two plates. There were 29,161 slip rate combinations of six faults that were tested to see which would provide the best fit to the observed site velocities. The San Andreas Fault was the fault with greatest slip rate (35 mm/yr) in the best fit model with a range of possible slip rates from 31 mm/yr to 44 mm/yr. The Owen's Valley Fault had a best fit slip rate of 5 mm/

yr with a range of possible slip rates from 0 mm/yr to 16 mm/yr. The Northern Death Valley Fault also had a slip rate of 5 mm/yr in the best fit model and had a range of 0 mm/yr to 8 mm/yr. The remaining faults and their best fit slip rates were the Hunter Mountain Fault at 3 mm/yr, the Hosgri Fault at 1 mm/yr, and the West Huasna Fault at 0 mm/yr.

Presenter(s): Jorge Gonzalez

Faculty Mentor: Dr. Sally McGill

Department: Geological Sciences

Title: *Global Positioning System Velocity Profile for the Imperial Transect: Reconciling Earthquake Depths with a Steep Velocity Gradient.*

Abstract: In this study, GPS data and elastic modeling were used to infer fault slip rates by generating a velocity profile across the Pacific-North American plate boundary from faults in the Imperial Valley including the Agua Blanca, San Miguel, Elsinore, San Jacinto, Imperial and an Unnamed Fault east of the Imperial Fault. The results show that the Imperial and San Jacinto faults play the primary role in the steep gradient of the transect's velocity profile. Aseismic creep was allowed in the uppermost crust of the models for the Imperial Fault in order to fit the very steep velocity profile in the vicinity of that fault. The best-fitting model has 15 mm/yr of shallow aseismic creep above a locked zone that extends from 12-18 km depth, and 18 mm/yr of aseismic creep below the locked zone. This model also has 25 mm/yr of creep on the San Jacinto Fault, below a locked zone that extends from the surface down to 20 km depth.

Presenter(s): Jake Patton

Faculty Mentor: Not Indicated

Department: Geological Sciences

Title: *Petrological analyses of opaque mineral assemblages to constrain the formation conditions of the Josephine Peridotite*

Abstract: The serpentinizing reaction of olivine and pyroxene with seawater creates some of the most reducing environments known in nature.

Serpentinization of peridotite can produce low enough fO_2 values that stabilize metals such as awaruite (Ni_3Fe) and copper, as well as various nickel-sulfides. By applying the mineral phases present within a rock to phase equilibria, the pressure, temperature, and thermodynamic conditions of the serpentinizing fluids can be determined. Previously, the formation conditions for the Josephine Peridotite in Oregon and California were unknown. Careful analyses of eleven samples from the Josephine Peridotite using x-ray diffraction, optical microscopy, reflected-light microscopy, and energy-dispersal x-ray spectroscopy have determined the formation conditions of the hydrothermal fluid that serpentinized the Josephine Peridotite. These analyses have shown that the Josephine Peridotite formed at temperatures of 400 °C, at pressures of 50 MPa, had activities of $H_2(aq)$ ranging from $\log -0.60$ $H_2(aq)$ to $\log -0.63$ $H_2(aq)$ and activities of $H_2S(aq)$ ranging from $\log H_2S(aq) -2.452$ to $\log H_2S(aq) -2.410$. These results show that the hydrothermal vents that serpentinized the Josephine Peridotite were much more reducing than found at the Logatchev and Rainbow hydrothermal fields found on the Mid-Atlantic Ridge.

Presenter(s): Katrina Jaimes

Faculty Mentor: Dr. Joan Fryxell

Department: Geological Sciences

Title: *Effects of Rainfall on Penetrability of Alluvial Sediment, and Possible Caliche Formation*

Abstract: A study of penetrability of alluvial sediment, which compares strike counts of a drop-hammer on rebar to a specific depth within disturbed and undisturbed sediment. Results indicate a linear decrease in penetrability over time, a relationship between penetrability and moisture content, and provide implications of caliche deposition.

Presenter(s): Travis Buenting

Faculty Mentor: Dr. Sally McGill

Department: Geological Sciences

Title: *Monitoring Tectonic Plate Motion near Desert Hot Springs California*

Abstract: This study uses elastic modeling of GPS measurements to estimate slip rates of major faults along the Pacific-North American plate boundary, near Desert Hot Springs, California. This study applies velocities for 7 new sites that have not been included in any previous modeling studies, as well as updated velocities for a number of other sites. For the Banning and Mission Creek strands of the San Andreas, the best-fitting slip rates were calculated to be 15 mm/yr and 0 mm/yr, respectively, but other acceptable models had a combined slip rate for these two faults that ranged between 0-29 mm/yr. For other faults, the best-fitting model yielded slip rates of 9.6 mm/yr for the San Jacinto fault, 7.5 mm/yr for the Newport-Inglewood fault, 6.5 mm/yr for the Elsinore fault, and Emerson fault: 0-6 mm/yr, and the 7.5 mm/yr and a total of 8.8 mm/yr across four faults in the Eastern California Shear Zone.

Presenter(s): Crystal Bair

Faculty Mentor: Not Indicated

Department: Environmental Geology

Title: *Correlating Lake Perris Seepage Rates to Water Levels: 1976-2016*

Abstract: Water in California is an expensive resource. According to the California Public Utilities Commission's 2016 report the average cost of water from all traditional sources is about eight hundred dollars per acre-foot. For perspective, an acre-foot of water serves approximately nine people a year. Here in Southern California we rely heavily on outside sources of water. The California State Water Project is a dominant supplier to Southern California. Through a complex system California State

Water Project transports an average of 2.9 million acre-feet of water a year. Water from the California State Water Project is stored in thirty-four lakes and reservoirs, Lake Perris is the southernmost man-made lake supplied by the California State Water Project. The Lake Perris dam has recently been under repair to correct a loss of water due to seepage. Evaluation using Darcy's Law of seepage rate through time discovered that the seepage rate through time at Lake Perris has not remained constant like what would be expected. Further investigation is necessary to determine the cause.

Presenter(s): Allen Thron

Faculty Mentor: Dr. Sally McGill

Department: Environmental Geology

Title: *GPS Modeling of Fault Slip-Rates within San Gorgonio Pass*

Abstract: GPS data collected by CSUSB students from benchmarks within a transect across the Pacific-North America plate boundary passing through San Gorgonio Pass were combined with published velocities for other sites within the transect to conduct elastic modeling to obtain fault slip rates using a MatLab computer routine. The best-fitting model had a deep creep rate of 22 ± 2 mm/yr for the San Jacinto Fault, 15.2 ± 1.2 mm/yr for the Johnson Valley Fault and 2.8 ± 0.6 mm/yr for the Pisgah-Bullion fault. Surprisingly, the Mission Creek strand of the San Andreas fault has a deep creep rate of only 0.1 ± 1.8 mm/yr, and the San Gorgonio Pass strand of the San Andreas Fault, the Elsinore fault and the Newport-Inglewood fault all had slip rates of zero. Another model with a slip rate of 4 mm/yr for the San Gorgonio Pass strand fits the GPS velocities almost as well, and is more consistent with geologic slip rate estimates. The maximum amount of slip that can be placed on the SAF, while still fitting the GPS velocities reasonably well is 8 mm/yr on the San Gorgonio Pass strand and 3 mm/yr on the Mission Creek strand.

Presenter(s): James Erwin

Faculty Mentor: Not Indicated

Department: Environmental Geology

Title: *Formation Conditions of Marble in Devil's Canyon*

Abstract: Marble and Calc-silicate pods included within the Gneiss of Devil Canyon represent a broad range of compositions that correspond to formation conditions of varying metamorphic grade and concentrations of H₂O and CO₂. Mineral assemblages from a thirty-mile long sample area along the western San Bernardino Mountains were determined using optical microscopy and X-ray powder diffraction, and split into eight different compositions based on stable mineral phases present within the sampled rocks. Based off these compositions, the reactions that likely formed the assemblages along with the temperature and pressure of metamorphism were determined for each assemblage from a T-XCO₂ phase diagram for siliceous carbonates. The results of correlating compositions to temperature and pressure show that marble and calc-silicate rock formed within gneiss and schist as a result of primary greenschist to amphibolite metamorphism from tectonically driven regional metamorphism of Cordilleran miogeoclinal aged sedimentary rocks. In some areas, these rocks were secondary metamorphosed to upper amphibolite facies, were serpentinized through CO₂ poor fluids, or were newly formed at lower greenschist facies through fluid interactions in fractures as Cretaceous and Jurassic plutons intruded the vast sequence of sedimentary rocks that were deposited during the Paleozoic era.

Presenter(s): Cesar Grijalva

Faculty Mentor: Not Indicated

Department: Geology

Title: *Variance In The Slip Rate Of The San Andreas Fault System From San Luis Obispo To Mexico*

Abstract: During 2015, California State University, San Bernardino (CSUSB) students have used GPS to estimate slip rates for faults in eight different transects across the

Pacific-North America plate boundary. In this study, the slip rates from these eight transects were compiled in order to understand the neotectonics along the central and southern California portion of the San Andreas Fault system. The results permit analysis of changes of slip rates along strike and how these changes may be explained by transfer of slip between different faults within the plate boundary system. Fault slip rates obtained by students in 2015 were also compared to previously published slip rates from the same or nearby locations obtained via both geodetic and geologic methods. The similarities and differences obtained by the different methods were graphed and analyzed to gain a better understanding of how the relative plate motion is distributed amongst the different faults that make up the Pacific-North American plate boundary. Aside from a few differences in data, the three methods analyzed agree that the slip rate of the San Andreas Fault is increasing south of where the Eastern California Shear Zone (ECSZ) merges in.

Presenter(s): Kyle Pena

Faculty Mentor: Not Indicated

Department: Geology

Title: *Global Positioning System Tracking of Slip-Rate of the Imperial, Elsinore/Laguna Salada, San Jacinto/Weinert, Agua Blanca, and San Miguel Faults near the U.S.-Mexico Border*

Abstract: In this study, the slip rates of the Imperial, Elsinore, Agua Blanca, and San Miguel Faults were investigated. This was done by using available GPS site velocities in the Imperial Valley. From my research using GPS site velocities and elastic modeling, I have calculated the following slip rates: Imperial Fault-30 mm/yr; Elsinore (Laguna Salada) Fault-2 mm/yr; Agua Blanca Fault-1 mm/yr; San Miguel Fault-4 mm/yr; Weinert Fault-5 mm/yr; Unnamed Fault- 2 mm/yr. Results were found by comparing observed GPS velocities with velocities predicted from an elastic model for various fault slip rates and locking depths for the faults studied. Within the model, slip rates and locking depths were manipulated to form a line of best fit. In most cases, my

slip rates agreed with published studies. The one major discrepancy is for the Imperial fault. From my research, using GPS, I calculated a slip rate of 30 mm/yr, while Thomas and Rockwell (1996) calculated a slip rate of 15-20 mm/yr using an offset channel that was 300-500 years old.

Presenter(s): Jake Campbell

Faculty Mentor: Not Indicated

Department: Geology

Title: *Global Positioning System Tracking of Slip Rates along Faults within the Bakersfield Transect*

Abstract: The purpose of this study was to estimate fault slip rates faults within a transect crossing the Pacific-North American plate boundary near Bakersfield, California, by inputting a set of geodetic data into an elastic model. The San Andreas Fault (SAF) slip rate estimated in this study ranges from a high of 34 mm/yr to a low of 30 mm/yr. The value obtained for SAF in the best-fitting model is 32 mm/yr. Owens Valley Fault is slipping at 2 mm/yr. The Hosgri Fault yielded a slip rate of 2 mm/yr. The Southern Sierra Nevada Fault is slipping at 9 mm/yr. The Hunter Mountain Fault is not slipping at all right now, and the Death Valley Fault is currently slipping at 5 mm/yr. The aforementioned slip rates yielded the lowest χ^2 per degree of freedom. This information is useful because it can constrain the seismic hazard on faults in this area.

Presenter(s): Moises Romero

Faculty Mentor: Dr. Kimberly Cousins

Department: Chemistry

Title: *Charge Analysis of Electronic Organoferroelectrics*

Abstract: Cocrystals of tetrathiafulvalene (TTF) and tetrachloro-1,4-benzoquinone (Chloranil) are known electronic organoferroelectrics. Electronic organoferroelectrics occur by going from a neutral state to an ionic state which then exchange charge. Organoferroelectrics have electronic applications such

as data storage. This study seeks to create a screening method to potentially predict other charge transfer organoferroelectrics. Charge calculations on crystals were done with Bader charge analysis using VASP 5.4.1. With vdW-DF-optPBE. Calculations were done on the Pn and P21 space groups for TTF and Chloranil: full crystal dimers and monomers of the cocrystals charges were calculated. Charge differences were calculated to determine a trend, and compare to results from the Spartan software.

Presenter(s): Thomas Kennedy, John Hoskins, Daniel Garcia, and Nicholas Sabala

Faculty Mentor: Not Indicated

Department: Chemistry

Title: *The Optimization for the Isolation and Purification of Alcohol Dehydrogenase Utilizing Aqueous Polyphase Solutions*

Abstract: Aqueous two-phase polymer systems have been utilized as a common research method for the separation of proteins, viruses, and DNA (Albertsson, 1971). Albertsson has also described the methods for generating poly-phase systems where three or more aqueous polymer solutions were utilized. Eleven different polymers were tested for aqueous two-phase compatibility at maximum solubility in water. The best polymers, poly(ethylene glycol) (Mw=4600), polyvinylpyrrolidone, hydroxypropyl cellulose and poly(acrylic acid sodium salt), were placed in a poly-phase column, made in-house, and allowed to form the poly-phase system. Alcohol dehydrogenase (ADH) is a common enzyme in many different organisms, especially *S. cerevisiae* or baker's yeast, and it is readily available lyophilized from multiple scientific companies. A method for salting-out ADH from Baker's yeast was optimized. The salted-out ADH was then placed in the chosen polymers separately for activity, according to Racker's method (1949). The ADH was active in all polymers chosen separately, and the poly-phase system was created and optimized. The purification of the ADH using the polymers was evaluated using SDS-

PAGE and native electrophoresis, which was optimized for strongest bands. The main issue of separating the polymers from the proteins was necessary due to streaking of the electrophoresis bands. Common methods were tried to separate the polymer from the protein with little success except for an electrophoresis method described by Albertsson using a multiple U-shaped glass apparatus. Computational visualization of the ADH was also performed using YASARA.

Presenter(s): Maressah Ynfante-Corral

Faculty Mentor: Dr. Kimberly Cousins

Department: Chemistry

Title: *Hydrogen Placement on Potential Organic Ferroelectric NUBHOH*

Abstract: NUBHOH is an organic potential ferroelectric co-crystalline material composed of glycine and urea, with a reported crystallographic space group of P2₁ for the non-hydrogen atoms. A ferroelectric material is one that can switch its polarization state once an electric field is applied. The polarization switch on an organic ferroelectric has practical uses like memory storage in electrical devices. One mechanism for a polarization switch is through hydrogen bond transfer. NUBHOH has no hydrogens present on its reported structure found in the Cambridge Data Base. This project tried to find possible hydrogen placements on the glycine component of urea because it can exist as a zwitter ion or in neutral form. Vienna Ab initio Simulation Package (VASP) was used to run plane wave density functional calculations from different starting protonation states, and visualization was accomplished using Mercury, VMD and Avogadro software. These structures were subject to geometry optimization, as well as molecular dynamics simulation, with everything relaxed, on NUBHOH. These calculations found the lowest energy stable state was one in which the protons on glycine and urea form four unique species, and each glycine no longer exists as either a zwitter ion or neutral molecule. This structure has no remaining crystallographic symmetry (P1 space group), as well as intriguing potential for electroactive

behavior via proton behavior coupled with bond and molecular rotation.

Presenter(s): Colomba Sanchez

Faculty Mentor: Dr. Kimberly Cousins

Department: Chemistry

Title: *Subset System Study Of Diisopropylammonium Bromide: An Organic Ferroelectric Crystal*

Abstract: Diisopropylammonium bromide (DIPAB) is an organic molecular ferroelectric crystal that switches its polarity through an applied electric field. DIPAB has a large ferroelectric response of $23 \mu\text{C}/\text{cm}^2$, which is comparable to commercially used inorganic ferroelectrics, such as barium titanate (BTO). DIPAB is an alternative to toxic inorganic ferroelectrics because of its environmentally friendly quality. Ferroelectrics have commercial uses such as data storage, flexible electronics, ferroelectric thin-film memories, actuation and electro-optics. This research used Spartan '14 software to calculate the rotational barrier of the molecule during the transition from a relaxed state to a hypothetical intermediate symmetrical state as it switches its polarity. A basis set study was performed using Hartree-Fock (HF) and Density-Functional theory (DFT) B3LYP functionals which showed that HF 6-31G* and DFT B3LYP 6-311G* produced reliable results with a reasonable resource allocation. To understand what occurs during the polarization switch, vacuum calculations were performed on structures extracted from the Cambridge Structural Database (CSD) as six different types of systems: DIPA cation system, single DIPAB system, DIPA dibromide system, three DIPA/two bromide system with center DIPA rotated, one DIPAB rotated in unit cell, and both DIPAB rotated in unit cell. The transition from a relaxed state to intermediate state represents a possible transition mode that occurs as DIPAB changes from one polar state to another. A correlation between the size of the system and its rotational barrier shows that as the system size increased, the rotational energy barrier increased.

Presenter(s): Francisco Guzman

Faculty Mentor: Not Indicated

Department: Chemistry

Title: *Fabricating High-Quality Ultra-Thin Croconic Acid Film Using Electric Field Guidance*

Abstract: A novel method for fabricating ultra-thin croconic acid (CA) films with a very low surface roughness on Si wafers is reported. With a thickness of approximately 20 nm and surface roughness of 2.0 nm, the film obtained far exceeds the quality and smoothness of previously reported CA thin films. The film is prepared by utilizing a high electric field applied in situ during thermal vapor deposition by promoting the alignment of the CA molecules due to their high dipole moment. The resulting film is compared with that of the best-reported film produced via a combination of thermal evaporation at low substrate temperature with subsequent slow heating, to demonstrate the greatly enhanced uniformness of the film, producing a film with ferroelectric properties. A mechanism for film formation under electric field assisted deposition is proposed.

Presenter(s): Maricarmen Martinez-Solano and Josephine Habib

Faculty Mentor: Dr. Kimberly Cousins

Department: Chemistry

Title: *Nitrobenzene Coupling*

Abstract: Azobenzene is a coupling product of nitrobenzene with DMSO, ethylene glycol, and KOH as reagents. Product samples were neutralized with 5% HCl and the organic extract was analyzed using GCMS. It is the purpose of these research groups to find greener ways to synthesize this product under several conditions while developing a practical mechanism. One part of the research focused on observing the products generated from a similar molecule, 2-Nitrotoluene. The reaction temperature was varied to determine the best conditions for this coupling. The other part of the research performed four different procedures; first, kinetic data was obtained for the reaction, the next experiment used either 100% DMSO or 100% ethylene

glycol as a solvent. Next, a smaller scale reaction was run using mixed solvents with either TEMPO, a radical inhibitor or with 1,4-ditertbutylbenzene a potential internal standard. The last reaction was performed with 1 DMSO: 1 ethylene glycol ratio along with TEMPO and 1,4-ditertbutylbenzene. After these experiments; it was found that 2-Nitrotoluene as the reactant generates an azoarene product predominantly at 130° Celsius, but the intermediate azoxybenzene was formed in greatest amounts at 120° Celsius. The findings of the latter group show that azobenzene gradually increased throughout the heating process when 100% of DMSO was used; while azoxybenzene increased initially, then decreased. In 100% ethylene glycol, the percent azobenzene fluctuated throughout the time points as did the azobenzene. In this procedure, TEMPO acted as a radical inhibitor changing the reaction pathway.

Presenter(s): Sergio Jacinto

Faculty Mentor: Dr. Kimberly Cousins

Department: Chemistry

Title: *Synthesis and Structure Prediction of a Novel, Potentially Electroactive Organic Material*

Abstract: Recently, organic materials have been reported to display dielectric properties. Dielectric materials are important because they have the potential to serve as components for electronic devices, such as computer processors and solid-state memory. The development and use of organic dielectric materials would eliminate the need to use rare earth metals, and reduce relative toxicity in the production of dielectrics. Croconic Acid (CA) and Diisopropylamine (DIPA) were selected for this study, because they are components of known organic ferroelectric crystals. A computational and experimental investigation was conducted on whether the two species would exhibit hydrogen bonding interactions and form a co-crystalline salt, and whether the new compound would display interesting dielectric behavior. Using tools from the Cambridge Crystallographic Data Center, including ConQuest v1.6-8 and Mercury v3.6-8, and Wavefunction's Spartan '14 software, an initial complex was constructed of DIPA

cation interacting with CA dianion. Concurrently, two molar equivalents of Diisopropylamine were added to one molar equivalent of Croconic Acid using a pestle and mortar, and a reaction was immediately observed. The NMR spectrum of the resulting powder was compared to the predicted NMR spectrum that was produced by Spartan '14, and the two graphs aligned well. The resulting structure was named bis-(diisopropylammonium) croconate (BDC). The crystals were then analyzed under x-ray diffraction and compared to the theoretical unit cell. The computational data produced matched with the experimental data gathered, and confirmed the creation of BDC. The next step in this study will be to test the single crystals for dielectric behaviors.

Presenter(s): Beverly Abadines, Estefania Padilla, Oswaldo Loya, and Jose Lopez

Faculty Mentor: Dr. Qingquan Sun

Department: Computer Science & Engineering

Title: *The Physical Design of a Scanning Tunneling Microscope*

Abstract: The goal of this research is to design and construct low cost Scanning Tunneling Microscope (STM) utilizing inexpensive tools, and applying basic mechanical, electrical, and programming techniques. The affordability and modesty of this design is intended to expand the exposure of surface microscopy to a broader range of students. We have designed 3D CAD models of the prototype and its intermediate construction jigs in order to optimize the dimensions and to guide the construction of physical structures. The purpose of intermediate jigs was to help create reproducible and consistent components for the overall assembly of the STM.

Presenter(s): Eli Gonzalez

Faculty Mentor: Not Indicated

Department: Computer Science

Title: *On Bed Posture Recognition With Pressure Sensor Array System*

Abstract: Automated on bed posture recognition is of major importance to physical rehabilitation exercises. This paper presents a pressure sensor array system to unobtrusively recognize on bed postures for patients recovering from illness, injury and surgery. In this paper, we propose to use limb clusters to recognize on bed postures instead of using the whole body pressure map since the shapes and positions of limbs represent the postures in nature. To measure the similarities of limb clusters, we propose to use a comprehensive distance metric considering both physical distance and pressure difference. In the recognition phase, a weighted limb based recognition method is applied. The experiments are conducted with 15 subjects ranging from various gender, age and weight. The experiments have demonstrated that our proposed system and method can achieve a 97% recognition rate for typical on bed postures.

Presenter(s): Mary Elizabeth Bucayu and Fatimah Safari

Faculty Mentor: Dr. Marc Fudge

Department: Computer Science & Engineering

Title: *What Have California Cities Learned As a Result of the Great Recession? The Impact of the Local Option Sales Tax on Rainy Day Stabilization Funds*

Abstract: The current fiscal environment continues to place tremendous pressures on local governments' operating budgets. To ameliorate fiscal stress and stabilize revenue, governments deploy a variety of budgeting strategies including increasing tax rates, decreasing expenditures, or simply borrowing funds from the public. Contingency funds, commonly referred to as rainy day stabilization funds (RDSF), are also used to combat fiscal stress (Marlowe, 2005; Hou, 2004). An RDSF is one counter-cyclical budget management strategy that allows excess revenue during strong economies to be saved for and spent during weak economies in an effort to reduce budgetary volatility (Rodríguez-Tejedo, 2012). Another strategy to address fiscal stress is the local option sales tax (LOST), which many states allow their local governments to impose

(Burge & Piper, 2012; Sjoquist et al., 2007). At present, thirty-six states, including California, authorize their local governments to levy a LOST (Afonso, 2015). While the literature on both RDSF and LOSTs is robust, it has thus far failed to consider that the two may be related. LOSTs have been found to prompt an increase in local expenditures (Afonso, 2014), but scholars have yet to investigate where the marginal dollar is spent. By further diversifying its revenue stream, local governments could save surplus LOST for future use. Therefore, one way the marginal LOST dollar could be spent is on future expenditures or for offsetting future tax increases. This possibility yields a testable hypothesis with a strict falsification test: Do California local governments with more LOST revenue save more than local governments with less LOST revenue? An answer in the negative falsifies the hypothesis, thereby indicating that LOST revenue serves only to finance current obligations rather than some portion of it being reserved for a rainy day.

Presenter(s): Joel Salazar and Yazmin Estrada

Faculty Mentor: Dr. Min-Lin Lo

Department: Mathematics

Title: *Radio Number for Even Square Cycles*

Abstract: We are investigating optimal radio labelings of radio stations that avoid radio interference between them. We present this issue using graph theory, comprising a mathematical model where each vertex represents a station and the edges represent the closeness of the stations. Let \textit{G} be a connected graph. The $\textit{distance}$ between two vertices u and v in G is defined by the length of the shortest path in \textit{G} between u and v , which is denoted by $d_G(u,v)$. The $\textit{diameter}$ of \textit{G} , denoted by $\text{diam}(G)$, is the maximum distance between two vertices in \textit{G} . The $\textit{radio labeling}$ of G is a function f that assigns each vertex a non-negative integer such that $|f(u) - f(v)| \geq \text{diam}(G) - d_G(u,v) + 1$ holds for any two distinct vertices u and v of G . The \textit{span} of f is the difference of the largest and the smallest channels used. The $\textit{radio number}$ of \textit{G} , denoted by

all radio labelings of $\{G, f\}$ is said to be a $\{G, f\}$ optimal radio labeling of G if $\sum_{v \in V(G)} f(v) = \chi(G)$. A cycle with n vertices, denoted by C_n , is a graph whose vertex set can be reordered as $\{v_1, v_2, \dots, v_n\}$ such that $E(C_n) = \{v_1 v_2, v_2 v_3, \dots, v_{n-1} v_n, v_n v_1\}$. The square of a graph G has the same vertex set as G , but the edge set is now $E(G^2) = E(G) \cup \{uv : d_G(u, v) = 2\}$. In this presentation, we will discuss the progress we made on the unsolved case for C_n^2 , where $n = 4k + 3$ with $k = 4m + 3$, for some integer m .

Presenter(s): Bethany Faz

Faculty Mentor: Dr. Jorge Carlos Román

Department: Mathematics

Title: *A Comparison of Programming Languages for Markov chain Monte Carlo Applications*

Abstract: Markov chain Monte Carlo (MCMC) methods are utilized to generate samples from intractable distributions. For example, one MCMC method commonly used is the Gibbs sampler, which draws approximate samples from conditional distributions. The prevalence of the Gibbs sampler and other MCMC methods in various disciplines has created a need for efficient programs to run MCMC algorithms. For our research, we used the following five programming languages to compare computation times for Gibbs samplers in several statistical models: R, C++ (using the Rcpp package in R), Just Another Gibbs Sampler (JAGS), Julia, and MATLAB. From our results, we see that each language had its benefits and limitations. However, with its simple syntax and fast computation time, we contend that Julia is the most optimal programming language for MCMC algorithms.

Presenter(s): Brittney Bol

Faculty Mentor: Dr. Monideepa Becerra

Department: Health Science

Title: *Sleep Apnea and Health among College Students*

Abstract: Objective: Healthy People 2020, which sets national objectives for U.S., have recently identified sleep health as a major public health issue. While studies on sleep deprivation among college students have shown high prevalence, little epidemiologic studies exist to evaluate the health and social outcomes associated with low sleep. In this study, we evaluated the relationship between sleep health to that of academic performance, psychological distress, and food insecurity. Methods: An existing database on health and behavioral outcomes of college students was utilized to conduct analyses. First, descriptive statistics was conducted to evaluate the prevalence of poor sleep health, followed by each outcome: academic performance, psychological distress, and food insecurity. Sleep health was assessed through the validated Berlin sleep health questionnaire. Academic performance was measured using grade point average. Kessler 6-scale was used to measure levels of psychological distress, while USDA questionnaire was used to assess food insecurity among college students. Next, bivariate analyses were conducted to evaluate the relationship between sleep health and each of the aforementioned outcomes. Results: Major results demonstrated that 76% of college students reported feeling tired, fatigue, or daytime sleepiness, while 88% reported less than 8 hours of sleep. Mean GPA was significantly lower among those who reported feeling tired/fatigue/daytime sleepiness (3.24 vs 3.04, $p < .001$), compared to those who did not report such sleep health. There is a significant relationship between students who cut meals, did not have enough food to last, went hungry, and could not afford food and the average hours of sleep during school week. Prevalence of such poor sleep health also increased with psychological distress (no distress = 62%, mild-moderate = 87%, serious = 96%, $p < .05$). Conclusion: Our study results demonstrate that poor sleep health is a major public health issue among college students and is negatively associated with mental health, food security,

and academic performance among college students.

Presenter(s): Heather Kakish

Faculty Mentor: Dr. Monideepa Becerra

Department: Health Science & Human Ecology

Title: *Body Image Perception among Young Female Adults: An Instagram Analysis*

Abstract: Objective: Evaluate the use of social media tool, Instagram, to assess body image perception among young adults. Methods: The first 10 photos that were available on the explore posts page were collected. The same data collection and analysis procedure was repeated two weeks apart to obtain a total of 20 photos. Each photo was analyzed for its content to evaluate the main purpose and theme of the hashtags. To evaluate emergent themes, open and axial coding were utilized. Results: The more followers a user had on Instagram, the less hashtags were used to describe the photo, and the fewer followers a user had, the more hashtags were used to describe a photo. Three emergent themes were identified: expectations or idolization, encouragement, and product promotion. Conclusion: We provide one of the first insights into the use of Instagram on health-related outcomes; specifically, the prevalence of body image-related hashtags. Public health professionals can utilize the trending hashtags identified in this study to reach a large population of young adults to provide encouragement for weight loss and body positivity, in turn expanding the scope of health education delivery methods.

Presenter(s): Connie Marmolejo

Faculty Mentor: Dr. Monideepa Becerra

Department: Health Science & Human Ecology

Title: *Relationship between Mental Illness and Discrimination among College Students*

Abstract: Objective: Approximately 43.8 million Americans aged 18 or older have at least one form of mental illness. Given that national objectives, such as those set forth by the Healthy People, the initiative has call to action to improve the mental health status

among young adults. In this study we evaluated the prevalence of mental illness among college students, the relation to stigma, in underlying perceived barriers to care and help seeking behavior. Methods: An existing database on health and behavioral outcomes of college students was utilized to conduct analyses. First, psychological distress was assessed using the Kessler 6 scale. Discrimination was assessed using the Everyday Discrimination Scale. Standard demographic characteristics will be assessed using questionnaire similar to that of the California Health Interview Survey. This in turn will enable the results of this study to be comparable to the state-wide assessment. Evaluation of results will enable researchers to identify participants to be recruited to focus groups. Results: Nearly 17% of the population have serious psychological distress, and 30.7% have mild to moderate psychological distress. Furthermore, 19.9% of the population reported everyday discrimination. The prevalence of serious psychological distress among those who reported everyday discrimination was 40.0% compared to 11.3% among those with no discrimination experience ($p < .05$). Conclusion: Our study demonstrates that psychological distress is associated with discrimination and public health interventions for college students are needed.

Presenter(s): Alexa Reyes

Faculty Mentor: Dr. Monideepa Becerra

Department: Environmental Health Science

Title: *Emergency Department Visits due to Clostridium Difficile*

Abstract: Objective: Much of the literature has highlighted clostridium difficile infection (CDI) among inpatient cases involving at risk population, though little evidence exists on emergency department (ED) utilization. The objective of this study was to address such a gap in the literature. Methods: The primary outcome variable for this study is to evaluate ED visits due to CDI, which included both primary and secondary discharges using the Office of Statewide Health Planning and Development (OSHPD) 2010 data. This

data provided health and hospital quality information from the state of California that was utilized to run descriptive statistics, chi square, and regression analysis. Results: A population sample of 6,871,321 ED cases was obtained from the state of California in 2010. Of these six million were cases CDI; thus noting a prevalence of 1.87 per 1,000 visits. It was observed that in the age category less than 1% of the patients between the ages 18-34 were infected with CDI versus 5.6% of patients 65 years or more. It was also observed that CDI was higher among women, as compared to men (2.1% vs. 1.5%), with similar results persisting upon regression analyses. Similarly, those between the ages 35-64 had 63% lower odds of going to the emergency room with CDI compared to patients 65 years or older. Conclusion: Our study has identified the priority population that should be targeted in reducing C.diff infections.

Social & Behavioral Sciences



Presenter(s): Athahn Steinback

Faculty Mentor: Dr. Timothy Pytell

Department: History

Title: Downfall: 1933

Abstract: It is no secret, that the democratic western world is fraught by internal divisions, economic insecurity, and ethnic nationalism. Right-wing populist movements and anti-international parties such as AfD (Germany), PVV (Netherlands), FPÖ (Austria), UKIP (United Kingdom) and others, currently flourish across Europe. However, this resurgence of populist sentiments and ethnic nationalism is nothing new and echoes of the 1930s crises that brought fascist ideologies into the political 'mainstream' across the continent and presented a very real existential threat to European democracy. My research explores the evolution of populist movements and the downfall of democratic systems using the development of the Nazi party and collapse of the German Weimar Republic as a case study. Populist movements do not emerge fully fledged, and I will demonstrate how the Nazi party in Germany evolved from a disparate collection of racial nationalists, anti-internationalists and anti-capitalist socialists to become the party that destroyed a democratic society, launched a world war and the largest genocide in human history. Although none of the major populist parties active in Europe today have reached the level of influence, radicalization or overt aggression of the Nazi party, they spring from similar ideological foundations, predicated upon a phobia of

outsiders and internationalism, fueled by economic insecurity. The current crop of populist parties may not be the Nazi party reborn, but they do represent a threat to democracy and Western liberalism as a whole.

Presenter(s): Sofia Benitez

Faculty Mentor: Dr. Liliana Gallegos

Department: Sociology

Title: *El Santo, El Enmascarado de Plata Vs. The Logic of Coloniality*

Abstract: With this research we have correlated lucha libre to the logic of coloniality. By using two perspectives, and a number of scholars ranging from Heather Levi, Octavio Paz, and Doyle Greene, I will be demonstrating the perverse logic in which lucha libre is being studied, as well as distributed. We claim that it is those in power/outsider representations who project themselves onto lucha libre, and luchadores themselves realize that they have lived their lives molding their own masks. Luchadores are looked up to as Gods/ superheroes, and the affect they have among the Mexican culture is one not studied enough. New to the academy, researchers such as myself need to point out the episodes in which this happens in previous academic research and present alternatives. When studying lucha libre we must understand that we are working with an aesthetic and a discipline, both in the ring and in film. The mask, the theatrics and the words

spoken in the ring all work together to invert themselves with mysterious power. Things that appeared absurd to our Mexican and euroamerican scholars such as the lucha libre being rigged do not matter at all. We will begin a discourse within academia, which will view lucha libre as the ultimate fight of the people, not just in the ring, but within their everyday lives.

Presenter(s): Josue Becerra

Faculty Mentor: Dr. Donna Garcia

Department: Psychology

Title: *Confronting Discrimination: Latina Women's Beliefs vs. Behaviors*

Abstract: Marginalized groups of people tend to avoid publicly confronting prejudice despite claiming they would confront someone who expressed prejudice against them (Woodzicka & LaFrance, 1999). One reason for non-confrontation is the fear of social costs, such as being labeled as a complainer or whiner (Kaiser & Miller, 2001). For example, Woodzicka and LaFrance (1999) found that women's beliefs on confrontations and their actual behaviors in a discriminatory situation were contradictory. In a hypothetical situation, women believed they would directly challenge discrimination and feel angry in that situation (Study 1). However, women placed in an actual discriminatory situation felt afraid and were unlikely to directly challenge discrimination (Study 2). We expect to find similar results when conducting similar research with Latina women in a racial discriminatory situation. We will be recruiting Latina women at CSU San Bernardino to participate in a two-part study. In Part 1, participants read a hypothetical scenario where they are the target of a racist comment. In Part 2, participants will play an online game of "CSUSB Survivor" with ostensibly four other players where they will direct a racist or equally offensive but non-racist comment at the participant. Responses will be coded in terms of degree of confrontation following the procedure in Woodzicka and LaFrance (1999). We expect greater anticipated confrontation and anger in the hypothetical scenario, but the opposite pattern in actual responses and report

greater fear than anger. Support of our hypothesis will suggest that Latina women's anticipated responses will conflict with their actual behaviors.

Presenter(s): Daniel Caro and Kamiya Stewart

Faculty Mentor: Dr. Donna Garcia

Department: Psychology

Title: *Women's Labeling of Gender Discrimination: The Role of Perceived Shared Fate*

Abstract: We examined whether perceptions of "shared fate" with other women would influence women's willingness to label an event as discrimination. Study 1 focused on women's labeling of another woman's experience with gender discrimination. Undergraduate women (N = 211) wrote about their shared attributes with other women or their unique attributes. Next, they read about a female student who was treated unfairly by a male professor. Women in the shared (versus unique) fate condition were more likely to label the woman's experience as discrimination, which in turn predicted greater liking for the woman. Study 2 focused on women's labeling of a personal experience with gender discrimination. Undergraduate women and a confederate (N = 198) each completed a creativity test, which would be graded by either the same male evaluator (shared fate) or a different evaluator (unique fate). After receiving a failing grade with sexist feedback, participants indicated the extent their failure was due to various factors, including discrimination. Participants either gave these ratings privately or publicly in front of the confederate. Women were more likely to label discrimination as a factor when their ratings were made publicly (not privately) in the shared (versus unique) fate condition, which reduced the negative affect caused by the discriminatory experience. Moreover, the pattern for public attributions held even when women later made private attributions. Together, the findings suggest that perceptions of shared fate can encourage women to label unfair treatment as discrimination, whether they are observers of another's experience or the target of the discrimination.

Presenter(s): Mina Selim and Aaron Seitz

Faculty Mentor: Dr. Jason F. Reimer and Dr. Eugene Wong

Department: Psychology

Title: *Utilizing Cognitive Training to Enhance Low Working Memory Capacity*

Abstract: Recent studies have examined the effectiveness of working memory (WM) training in young adults. Regarding far transfer effects, results have been inconsistent, with some studies finding evidence for far transfer effects (Au et al, 2015) and others finding no evidence (Melby-Lervåge et al., in press). In terms of near transfer effects, findings appear to be more consistent in providing evidence of positive training effects (e.g., Harrison et al., 2013; Melby-Lervåg et al., in press). The purpose of the present study was to extend these findings by examining whether near-transfer training effects can be found in individuals with low working memory capacity (WMC) using “gamified” versions of n-back and contrast sensitivity (adaptive control) training tasks. Participants were pre- and post-tested (and compared to a no-contact control group) on measures of WMC, cognitive control, and visual acuity. The results indicated that there was positive near transfer of training to measures of WMC with the n-back training group and the adaptive control group. These results provide evidence that both WM-based and non WM-based training tasks may be beneficial for individuals who possess deficits in WMC.

Presenter(s): Tanya Patterson, Timothy Baum, Gia Macias, and Sarah Tveit

Faculty Mentor: Dr. Cari Goetz

Department: Psychology

Title: *Contemplating Death Leads To The Derogation Of Atheists*

Abstract: Discrimination towards atheists is an often understudied form of discrimination. Recent research has suggested that existential fear (e.g., the fear of death/non-being) may be driving prejudice towards atheists (Cook, 2015). Research to date has focused on

negative perceptions of atheists rather than examining how evaluations of atheists may be influenced by the salience of death-related thoughts. The current study (N=138) examines how mortality salience influences the evaluation of an atheist target. Participants were first randomly assigned to write about dying or dental pain. They then were randomly assigned to evaluate an atheist or gamer (control). Results showed that individuals in the mortality salience condition evaluated the atheist target less positively than any of the other condition ($F(1, 131) = 4.27, p = .04$). Implications for terror management theory are discussed.

Presenter(s): Nina Acosta

Faculty Mentor: Dr. Donna Garcia

Department: Psychology

Title: *Pride and Prejudice: The Effects of the “Proud to Be” PSA on Attitudes Toward the Redskins Logo*

Abstract: The United States has a long-standing history of appropriating Indigenous representations for the use of mascots in athletics. Despite protest by Indigenous groups against this practice, professional athletics teams continue to appropriate Indigenous representations as mascots. The National Congress of American Indians produced a public service announcement, Proud to Be (PTB), to elicit support from the general public for changing the name/mascot Redskins. The purpose of the proposed research is to experimentally examine the effects that PTB has on support among Non-Indigenous participants, as function of political alignment. We considered two competing outcomes: The Counterproductive Hypothesis predicts the more conservative participants are, the less supportive they will be of changing the Redskin name/mascot, especially after watching the PTB rather than two control PSAs (directed at ending the word retard or reducing texting and driving). We also expect that the more conservative participants are, the less supportive they will be of either “name change” campaign, especially the one that corresponds with the PSA they view. Alternately, The Effective Hypothesis predicts if the PSA induces empathy among viewers, it could elicit

support independent of political perspective. That is, participants will be supportive of changing the Redskin name/mascot after watching PTB rather than either control PSA. This effect will occur through the effects of PTB on increased empathy (specific to the target group). Preliminary analyses provide support for the Effective Hypothesis: Regardless of political perspective, participants experienced increased empathy for Indigenous People after viewing PTB, which led to increased support for the message.

Presenter(s): Phillip Loving

Faculty Mentor: Not Indicated

Department: Psychology

Title: *Triple Play*

Abstract: Triple Play is a national Boys and Girls Club programming curriculum that is described as a dynamic wellness program that demonstrates how the combination of eating right, keeping fit and forming positive relationships lead to a healthy lifestyle. The Boys and Girls Club of Waterman Gardens plans to implement the program weekly on Mondays. While the components related to healthy eating and exercise have been well documented in previous evaluation studies (Youth Development Strategies, Inc., 2014), less attention has been given to evaluating the attainment of the final component, developing positive relationships. One factor implicated in the development of positive relationships is prosocial behavior. Prosocial behaviors in children include sharing, helping, empathy, trusting, and cooperating (Nantel-Vivier et al., 2009). Additionally, enhanced prosocial behaviors are associated with a variety of positive outcomes. For example, researchers found a direct association between children's prosocial behavior and their personal reports of greater happiness and pleasure during interactions (Denham et al, 1990).

Presenter(s): Heather Carrasco, Gino Howard, Jose Rodriguez, Amanda Bain, and Daniella Lockhart

Faculty Mentor: Dr. Mark Agars

Department: Industrial & Organization Psychology

Title: *Targeting the Perceptual Hierarchy: Appropriate Feedback for Experts versus Novices*

Abstract: The effects of feedback on performance have produced inconsistent results. This can be attributed to a lack of a feedback intervention theory which takes into account the amalgamation of factors which can interact to effect performance as a function of feedback. One such factor is that cognitive attention may be directed to various levels of the perceptual hierarchy depending on whether feedback task or self-relevant. Our study examined level of expertise as a moderator of the feedback – performance relationship. As proposed, level of expertise mattered, as experts responded more positively to self-feedback whereas novices responded more positively to task feedback.

Presenter(s): Arturo Covarrubias-Paniagua and Rose De Kock

Faculty Mentor: Dr. John Clapper

Department: Industrial & Organization Psychology

Title: *Learning Multiple Categories Without Feedback*

Abstract: How do people acquire new categories in an unsupervised (no-feedback) environment? We distinguish two general classes of models. Correlation tracking models assume that new categories are acquired by tracking associations among the features of different stimuli until reliable patterns are learned. Category invention models assume that new categories are triggered as an all-or-none response to novel or surprising objects that violate existing categories. Previous research tested the models by manipulating the order in which examples of two different categories were shown in an unsupervised learning task. As predicted by the category invention model, people learned best when a training sequence maximized the perceived contrast between two potential categories, e.g., by showing them in separate blocks, even if fewer

examples were shown than in a comparable low-contrast (e.g., randomly interleaved) sequence. This “negative exposure effect” cannot be accommodated by pure correlation tracking models. Of course, people often acquire more than two categories at a time in the real world, and so it is important to determine whether evidence for category invention can also be obtained in a multi-category task. In this experiment, participants saw examples of three categories in two different sequences: (a) mixed from the start of training (interleaved sequence), or (b) staggered so that examples of the first category only were shown for several trials, followed by examples of the first and second categories in random alternation, and finally by examples of all three categories in random alternation (semi-blocked sequence). As in previous two-category studies, learning of all categories was better in the semi-blocked condition than in the interleaved condition, even when fewer examples were shown. This is a clear victory for category invention as a theoretical model, and perhaps also for the practical value of blocked or semi-blocked training sequences when people must acquire separate categories under unsupervised conditions. On the other hand, people in the contrast condition showed evidence of reduced learning after the third category was introduced, suggesting that they may have had difficulty maintaining three separate categories in this unsupervised task. Further research will attempt to investigate the causes of this “category load” effect and clarify its impact on people’s ability to acquire and maintain large sets of related categories under both supervised and unsupervised task conditions.

Presenter(s): Zachary Harmony and Israel Garcia

Faculty Mentor: Dr. Cynthia Crawford

Department: General & Experimental Psychology, Biological Psychology

Title: *Effects of Nicotine Exposure on Methamphetamine Oral Self-Administration, Extinction, and Reinstatement in Adolescent Rats*

Abstract: Adolescence is a vulnerable developmental

period, especially in regard to pharmacological induced changes in neurochemistry and resulting behavior (Andersen, 2014). Nicotine exposure during adolescence alters the response to addictive drugs in adult rodents (Anker and Carroll, 2011; Collins et al., 2004; Hutchison and Riley, 2008; Kempainen et al., 2009; McMillen et al., 2005, Pipkin et al., 2014; Santos et al., 2005). Specifically, nicotine administration during adolescence increases the locomotor activating effects of cocaine and amphetamine in adult rats (Collins et al., 2004, Santos et al., 2005). Recently, we found that adolescent exposure to nicotine increased the intake of methamphetamine in adult male rats (Pipkin et al., 2014). In the current study, we assessed early adolescent nicotine exposure on the reinforcing properties of methamphetamine (MA) in adolescent rats. To this end, we assessed MA acquisition of self-administration, extinction, and reinstatement in adolescent male and female rats. In addition, we investigated if the effects of adolescent methamphetamine intake were modulated by different nicotine exposure periods. Here we show that exposure to a low dose of nicotine (0.16, S.C.) during self-administration decreased MA intake, whereas rats with pre-exposure to nicotine (i.e., PD 25 – 35) did not show this effect. Conversely, pre-exposure to a high dose of nicotine (0.64, S.C.) increased MA intake during self-administration. We found this effect stronger in female rats. Lastly, neither dose of nicotine altered behavior during extinction or reinstatement periods.

Presenter(s): Janhavi Dhargalkar

Faculty Mentor: Dr. Cynthia Crawford

Department: Biological Psychology

Title: *Effects Of Repeated Paroxetine And Fluoxetine Exposure On Hippocampal Bdnf Functioning In Adolescent Rats*

Abstract: The use of SSRIs in pediatric populations is limited due to reduced efficacy and their tendency to induce suicidal ideation in adolescents. Recently, we found that repeated treatment with fluoxetine and paroxetine caused increased anxiety-like behaviors in adolescent rats, as measured on the elevated plus

maze and light/dark box. The purpose of the present study was to determine if changes in brain derived neurotrophic factor (BDNF) functioning are responsible for mediating these age-dependent behavioral and neurochemical effects. The rationale for this study was based on a growing body of evidence suggesting that the therapeutic effects of antidepressants are dependent on BDNF-mediated increases in neurogenesis. To test our hypothesis, we measured the expression of BDNF and the BDNF receptor, after repeated paroxetine and fluoxetine treatment. Male and female adolescent Sprague Dawley rats (n=67) were injected with paroxetine (2.5 or 10 mg/kg), fluoxetine (5 or 10 mg/kg), or vehicle for 10 consecutive days starting on postnatal day (PD) 35. On PD 45, the hippocampus of each rat was removed and then assayed for BDNF expression using western blotting. In both male and female rats, BDNF expression was decreased after fluoxetine (5 and 10 mg/kg) treatment. Paroxetine (10 mg/kg) also decreased BDNF levels, but only in male rats. Repeated treatment with the SSRIs paroxetine and fluoxetine led to decreased BDNF expression in adolescent rats. This reduction in BDNF levels may be responsible for the reduced efficacy of SSRIs during adolescence. Interestingly, paroxetine had a greater effect on the BDNF functioning of male rats than females.

Presenter(s): Lindsey Chesus, Diana Robinson, Maria Magana, Tania Estudillo, and Brenda Tellez

Faculty Mentor: Dr. Manijeh Badiee

Department: Psychology

Title: *Reducing Rape Myth Acceptance and Increasing Consent Education: Evaluating the Yes Means Yes Consent Approach*

Abstract: Any type of sexual activity acquired without consent, forced, or while intoxicated is an act of sexual assault (Jozkowski & Peterson, 2013). On college campuses, sexual assault is becoming increasingly problematic among heterosexual and LGBT populations, with rates ranging from 11.4% to 37.8% (Ford & Soto-Marquez, 2016). Unfortunately, only 7% of sexual

assault incidents on college campuses are reported to a school official, and most incidents go unreported by the victims (Bureau of Justice Statistics, 2016). Cultural norms and legal standards often reflect the No Means No (NMN) approach, which emphasizes presence or the absence of a “no” in consent. In 2014, California enacted affirmative consent legislation, similar to the Yes Means Yes (YMY) model of consent. Due to the emphasis of consent from both partners, the YMY model can lead to better communication and shared responsibility, unlike the victim-blaming NMN approach (LaFrance et al., 2012). According to Miscommunication Theory (Jozkowski, 2015), non-consensual and/or assaultive sex can result from confusion surrounding sexual consent and its definition (e.g., obtaining consent, continuous consent during sexual encounter). Utilizing this theory to increase education on the confusion of consent, rape myth acceptance (RMA), and rape culture may reduce the prevalence of sexual assault. Implementing sexual consent awareness programs among college campuses, specifically those that include discussions based on real life scenarios, have resulted in increased knowledge of consent among students (Borges et al., 2008). Moreover, peer-led programs have proven to be more effective in educating students on sexual assault within college campuses (Simon, 1993). The purpose of our study is to determine if the YMY intervention would influence individuals’ attitudes about sexual consent more than a NMN approach. We hypothesized that a YMY intervention would produce significant changes in attitudes toward consent whereas a NMN intervention would not. Results indicated unique findings that were unexpected, some of which suggest that there could be unintended positive effects from the NMN presentation.

Presenter(s): Diana Robinson

Faculty Mentor: Dr. Manijeh Badiee

Department: Psychology

Title: *Yes Means Yes: An Evaluation of an Alternative Approach to Sexual Assault Prevention*

Abstract: Sexual assault on college campuses is a prevalent social problem generating a significant

amount of research over the past several decades. Many programs have adopted a No Means No (NMN) approach to sexual assault prevention focusing on methods for potential and previous survivors of sexual assault to avoid becoming victims. Although these methods have had some success, they tend to place responsibility on survivors whereas perpetrators are not held accountable for their actions. Furthermore, in most approaches, the issue of consent is not taken into account. The Yes Means Yes (YMY) approach to sexual assault prevention recently legislated in California has heightened the issue of sexual assault prevention in the public consciousness and defined consent for sexual activities as an explicit “yes” rather than an absence of “no”. The YMY philosophy of consent emphasizes the mutuality of sexual activity and thus holds perpetrators accountable for their behavior in sexual assaults. The purpose of this experiment was to evaluate the effectiveness of an YMY sexual assault prevention program in comparison to a NMN approach. Students from CSUSB were recruited and randomly assigned to receive a presentation about sexual assault based on either the YMY approach or the NMN approach. Participants completed pretest and posttest measures of rape myth acceptance and attitudes toward consent one week before and after attending the presentation. They also engaged in open discussion in small focus groups immediately following the presentations. Preliminary results support the effectiveness of the YMY model. Implications and future directions will be discussed.

Presenter(s): Donna Casillas

Faculty Mentor: Dr. Donna Garcia

Department: Biological Psychology & Human Development

Title: *The Effect of Intersectional Invisibility on Racial and Gender Bias*

Abstract: The double-jeopardy model predicts that people with two subordinate identities will face more discrimination based on each of the identities (Williams, Phillips, & Hall, 2014; Almqvist 1975). On the other hand, intersectional invisibility suggests that

underrepresented minority (URM) women are non-prototypical of both their sex and ethnic categories and therefore are less vulnerable to experiencing blatant racism and sexism (Biernat & Sesko, 2013; Purdie-Vaughns & Eibach, 2008; Sesko & Biernat, 2010). Biernat and Sesko’s study supports the intersectional invisibility theory. My study will parallel the first study in Biernat and Sesko’s 2013 paper. In my study, participants will read about one of four randomized pair, and rate the competency of both members. The pairs consist of a black woman and a black man, a black woman and a white man, a white woman and a black man, or a white woman and a white man. In Biernat and Sesko’s study the pairs will complete a male typed task, with each member working separately at first then coming together to work on an application for a software program. However, in my study, the pairs will be working on a female typed task. Whereas Biernat and Sesko’s study showed white women receiving the lowest competency ratings on the task, we hypothesize that white women will experience a lift in their competency ratings.

Presenter(s): Derrick Ocampo, Gemma Anguiano, and Sydney Gutierrez

Faculty Mentor: Dr. Robert Ricco

Department: General & Experimental Psychology

Title: *Infant Memory for Emotion Experienced in a Social Referencing Paradigm*

Abstract: Through social referencing, infants are able to use others’ emotions to guide their behavior during a novel situation. Specifically, infants tend to avoid objects receiving negative emotion, and approach those receiving positive emotion. Although social referencing is a powerful tool to guide future behavior, few investigations have examined long-term changes in behavior (i.e., memory for emotion learned in social referencing experience). There is evidence that 11-month-old infants do show retention after a short delay (i.e., 3 minutes) but may not after a 1-hour delay (Hertenstein & Campos, 2004). We extend this research, examining 10-14-month-olds’ visual and

overt behaviors for evidence of memory for emotion information acquired in a social referencing experience. We hypothesize approach/avoid behavior (for positive/negative emotion, respectively) will be stronger at the shorter delay. Participants are seated in front of a Tobii T60XL eye tracker and shown pre-recorded video clips of an experimenter displaying facial and verbal emotion toward one of two novel objects (Encoding Phase). After a delay (immediate or 10- minute, between subjects), the two objects from each trial are offered to the participant to allow her/him to interact with the objects (Retrieval Phase). Preliminary results ($n = 3$) indicate that infants pay greater attention and approach an object paired with a negative emotion than positive or neutral. Findings from this study will further expand our understanding of infants' memory process for emotion experienced during a social referencing experience.

Presenter(s): Daniell Study

Faculty Mentor: Dr. Janet Kottke

Department: Industrial & Organizational Psychology

Title: *The Relationship between the Willingness to Work Hard and Career Intentions among College Students*

Abstract: Overlapping models of employability have identified the importance of being willing to work hard to get ahead in one's career. This paper focuses on Hogan, Chamorro-Premuzic, and Kaiser's (2013) definition and model of employability, and explores the motivational component of this model; the willingness to work hard. This paper focuses on four personality dimensions; ambition, work ethic, conscientiousness, and proactivity, to help identify individuals that are willing to work hard toward his or her career intentions. Analysis revealed equivocal results in the fit of the model. However, correlations among variables revealed a relationship between the willingness to work hard and an individual's career intentions.

Presenter(s): Diana Tuttle

Faculty Mentor Not Indicated

Department: Industrial & Organizational Psychology

Title: *Rewarding to Deal with: Agreeableness and Social Perceptiveness as Indicators of Supportive Tutoring Experiences*

Abstract: Theoretical background related to the construct of employability is presented, with emphasis on the social component of employability, rewarding to deal with (R). In a field study, students rated tutors they would recommend to others as rewarding to work with, specifically, tutors high on social perceptiveness and agreeableness. The importance of the work is both theoretical and practical in that social perceptiveness is conceived of as a dimension of the Hogan model of employability (theoretical), and the results have some implications for staffing tutoring centers (practical).

Presenter(s): Jung-Jung Lee and Claudia Alvarado

Faculty Mentor: Dr. Janet Kottke

Department: Industrial & Organizational Psychology

Title: *An Item Response Theory Analysis of the Top Leadership Scale*

Abstract: A Graded Response Model analysis of the TLDS revealed information beyond that obtained from traditional test statistics. One item provided as much psychometric information as two other items combined. As a result, a one or two item scale might be possible for practical use assessing follower confidence in top leadership.

Presenter(s): Claudia Alvarado

Faculty Mentor: Dr. Mark Agars

Department: Industrial & Organizational Psychology

Title: *Examining a 5 Factor Model of Future Time Perspective*

Abstract: This study examines the psychometric properties of a five-factor model of future time

perspective (FTP). Perceptions of time and the future have implications for individual behaviors and decisions, yet the role of FTP is not well understood. Results provide support for a five-factor structure of FTP for use in future research. Individuals perceive time differently, particularly in their consideration of the future. In the context of goal setting, for example, some individuals focus on the immediate future while others look many years ahead. This construct has been identified as future time perspective (FTP, Nuttin, 1964). Differences in FTP have implications for motivation, yet its impact is not well understood. The current study describes the psychometric assessment of a five-factor measure of FTP developed from existing scales. In developing a broad measure of FTP, we integrated two approaches. First, we included Husman and Shell's (2008) description of FTP, which identifies four dimensions including speed, which is defined as a person's ability to manage future events without external pressure; extension, defined as the extent in time for an individual to think about the future; value, defined as attainability of future goals; and connectedness, which is an individual's ability to associate his/her present action to future goals. Second, based on the literature, we included perceptions of future opportunities (Carstensen & Lang, 1996) as a fifth dimension of FTP. The final scale examined in the present study comprised 35 FTP items comprising 5 factors. Participants ($n = 280$) were undergraduate students at a comprehensive university in the southwestern United States. All participants completed an online survey that contained 35 items representing the FTP construct, as well as 105 items representing several other established measures psychological constructs. Participants received class extra-credit for their time (approximately 30 minutes). Mplus with maximal likelihood estimation was used to evaluate the fit of the 35 items to three measurement models: one-factor model, five-factor model, and higher order factor model. The five-factor model showed the best fit ($CFI = .76$, $RMSEA = .07$), compared to the higher order factor model ($CFI = .74$, $RMSEA = .08$) and single factor model ($CFI = .41$, $RMSEA = .12$). Subsequently, post-hoc modifications were made based on the five-factor model in which items

with variance explained less than 10% variance being removed. Additionally, items with coefficients less than .50 were also removed. The revised 28-item model demonstrated a modest fit ($.85$ CFI and $.07$ REMSEA) to the five-factor structure.

Presenter(s): Rachel Bravo

Faculty Mentor: Dr. Kenneth Shultz

Department: Industrial & Organizational Psychology

Title: *College Students' Attitudes toward Older Workers*

Abstract: As college students are preparing to enter the workforce as professionals, it is important that we examine their explicit and implicit attitudes toward older workers to investigate what organizations can do on behalf of older workers. For instance, organizations may have policies that are giving preferential treatment toward older workers and reinforcing younger workers' negative attitudes. For the present study, I used a scenario based-procedure in which participants read about an older worker who has been promoted based on an employment policy that favors older workers or the most competent workers. I examined students' pre- and post-explicit and implicit attitudes toward older individuals for each condition. Students in the preferential treatment condition did not have significantly different explicit attitudes from students in the merit condition, thus Hypothesis 1 was supported. Aside from treatment, students' post implicit attitudes significantly decreased (i.e., were less negative) from students' pre-implicit attitudes. Therefore, Hypothesis 2 was partially supported. In addition, students in the preferential treatment condition exhibited only negative emotions toward the older worker and not harmful behaviors. Therefore, Hypothesis 3 was partially supported. Finally, there was no impact of preferential treatment toward older workers on students' aging anxiety. Implications of these findings with regard to both implicit and explicit attitudes toward older workers are discussed.

Presenter(s): Megan Urquidi, Michelle Orozco, Janice Vasquez, and Linda Hernandez

Faculty Mentor: Dr. Emily Shum

Department: Psychology

Title: *The Influence of Societal, Cultural, and Personal Attitudes on the Mental Health of Asian American Women Working In Male Dominated Fields*

Abstract: The purpose of the current project is to better understand societal, cultural, and personal attitudes that affect the mental health of Asian American women working in male dominated workplaces. The proposed study will examine how depression and suicidal ideation can result from the combination of familial and cultural expectations that Asian American women experience both in their personal lives and their work related environments. Women place more importance on their social relationships so it can lead to psychological distress and even a diagnosable mental disorder (Sangalang & Gee, 2012). It is less likely for individuals of the Asian American culture to seek mental health services due to social stigma. Families of the Asian American culture are likely to disapprove of family members that seek mental health services due to social stigma and cultural values (Ka Yan Cheng, et al., 2010). The level of family communication and support contribute to an individual's mental state and can either relieve stress or act as a source of stress. Higher levels of family conflict and discrimination are associated with suicidal ideation and suicide attempts among Asian Americans (Hahm, Jang, Vu, Alexander, Driscoll, & Lundgren, 2013). A sample of community-based health practitioners will be interviewed in order to better understand the stressors their clients experience and their reasoning for seeking treatment. These qualitative interviews will allow for the development of modified treatments that will better assist Asian American women who are coping with depression or suicidal ideation.

Presenter(s): Ramiro Ferreyra

Faculty Mentor: Dr. Michael R. Lewin

Department: Psychology

Title: *Is the Relationship Between Early Maladaptive Schemas and Psychological Distress Indirect?*

Abstract: According to Young (1998), Early Maladaptive Schemas (EMS) develop during childhood and serve as a mechanism through which life experiences are viewed (negatively). These schemas have been shown to increase an individual's cognitive vulnerability to various mental disorders and have thus been the focus of heavy research. Although the effects of EMS on psychological distress have been thoroughly observed, the degree to which these effects remain direct has not. Thus, it was hypothesized that the relationship between EMS and psychological distress is indirect. Furthermore, it was also hypothesized that emotion regulation, experiential avoidance, psychological flexibility, cognitive flexibility, and mindfulness were potential mediators of this relationship. Participants were made up of adult undergraduate students from the California State University San Bernardino campus (N=178; M= 63, F= 115) and were awarded course credit for taking part in the study. A total of seven self-report measures were used along with a demographics sheet, where information about personal and family background was recorded. The measures included the Schema Questionnaire – Short Form (SQ-SF; Young, 1998); the Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer & Toney, 2006); the Brief Symptom Index-18 (BSI-18; Zabora, BrintzenhofeSzoc, Jacobsen, Curbow, Piantadosi, Hooker, Owens, and Derogatis, 2001); the Multidimensional Experiential Avoidance Questionnaire (MEAQ; Gamez, Chmielewski, Kotov, Ruggero & Watson, 2011); the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003); the Acceptance and Action Questionnaire-II (AAQ; Bond, Hayes, Baer, Carpenter, Guenole, Orcutt, Waltz, & Zettle, 2011); and the Cognitive Flexibility Inventory (CFI; Dennis & Vander Wal, 2010). An analysis of preliminary data indicated that mindfulness, psychological flexibility, cognitive flexibility, and experiential avoidance mediated the relationship

between EMS and psychological distress; emotion regulation was not. These results were shown to be true for the EMS domain of Disconnection and Rejection, which refers to the expectation that certain core needs may not be met with certainty. Implications for clinical therapy and future research are discussed.

Presenter(s): Eseosa Orhuozee

Faculty Mentor: Dr. Manijeh Badiee

Department: Psychology

Title: *Attitudes about Sexual Consent: Evaluating Gender and Ethnic Differences*

Abstract: Sexual assault is any sexual activity that occurs without consent (Jozkowski et al., 2014, U.S. Department of Justice, Bureau of Justice Statistics, 2014; Wright & Tokunaga, 2016). Sexual assault continues to be a major problem on college campuses in the U.S. (National Sexual Violence Resource Center, 2015). Many factors contribute to sexual assault: alcohol consumption, hostile masculine attitudes, rape myth acceptance, and sexual objectification (Bernard et al., 2015; Cottingham et al., 2014; Fredrickson & Roberts, 1997; Loughnan et al., 2013; McDermott et al., 2015; Peat et al., 2011). Additionally, attitudes on sexual consent seem relevant. Although extensive research exists on sexual assault, studies of sexual consent are limited (Jozkowski & Peterson, 2013). Additionally, knowledge of multicultural views on sexual consent is lacking. The purpose of our study is to compare groups by gender and race/ethnicity to determine whether they have different views of consent. We will employ a mixed methods design in which qualitative and quantitative data are collected to develop a comprehensive understanding of sexual assault attitudes. The independent variables are gender, with two levels (e.g., male and female) and race/ethnicity, with at least three levels (e.g., Latina/o, White, and Black). The dependent variables are participants' scores on consent measures. We hypothesize that participants will identify nonverbal cues as communicating consent more frequently than verbal cues. Additionally, gender and

race/ethnicity will be related to consent attitudes. Our study can be a first step in including multicultural issues into affirmative consent education.

Presenter(s): Alexandra Medina

Faculty Mentor: Dr. Christina Hassija

Department: Psychology

Title: *Attentional and Memory Bias among Sexual Assault Survivors with Post Traumatic Stress Disorder*

Abstract: The National Crime Victimization Survey estimates that every two minutes an American is sexually assaulted. Posttraumatic stress disorder (PTSD) is described in the DSM-5 as a trauma-related disorder caused by exposure to a traumatic event. The National Comorbidity Survey Replication estimates that PTSD will have a lifetime effect for 6.8% of Americans. Studies have shown that negative cognitions and mood disturbance contribute to individuals' development of PTSD and depression and can result in attentional bias. The two primary PTSD symptom clusters used to explain attentional bias are re-experiencing and hyperarousal. Studies have shown that individuals with PTSD may experience attentional bias towards trauma-related words causing slower and less accurate responses to trauma-related stimulus. However, there has been little research conducted on attentional bias among sexual assault populations. The goal of the current study is to examine attentional bias effects in sexual assault survivors with the use of a Stroop task. We aimed to determine if sexual assault survivors with PTSD and depression would have a larger bias toward sexual assault related words as compared to sexual assault survivors with no PTSD and controls. Participants were assessed for level of PTSD and depression and completed a Stroop task containing five categories of words: sexual assault-related, matched-neutral, neutral, positive, and negative. Data collection is ongoing. However, preliminary findings suggest a positive relationship between greater PTSD symptom severity scores and reaction time. Findings have possible implications for determining indicators of PTSD severity by the intensity of attentional biases towards sexual

assault-related words.

Presenter(s): Aaron Cisneros

Faculty Mentor: Dr. Christina Hassija

Department: Psychology

Title: *Pornography viewing as a Predictor of Rape Myth Acceptance and Rape Proclivity as Mediated by Gender Role Acceptance*

Abstract: Sexual assault is one of the most prevalent crimes committed in the United States and even more prevalent among college campuses today. Equally as prevalent in the United States is the consumption of pornography among college age males. Pornography tends to be a subject of controversy due to its depiction and treatment of women, as exemplified by aggressive and hostile behaviors towards women within pornographic films. Because much of the messages and behaviors within pornography are consistent with legal definitions of rape and sexual assault, and many college aged males watch pornography regularly, it is plausible that viewing certain forms of pornography may contribute to males' perceptions of sexual assault. The goal of the present study is to investigate the influence of pornography viewing on rape supportive beliefs among college-aged males. Participants were administered online measures assessing demographic information, rape myth acceptance, rape proclivity, gender roles, and pornography viewing. We hypothesize that consumption of aggressive pornography will be positively associated with rape myth acceptance and rape proclivity. Additionally, we propose that the relationship between pornography viewing and rape myth acceptance and rape proclivity will be mediated by participants' adherence to gender roles. Data collection is currently ongoing. Preliminary analyses suggest positive associations between viewing of pornography with aggressive content and rape myth acceptance and rape proclivity. Results will enhance our understanding of factors that contribute to rape supportive beliefs and may have important implications for potential targets in sexual assault prevention.

Presenter(s): Natasha Dixon and Eric Berru

Faculty Mentor: Dr. Joseph D. Wellman

Department: Psychology and Human Development

Title: *Fearing Fat: Exposure to Weight Stigmatizing Images Leads to Choosing Higher Calorie Foods*

Abstract: The overweight are consistently presented in the media as lazy, sloppy and unintelligent. Previous research has suggested that weight stigma and fear of fat (FoF) may increase eating behavior and weight gain among these individuals. We examined how weight stigmatizing images and FoF influence calorie selection among lean and heavyweight individuals (BMI: Study 1). In Study 2, we examined individuals who perceive themselves to be overweight. Participants were randomly assigned to view stigmatizing images of the overweight, non-stigmatizing images of the overweight, or neutral images (i.e., objects). They then reviewed a restaurant menu and selected items they would like to eat. Finally, participants completed measures of perceived weight stigma and FoF. Results indicate that the more overweight participants feared fat, the more calories they ordered in the stigmatizing condition. The opposite pattern was observed among average weight individuals in the stigmatizing condition. Findings are discussed from a resource depletion perspective.

Presenter(s): Silvana Johnston

Faculty Mentor: Dr. Kelly Campbell

Department: Psychology and Human Development

Title: *Associations between Familism and Quality of Interaction with Primary Caregivers; Hispanic and Non-Hispanic White Emerging Adults*

Abstract: Despite the fact that the Hispanic community is the largest minority in California (U.S. Census Bureau, 2010), research addressing the needs of Hispanic emerging adults is limited. Familism, an emphasis on family over the individual, is a central value in Hispanic culture (Schwartz, 2007). Despite acknowledgment in the literature that familism is a multidimensional construct (Valenzuela & Dornbusch, 1994), most empirical studies measure familism as a unitary construct. Four factors

have been identified in the literature: (1) Subjugation of Self for Family (FS), when the individual prioritizes the needs of the family over self-interest; (2) Interconnectedness (FI), the emotional bond and intercommunication among family members (3) Honor (H), honoring and protecting the family, and (4) Familial Support (FS), which includes physical, emotional and financial support between the family members (Steidel et al., 2003). While previous research shows that Hispanic adolescents emphasize familism more than non-Hispanic Whites (NHW) (Campos et al., 2014), little research has examined how familism is associated with the quality of interactions with family members across these groups. The present study tested (1) differences in familism levels across the four subtypes and interaction quality with caregivers across Hispanic and NHW emerging adults, and (2) whether familism interacts with ethnicity to predict interaction quality. Participants included 778 students attending college in Southern California who completed an online survey as part of a larger study on family factors and academic motivation among first-generation college students. Familism was measured with the Familism Scale (Steidel & Contreras, 2003) and interaction quality was measured with the positive (PI) and negative interaction (NI) subscales of the Network of Relationships Inventory: Behavioral Systems Variation (Furman et al., 2009). Results showed that Hispanics reported higher levels of familism across all subtypes and more positive interactions with caregivers compared with NHWs (see Table 1). There were no significant differences in NI across ethnic groups. Using hierarchical multiple regression, moderation analyses revealed significant interactions between FI and FS and ethnicity in predicting NI ($\beta = -.37, p = .015$; $\beta = -.40, p = .049$, respectively). Probing the interactions revealed that for FS, Hispanics had marginally lower NI when FS was high than when NI was low (see Figure 1A). Conversely, NHWs had significantly higher NI when FS was high than when NI was low. The interaction between FI and ethnicity predicting NI showed a different pattern. Hispanics demonstrated significantly lower NI when FI was high compared with when FI was low, while NHWs did not show a difference in NI across FI levels (see Figure 1B). These findings support literature that familism is a key factor in Hispanic emerging adult development. Furthermore, these findings

suggest that associations between familism and quality of interactions with family members vary by type of familism. Subjugation of self for family suggests sacrifice of independence and autonomy, which our study suggests is less adaptive for NHWs compared with Hispanics. Conversely, interconnectedness showed stronger negative associations with negative interactions with caregivers among Hispanics, suggesting that this aspect of familism is particularly important for promoting positive family relationships among Hispanic emerging adults.

Presenter(s): David Sanchez

Faculty Mentor: Dr. Cynthia Crawford

Department: Biological Psychology

Title: *Role of NPY on Cannabinoid-Induced Anxiety-Like Behavior*

Abstract: Increased cannabis accessibility and use has resulted from recent changes in state laws. These laws were adopted based on our understanding of cannabis effects from research conducted twenty to thirty years ago. Unfortunately, the cannabis now being sold for recreationally and medical purposes contains a greater $\Delta 9$ -tetrahydrocannabinol (THC) content and much lower cannabidiol (CBD) content than cannabis available in the past. Because THC is the primary psychoactive agent in cannabis and is responsible for its rewarding and addicting properties, it is very possible that the cannabis presently being sold will have a much greater effect on neuronal functioning. Moreover, the lower content of CBD which acts as an indirect antagonist of THC also adds to the greater psychoactive effects of cannabis. These changes in cannabis are particularly concerning as high school students in the United States now report smoking cannabis more often than nicotine products. One particular effect of cannabis that will likely be enhanced by these changes in the chemical makeup of the drug, is its effect on affective behavior. Specifically, THC is believed to be anxiety-inducing while CBD is anxiolytic suggesting that using high THC/low CBD cannabis will lead to greater anxiety. Therefore, the present study will assess the effect of repeated and chronic exposure during adolescence to the cannabinoid receptor agonist CP-55,940 (a synthetic analog of THC) and/or CBD on anxiety-

like behavior in young adult rats. To this end, we measured anxiety-like behavior using both an elevated plus maze and the light/dark box.

Presenter(s): Kelsey Meyer

Faculty Mentor: Dr. Cari Goetz

Department: Psychology

Title: *Dark Triad Attraction to Sexual Exploitability*

Abstract: Research has indicated that men find women displaying cues to sexual exploitability to be sexually attractive, particularly as short-term mates (Goetz, Easton, Lewis, & Buss, 2012). Men with certain individual differences are more likely to perceive and take advantage of sexually exploitable women, such as those who score low on agreeableness and have an orientation toward uncommitted sex (Lewis, Easton, Goetz, and Buss, 2012). High rates of short-term mating and exploitation are also seen in populations high on the constellation of personality traits known as the Dark Triad (psychopathy, Machiavellianism, and narcissism; Jonason, Li, Webster, & Schmitt, 2009). The goal of the current study is to determine what effect, if any, the Dark Triad has on male attraction to cues to sexual exploitability in women. We expect males who score high on the Dark Triad to be more attracted to high exploitability women than males low on the Dark Triad. Further, high Dark Triad males are expected to show little or no attraction to low exploitability women.

Presenter(s): Nestor Maria

Faculty Mentor: Dr. Cari Goetz

Department: Psychology

Title: *Who Gets Mad And Who Feels Bad? Using Mate Value Discrepancies To Predict Anger And Shame In Relationships.*

Abstract: The goal of the present study was to investigate how anger and shame function to motivate cognition and behavior in response to transgressions within a romantic relationship. We were specifically interested in how mate value discrepancies in a romantic relationship would relate

to anger and shame exhibited by both the victim and perpetrator of a transgression. We predicted that mate value discrepancies (higher discrepancy values indicated the participant's mate was higher in mate value) would be positively associated with shame when a person is either a perpetrator or victim of a relational transgression and negatively associated with anger when a person is the victim of a relational transgression. We predicted no relationship between mate value discrepancies and anger when a person is the perpetrator of a relational transgression. Three hundred participants currently in romantic relationships provided ratings of themselves, their mate, and their ideal mate, which we used to calculate mate value discrepancies. Participants were randomly assigned to a "perpetrator" or "victim" condition. They read four scenarios as the perpetrator or a victim of a relational transgression and rated the degree of shame and anger they would feel in each situation. Results expand our understanding of the function of emotions and relationship dynamics.

Presenter(s): Brittany Rawlings

Department: Psychology

Faculty Mentor: Dr. David Chavez

Title: *The Influence of a Youth-Advisory Board on the Empowerment of Adolescents*

Abstract: The study examined the effectiveness of the Teen Advisory Board implemented on children and teens at the Boys and Girls Club of Waterman Gardens. The Boys and Girls Club of Waterman Gardens is a community program that provides support for marginalized, low income families. The Teen Advisory Board is a program that involves the youth members of the Boys and Girls Club, specifically where teen members are offered leadership opportunities where they advise the younger group members in homework, physical exercise activities, and peer support. While youth advising programs involving adult mentors have been successfully studied in the past, fewer have studied the benefits of cross-age mentorship among at-risk communities. The study examined

whether the Teen Advisory Board had an impact on the mentors' psychological empowerment, through giving teens a leadership role within their community. The members of the study consisted of 20 boys and girls (ages ranging from 6-17) from the Boys and Girls Club of Waterman Gardens. The mentors were selected based on age and availability (14-17), incorporating 12 mentees and 8 teen mentors. A 3 month trial of the Teen Advisory Board was implemented through allowing the teen members to help the younger members with homework and guidance through physical activity in the attempt to improve the teen's mentors' feelings of perceived control within their community. To measure the success of the program, a pre-test/post-test survey was given to the teen mentors in order to properly measure feelings of psychological empowerment, pro-social behavior and socio-political control. We hypothesized that the Teen Advisory Board will increase the older groups' (mentors) level of psychological empowerment, pro-social behaviors, and socio-political control. The results imply that the Teen Advisory Board was successful in improving psychological empowerment and pro-social behavior among the teen members. The outcomes suggest the importance of providing peer support on the perceived level of control within one's community, and can be further implemented in Boys and Girls club settings, nationally.

Presenter(s): Tanya Patterson

Department: Psychology

Faculty Mentor: Dr. Joseph D. Wellman

Title: *Examining Masculinity Threats: Impact On Perceptions Of Psychological And Physical Intimate Partner Violence*

Abstract: Intimate partner violence (IPV) is a serious problem affecting both women and men. Despite increasing awareness, nearly 30% of women and 20% of men still experience physical, emotional, or sexual IPV. Current research examines men's reactions to IPV scenarios from the perspective of Bosson, Vandello, Burnaford, Weaver, and Wasti's (2009) theory of precarious masculinity and considers factors unique

to men such as masculinity threat. Masculinity has been described as "precarious" as it can be difficult to maintain and easy to lose. Often, men try to restore their masculinity through aggressive actions. Thus, we believe that men whose masculinity is threatened may evaluate a target of IPV more negatively and perceive the incident as less severe than men whose masculinity is not threatened. Researchers recruited 386 heterosexual men. Participants took a bogus personality test and received false feedback. Those in the threat condition were told they scored similar to most women; in the control, they received no feedback. Participants then read one of four scenarios depicting physical or psychological IPV at low or a high levels of severity. Finally, participants answered questions regarding their perceptions of the scenario, perpetrator, and target. Masculinity threat was found to decrease both perceived severity and willingness to intervene in the most physical IPV scenario. In addition, participants in this condition reported they would be less upset by witnessing the violence and expressed greater acceptance of IPV. This research suggests that masculinity threat may increase the acceptability of IPV and reduce men's willingness to intervene.

Presenter(s): Cecilia Melendez

Faculty Mentor: Dr. Michael Lewin

Department: Psychology

Title: *Attentional and Memory Bias among Sexual Assault Survivors with Post-Traumatic Stress Disorder*

Abstract: Posttraumatic stress disorder (PTSD) is a trauma related disorder characterized by cognitive, re-experiencing, avoidance and numbing and physiological symptoms in response to exposure to a traumatic event [Diagnostic and Statistical Manual of Mental Disorders (DSM-5)]. Studies have shown that negative cognitions and mood disturbance contribute to the development of PTSD and depression and can result in recall biases. Specifically, Vrana, Roodman, and Beckham (1995) used a modified Stoop color-naming task to identify words that were associated with combat in veterans with both trauma and PTSD.

Results revealed that Vietnam Veterans demonstrated greater recall biases when presented words associated with combat experiences. Although studies have shown this recall bias in combat survivors with trauma and PTSD, little is known about recall biases in sexual assault trauma survivors. In the current study, we aimed to determine if sexual assault survivors with PTSD and depression would have a larger recall bias (i.e., explicit and implicit recall of Stroop words) toward sexual assault related words as compared to sexual assault survivors with no PTSD and controls (neither PTSD nor depression). All participants were assessed for level of PTSD and Depression with the Post-traumatic Check-list for DSM-5 (PCL-5) and the Center for Epidemiological Studies Depression Scale Revised (CESD-R) respectively and completed a Stroop color-naming task containing five categories of words: sexual assault-related, matched-neutral, positive, and negative. Data collection is ongoing. Preliminary analyses suggest that sexual assault survivors with PTSD and Depression demonstrated greater recall bias towards assault-related words than the other groups. Findings are discussed in terms of future research and clinical implications for treatment of trauma in general and specifically treatment of trauma with comorbid depression.

Presenter(s): Lindsey Sirianni

Faculty Mentor: Dr. Richard Addante

Department: General Experimental Psychology

Title: *Novel Methods Development for Integrating Behavioral Measures of Hippocampal-Dependent Non-Conscious Memory Effects*

Abstract: The traditional textbook 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 (i.e. familiarity) does not. Exciting new findings from our laboratory have begun to question this core dogma of human memory, using electrophysiological methods (EEG) and a novel

procedure we developed for capturing non-conscious memory signals in a small group of three patients with hippocampal damage (Addante, 2015, Neuroimage). This physiological effect was explored in the current study, designed to add behavioral measures that are critical to linking the physiological impairments with meaningful behavioral manifestations of memory deficits, and to measure these effects in a larger sample size or normative populations that can be then applied to clinical amnesia groups. This work largely explored new methods programmed to be implemented at a mass level adopted across multiple laboratories capable of testing rare cases of human amnesia patients. Results of this novel method development will be discussed in the context of providing the field an innovative new paradigm by which to measure both behavior and physiology concurrently for capturing non-conscious memory signals at the scalp.

Presenter(s): Alana Muller and Rebekah Posadas

Faculty Mentor: Dr. Joseph Wellman

Department: Psychology

Title: *Who Does Gender Identification Help? Latina Women's Response to Ingroup and Outgroup Women Who Claim Sexism*

Abstract: The current research investigated claims of discrimination in relation to the gender and race of the claimant. Female participants were recruited from CSUSB and randomly assigned to one of four conditions (Diversity and White; No Diversity and White; Diversity and Latino; and No Diversity and Latino). The participants were given an article about either a White or Latina woman claiming discrimination at her workplace. To manipulate diversity, the article reported that the company had been cited as one of the best workplaces for women in the diversity condition but not in the control condition. Participants completed measures assessing their perception of the article presented, and feelings about the company's diversity training program, the lawsuit, and the claimant of discrimination. Participants then completed self-report measures of meritocracy, gender identification, and racial identification, and were finally thanked for their

time and debriefed. The results showed that when White women claimed discrimination, they were evaluated more positively by other women if gender identification was high. However, Latina women were not evaluated positively even when gender identification was high. This result shows a lack of support for Latina women facing discrimination and this study allows for future research investigating this unfortunate phenomenon that may result in practical applications for improving support for Latina women regarding discrimination.

Presenter(s): Alana Muller and Victoria Young

Faculty Mentor: Dr. Joseph Wellman

Department: Psychology

Title: *Latinos Reactions to Ingroup and Outgroup Sexism Claimants*

Abstract: The current study investigated how Latino Americans respond to ingroup (e.g. Latino American) vs. outgroup (e.g. White Americans) member's claims of gender discrimination. Preliminary research has found that when white women claimed discrimination, they were evaluated more positively by other women if gender identification was high. However, Latina women were not evaluated positively even when gender identification was high. The goal of the current research was to expand on these results by manipulating the race of a man to which a female claimant lost an opportunity. Female participants were randomly assigned to read an article about a woman (either White or Latina) losing a job to a man (either White or Latino) either claiming discrimination or not claiming discrimination totaling eight conditions (White woman losing to a White man, White woman losing to a Latino man, Latina woman losing to a White man, Latina woman losing to a Latino man; all four conditions either included a discrimination claim or excluded a discrimination claim). Participants then completed self-report measures of meritocracy, gender identification, and racial identification. The results showed that gender identification only predicted positive evaluation when a White woman lost to a White man and when a Latina woman lost to Latino man. Gender

identification did not predict positive evaluations of a Latina woman losing to White man or a White woman losing to a Latino man. This result suggests that gender identification will only provide benefits for women who lose opportunities to men of their same race.

Presenter(s): Danahly Reyes, Breeana Wyatt, Karina Figueroa, Patricia Anacleto, and Norma Fernandez

Faculty Mentor: Dr. David Chavez

Department: Psychology

Title: *Action Research in School Setting To Help Increase Community Empowerment*

Abstract: The current Community-Based Participatory Research (CBPR) study uses a mixed-methods approach to examine how action plans develop in community groups. Specifically, this study analyzes how collaboration with a group of parents can facilitate community involvement and increase a sense of psychological empowerment among parents. This project is an extension of previous work conducted with a smaller core group of the current participants. Psychological empowerment is defined as a personal belief in one's ability to make a significant change in one's own life. Evidence has suggested that when working collaboratively with a group of community members in a fashion consistent with a CBPR paradigm, these community members are more likely to develop action plans that effectively address health and educational disparities in their community. It was hypothesized that a sense of psychological empowerment would increase as a function of project participation. It was also hypothesized that qualitative analysis of meeting transcripts would yield themes of empowerment, hope and agency. Participants in our focus groups (n=20) consisted of parents from families that are likely to feel marginalized in their community due to lower socioeconomic status (SES) and ethnic minority group membership. Prior to group participation, participants completed a revised version of the Psychological Empowerment Scale. Participants then engaged in an ongoing discussion of community concerns and collaboratively developed actions plans to implement change and voice concerns to local

policy makers over the course of three months of regular meetings. Following this period, participants completed the revised Psychological Empowerment Scale. Paired t-test analysis revealed partial support of the hypothesis at the subscale level. Thematic analysis of transcripts revealed enduring concerns related to helplessness and a need for assistance and resources. However, there was also evidence of a growing sense of hope and newfound competency. This project closely examined CBPR and action research with parents from a marginalized community in order to develop action plans within a community. In conclusion, the findings suggest that project participation increased psychological empowerment and yielded themes of empowerment, hope and agency. This project suggests that a similar process can be used to promote social change for addressing health, safety, and educational disparities and in the process, help community members develop a stronger sense of psychological and community empowerment.

Presenter(s): Krystalyn Marquez, Sarah McMullen, and Martin Rojas

Faculty Mentor: Dr. David Chavez

Department: Psychology

Title: *The Relationship between Community Action and Queer Youth Empowerment*

Abstract: Queer youth daily navigate through a maze of challenges, risks, and rewards coming from all aspects of their lives. In result these youth develop many strengths and form resilience in time of great strain. The purpose of this study was to examine which factors of empowerment in Queer youth are most salient and can be positively impacted through participation in youth-led community based action initiatives. In conjunction with both Queer youth and allies from a local San Bernardino High school (n = 6) we facilitated the design of a mural by the youth as part of an ongoing community-based participatory research process. We conducted the Psychological Empowerment Survey (PES) at the beginning of the mural design process, and at three-week intervals thereafter. Based on previous work demonstrating the

empowering nature of youth-led community action projects, our team hypothesized that upon completion of the mural, we would see significant positive changes in the factors of empowerment measured by the PES. The mural project is still underway, but preliminary analysis of PES outcomes suggest that the hypothesis is supported. Queer youth-led community action seems an effective means to enhance psychological empowerment.

Presenter(s): Amanda Bain

Faculty Mentor: Dr. Mark Agars

Department: Industrial & Organizational Psychology

Title: *Subtle Sexism's Impact on Women's Self Perceptions of Career Outcomes*

Abstract: This study examines subtle sexism's impact on working women's self-perceptions via survey. Specifically, women's self-perceptions of career outcomes, job fit and turnover intentions. Although overt sexism has decreased substantially in the workplace more subtle forms of sexism are prominent and result in adverse impact for women. Subtle sexism is defined as intentional or unintentional actions or behaviors toward social minorities that convey ambiguous intent. This is harmful and results in adverse impact for women in the workplace. The overall impact of these subtle forms of sexism on women's self-perceptions is not understood. However, women's self-perceptions impact their work performance thus affecting their workplace outcomes. We hypothesize that women who have experienced higher levels of subtle sexism will have lower self-perceptions, explicitly self-perceptions of workplace outcomes and that resiliency will moderate the relationship. The data and findings will be collected this spring.

Presenter(s): Kimberly Gonzalez Alfaro

Faculty Mentor: Dr. Christina Hassija

Department: Clinical Counseling Psychology

Title: *The Influence of Attachment and Social Support on Psychological Outcomes among Incarcerated Women Reporting a History of Sexual Abuse*

Abstract: There is a growing body of literature that suggests that psychological outcomes after enduring childhood sexual abuse are related to attachment style. Literature also suggests that effective social support and perceived quality of social support can mediate effects of child sexual abuse on attachment. However, few studies have examined these associations with childhood sexual abuse populations, and even fewer have examined the prevalence of childhood sexual abuse and outcomes among incarcerated women. To address this gap in the literature, the purpose of the present study is to examine the prevalence of childhood sexual abuse among incarcerated women and examine the influence of attachment and social support on psychological outcomes. Three hundred and thirty six women who were incarcerated at a county detention center in Southern California completed the Adverse Childhood Experience (ACE) to assess exposure to childhood trauma, the Symptom Checklist (SCL-90) to determine psychological problems and symptoms, the Inventory of Parent and Peer Attachment (IPPA) to assess perceived parent and peer attachment, and the Social Support Questionnaire. The questionnaires were administered to participants in a classroom-like setting within the detention center. Demographic data was also collected. Preliminary analysis indicates that 116 participants experienced child sexual abuse. Additionally, negative associations were found between psychological distress and perceived social support. Psychological outcomes for individuals with little social support demonstrate some consistency with previous work that highlighted the significance of perceived satisfaction with social support.

Presenter(s): Abigail Earle

Faculty Mentor: Dr. Christina Hassija

Department: Psychology

Title: *Reactions to Disclosure of Sexual Assault*

Abstract: Sexual assault is very prevalent among college populations. It is known that disclosure impacts the post assault outcomes of sexual assault survivors. Disclosure can be the survivor's access to resources and support; it can also be psychologically harmful if met with a negative reaction. Few studies have examined the experience of the recipient of disclosure. This study will implicate ways to instruct disclosure recipients on how to correctly respond to sexual assault survivors that disclose to them. This study examines the relationship between aspects of sexual assault survivors' disclosure and the responses they receive from the disclosure recipients, in a sample of 100 college students. This study examines the role of severity of the survivor's assault and recipients' perceptions of blame, endorsement of rape myth, and history of sexual victimization on recipients' encouragement of the survivor to report. All participants were asked to complete a series of questionnaires online via SONA and Qualtrics systems, assessing the severity of assault (attempted rape, drug or alcohol facilitated rape, forcible rape, combined) and the encouragement to report (to medical services, mental health services, etc.) Hypotheses were tested with linear and hierarchical regression analyses. Tests of mediation was conducted utilizing a bootstrapping procedure. It is expected that survivors who disclose forcible rape will be most likely encouraged to report to police authorities by their disclosure recipients. It is expected that Rape Myth Acceptance and victim blame will mediate the relationship between severity of the disclosure and the encouragement of disclosure recipients.

Presenter(s): Estefania Galvez, Madahi Magana, Kevin Guijosa, Crystal Yanez, and D'andra Johnson

Faculty Mentor: Dr. David Chavez

Department: Psychology

Title: *Photovoice with Elementary School Children: An Evaluation of Participatory Methodology*

Abstract: This study used quantitative and qualitative methods to measure psychological empowerment through the use of Photovoice. Photovoice aims to examine how community members use photographs to express their voice through pictures and narration of the strengths and weaknesses they see within their community. Photovoice is often applied in research on health as an instrument for personal and community change. This research group has effectively utilized Photovoice with a sample of nearby 8 – 12 year old children from the Boys and Girls Club of Waterman Gardens, a public housing complex. Children from low SES environments are at a disadvantage in regards to availability of resources. Previous work with the Boys and Girls Club from Waterman Gardens led us to work with E. Neal Robert's Elementary School, the school that many members of the Boys and Girls Club attend. Upon learning of our previous Photovoice work to enhance children's psychological sense of empowerment, the school principal requested that we engage in Photovoice with children from the school. The current study involved 20 elementary school age students from E. Neal Robert's Elementary. The Community and Relationship Enhancement Team (CARE) from CSUSB led the study using the Community-Based Participatory Research (CBPR) paradigm. Prior to participation in the project, the Psychological Empowerment Scale (PES) and the Prosocial Behavior Scale (PBS) were administered to the participating children to establish a baseline score for each child. Qualitative data was collected via semi-structured prompts used to facilitate group discussions between CARE leaders and participants focusing on the children's narratives of their photographs. These group meetings were recorded to be analyzed at a later time to identify recurring themes. Following completion of the Photovoice project, the PES and PBS were again

administered to establish post-intervention scores on Psychological Empowerment and Prosocial Behavior. Quantitative data was analyzed using paired t-tests to measure change in empowerment and prosocial behavior. Our study showed that change occurred in these two variables in the expected direction. This study, consistent with earlier work, suggests that Photovoice leads to a greater sense of empowerment and prosocial behavior in an effective way to promote change within communities.

Presenter(s): Sophie Peterson

Faculty Mentor: Dr. Dionisio Amodeo

Department: General Experimental Psychology

Title: *Effect of 5-HT6 Modulation on Behavioral Flexibility and Working Memory in Mice*

Abstract: Repetitive behaviors are a prevailing symptom across several neuropsychiatric and neurodevelopmental disorders, including autism spectrum disorder (ASD). Repetitive behaviors with restricted interests (RRBs) are a core feature of ASD and currently there is lack of effective treatments for attenuation of these behaviors. In the search of new therapeutic targets, the 5-hydroxytryptamine 6 (5-HT6) receptor is of interest because blockade has shown to have pro-cognitive effects and shows promise in attenuation of behavioral inflexibility. The current experiments aim to better understand how increased 5-HT6 receptor activation may lead to learning impairments in C57BL/6J mice. Mice were tested on three separate behavioral measures including locomotor activity, spontaneous alternation (working memory) and probabilistic reversal learning (behavioral flexibility). Mice received an acute injection of vehicle solution or 2mg/kg EMD386088. We predicted that the 5-HT6 receptor agonist would impair both spontaneous alternation and probabilistic reversal learning performance. Vehicle and EMD386088 treated mice displayed comparable locomotor activity. EMD386088 impaired spontaneous alternation performance but facilitated performance on the probabilistic reversal learning task. Because these tasks measure working memory and behavioral flexibility and different areas

of the brain are recruited to perform each of these tasks, our results highlight how the 5-HT₆ receptor may modulate different types of learning and memory.

Presenter(s): David Buitron

Faculty Mentor: Dr. Hideya Koshino

Department: General Experimental/Psychology

Title: *Effects of Perceptual Load on a Simon Task*

Abstract: Perceptual load (PL) hypothesis claims that PL determines attentional selection. We questioned whether the PL effect can be generalized to other interference tasks, such as a Simon task. Participants performed a discrimination task with three levels of PL (No PL, Low PL, and High PL). There were four stimuli arranged in a horizontal fashion, and a target appeared at a near or far location from the fixation. In our previous study with a letter discrimination task, there were Simon effects for the No PL and Low PL, but not for High PL conditions. In the present study, we used a color discrimination task, and basically replicated our previous results, that there were Simon effects for No and low PL regardless of stimulus distance from the fixation. However, there was a Simon effect for high PL for far condition. The results suggest that stimulus discriminability affects the magnitude of the Simon effect.

Presenter(s): Timothy Baum

Faculty Mentor: Dr. Cari Goetz

Department: Psychology

Title: *The Effect of Mortality Salience on Relationship Commitment in Interfaith Relationships*

Abstract: Religious membership is a major aspect of people's social and moral identity; therefore, interfaith relationships involve individuals mated to someone who is an out-group member. Mortality salience increases derogation toward out-group members, and increases in-group bias. However, mortality salience also increases romantic relationship commitment. We hypothesized that religious similarity would moderate the relationship between mortality salience and relationship attitudes. Specifically, we expected that

the more similar romantic partners are in religion, the more relationship commitment and satisfaction they will report in response to a mortality salience prime. Participants (N = 100) were religious and in committed romantic relationships. They rated their religious similarity to their partner and were randomly assigned to a control condition (wrote about taking an exam) or a mortality salience condition (wrote about their own death) and completed relationship satisfaction and commitment measures. Results increase our understanding the mechanisms that influence relationship satisfaction and outcomes.

Presenter(s): Daniella Lockhart

Faculty Mentor: Dr. Mark Agars

Department: Industrial and Organizational Psychology

Title: *Evaluations of Women in the Workplace: The Influence of Cumulative Effects on Subtle Sexism*

Abstract: This study examines the evaluations of women in the workplace and the influence of cumulative subtle sexism. Overt forms of sexism, or the explicit and intentional disparate treatment of women in the workplace, have appeared to decline over the last several decades as a result of firm discrimination laws and subsequent social condemnation. While this change has resulted in an increase in opportunities for previously disadvantaged populations, more subtle forms of sexism continue to persist. This new sexism, termed subtle sexism, is classified as intentional or unintentional and usually overlooked due to its having been ingrained into societal norms. Since subtle sexism is harder to identify, its potential for harm is substantial. Some researchers claim instances of subtle sexism have effect sizes too small to do actual harm. However, singular instances that happen repeatedly and over a long period of time, can increase the effect sizes – along with the amount of harm done. That is, those single-event studies do not take into account real-world contexts. Therefore, the current study aims to address this gap in the literature by exposing participants to a series of video vignettes that contain instances of subtle sexism in order to test its cumulative effects on

the evaluations of women in the workplace.

Presenter(s): John Tenorio

Faculty Mentor: Dr. Joseph Wellman

Department: Psychology

Title: *The Impact Of Masculinity Threats On Evaluations Of Other Men Based On Femininity And Sexuality Of The Target*

Abstract: Threats to masculinity have been suggested to promote anti-gay attitudes and discrimination among men. Research has yet to examine if it is gay men's sexuality or perceived femininity that prompts the discriminatory responses. We examine how threats to masculinity impact heterosexual men's evaluation and helping response to a masculine or feminine target who is gay or straight. Heterosexual male participants first completed a "personality test" and either received masculinity-threatening feedback or no feedback. Participants then indicated their evaluation of and helping intentions towards one of four targets: a feminine gay man, feminine straight man, masculine gay man, or masculine straight man. 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 lower helping intentions compared to those in the control condition. Implications for masculinity threat and stereotype congruency theory are discussed.

Presenter(s): Christopher Mendez and Adam Beam

Faculty Mentor: Dr. Donna Garcia

Department: Psychology

Title: *LGBTQA+: Derogating or Supporting an In-group Member's Response to Discrimination*

Abstract: When people publicly respond to an experience with discrimination, they are open to evaluation from others. Preliminary research has examined these evaluations in intragroup contexts when, for example, women judge a woman who publicly claims discrimination (Garcia et al., 2005). The present research builds on these findings to

examine whether people's judgements about ingroup discrimination claimers depend upon the likely outcome of the complaint. Possibly, people will support rather than derogate ingroup claimers whose complaints might improve circumstances for the ingroup (see Garcia et al., 2010). To test this possibility, participants (N = 268) who identify as LGBTQA+ members and allies, read a news article about a gay couple who considered filing a lawsuit against an adoption agency that refused them the right to adopt. Half the participants read that the couple had a high probability of winning the lawsuit and the other read that the couple had a low probability. In addition, half the participants read that the couple decided to drop the lawsuit and the other read that the couple decided to proceed. The design is a 2(Probability of winning: low versus high) x 2(Decision: drop or proceed with lawsuit) between-group design. We predict that LGBTQA+ individuals will be supportive of the couple, regard their decision as appropriate, and perceive their decision as benefiting the LGB community when 1) there is a high probability of winning and the couple proceeds with the lawsuit, or 2) there is a low probability of winning and the couple drops the lawsuit.

Presenter(s): Alexandra Sharp

Faculty Mentor: Dr. Amanda Wilcox-Herzog

Department: Psychology

Title: *Screen-time Usage in Licensed Child Care Programs*

Abstract: The purpose of the present study is to investigate how much time children spend using screens in home-based and center based programs. A secondary goal is to determine if children are accessing screen time in non-parental caregiving situations, what they are watching or doing, and what teachers are doing while children are on such devices. All participants were English speaking teachers employed by licensed center based and home based child care programs in San Bernardino and Riverside counties. All participants completed four surveys including a demographic survey, two teacher beliefs scales (one regarding beliefs about DAP (Charlesworth, Hart, Burts,

& Hernandez, 1991), the second regarding beliefs about child rearing (Shafer and Edgerton, 1985), and a media survey (Wilcox-Herzog and Sharp, 2016). The four surveys were made available through Qualtrics survey software. It is predicted that children in center-based programs will be exposed to less screen time than children in home based programs. It is also predicted that if screen time is being used, teacher's beliefs about developmentally appropriate practice (DAP) will reflect how technology is being integrated into the curriculum. Specifically, it is believed that teachers who hold DAP beliefs will be more likely to use technology in developmentally appropriate ways and that they will interact more with children while they are using these devices.

Presenter(s): Stacie Subia

Faculty Mentor: Dr. Michael R. Lewin

Department: Psychology

Title: *Is the Relationship Between Trait Mindfulness and Quality of Life/Life Satisfaction Indirect?*

Abstract: Mindfulness meditation and related practices have become increasingly popular in the clinical research and practitioner communities and have been incorporated into many western psychotherapies (e.g., Mindfulness Based Stress Reduction, Dialectical Behavior Therapy, Acceptance and Commitment Therapy, and Mindfulness Based Cognitive Therapy). Although a growing literature has shown that state and trait mindfulness is related to healthy physical and mental health outcomes, less is known about the mechanism(s) through which mindfulness (purposeful attention with acceptance) enhances health outcomes. In the current study, we attempt to explore how the trait of being aware of one's experience with acceptance may lead to positive outcomes. Specifically, the current study is an attempt to delineate potential mechanisms through which mindfulness may yield the positive outcomes of quality of life and life satisfaction. Participants consisted of undergraduate students from California State University, San Bernardino who received course credit for taking part in the study. Study measures included a demographics form; the

Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer & Toney, 2006); the Satisfaction with Life Scale (SWLS; Diener, Emmons, Larsen & Griffin, 1985); World Health Organization Quality of Life Scale-Brief (WHOQOL-BREF; Skevington, Lofty & O'Connell, 2004); the Multidimensional Experiential Avoidance Questionnaire (MEAQ; Gamez, Chmielewski, Kotov, Ruggero & Watson, 2011); the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003); the Acceptance and Action Questionnaire-II (AAQ; Bond, Hayes, Baer, Carpenter, Guenole, Orcutt, Waltz, & Zettle, 2011); and the Cognitive Flexibility Inventory (CFI; Dennis & Vander Wal, 2010). Results of multiple mediator regression analyses using PROCESS (Hayes, 2008) indicated that the mindfulness – quality of life relationship was indirect as predicted and may be due to the proposed mechanisms of approach and commitment, cognitive and psychological flexibility, and emotion regulation. Findings have implications for improving overall quality of life utilizing mindfulness techniques. Limitations as well as future research directions will be discussed.

Presenter(s): Nuttacha Vaitayavijit, Estefania Galvez, and Tanisha Flowers

Faculty Mentor: Dr. Kelly Campbell

Department: Psychology

Title: *Instant Connections Among Same-Sex Pairs: Why Do We Like Who We Like?*

Abstract: Friendships are essential for mental and physical wellbeing. Compared to those who have close friendships, people without them have increased risk of mental health problems (Berkman & Glass, 2000; Shankar et al., 2011), greater susceptibility to influenza (Pressman et al., 2005), and higher mortality rates. The importance of friendship has prompted researchers to identify characteristics that promote its development. What is missing from extant work is an identification of the factors that help and hinder instant friendship connections. This information is imperative because judgments about whether to pursue a friendship are made within moments of first meeting (Ambady et al., 2000; Harris & Garris, 2008), which leads to the

question: Why are instant connections fostered easily with some people and not others? Guided by principles of evolutionary psychology, we examined factors that underlie instant friendship connections among same sex dyads. In particular, we hypothesized that dissimilar mate preferences would facilitate friendship connections whereas similar mate preferences would hinder them. Participants completed an online survey that assessed their intrapersonal traits including mate preferences. They were presented with a mate preference scale and also rated attractiveness by viewing a series of photos. Next, they attended a 3-hour speed-friending session in which they interacted with same-sex others for 3-minutes each. After each interaction, they completed a 2-minute assessment to rate the interaction. Two sessions were held, one for women and one for men. A social relations model was used to examine our central hypothesis. The results help advance evolutionary psychology theory and underscore the importance of mate preference in friendship selection. Our findings will inform the development of an Instant Friendship Facilitation (IFF) method that can be used to foster instant connections in social and professional settings. Our long-term goal is to help people foster more fulfilling relationships, which will ultimately benefit their health and well-being, and we expect the IFF will facilitate these outcomes.

Presenter(s): Natalie Callely

Faculty Mentor: Dr. Christina Hassija

Department: Psychology

Title: *Overcoming Trauma: Utilizing Existential Anxiety to Stimulate Posttraumatic Growth*

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 moderate the relationship between PTSD symptoms and level of PTG by triggering meaning-making behavior, or actions that help make sense of life events. Although EA 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, such as PTSD symptoms and suicidal ideation (Scott & Weems, 2013). The purpose of the current study is to examine the association between PTSD symptoms, EA, and PTG. Specifically, we evaluated the moderating role of EA in the relationship between PTSD symptoms and PTG. University students who have experienced trauma according to the Life Events Checklist for DSM-5 (LEC-5; Weathers et al., 2013) completed 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 (PTGI; Tedeschi & Calhaun, 1996). It is hypothesized that PTSD will be associated with PTG. It is also hypothesized that EA will be positively associated with PTSD symptoms and PTG, such that high levels of EA will be associated with greater PTG and that low levels of EA will be associated with low or no PTG.

Presenter(s): Sarah Hernandez, Kamiya Stewart, Christina Vieux, and Monica Biernat

Faculty Mentor: Dr. Donna Garcia

Department: Psychology

Title: *The Consequences of Social Exclusion on Self-Regulation of Unhealthy Eating Behavior*

Abstract: The self-evaluation maintenance model (SEM; Pleban & Tesser, 1981) predicts that social exclusion will be more detrimental to self-regulation when it is due to individual characteristics (e.g., personal ability). In contrast, social identity theory (SIT; Tajfel & Turner, 1986) predicts that social exclusion will impair self-regulation more when it is due to group membership (e.g., ethnicity or gender). Although these two theories appear contradictory concerning their prediction for social exclusion, we maintain they are complementary and depend on whether or not the exclusion is deserved, or fair. We argue social exclusion will be more detrimental when individuals are fairly excluded based on their individual characteristics (SEM) or unfairly excluded based on their group membership (SIT). We are recruiting Latina participants at CSU San Bernardino to participate in an online game called "CSUSB Survivor". Participants experience a situation

that simulates fair or unfair social exclusion based on either individual characteristics or group membership. Participants play two rounds of the game before they are excluded. After being excluded from continuing the game, participants are asked to rate different recipes of M&Ms on several dimensions such as crunchiness and sweetness. M&M consumption is measured in grams to determine participant's level of self-regulation over high caloric food. A 2 (fair versus unfair) x 2 (individual versus group) ANOVA will be used to analyze results. Support of our hypotheses will suggest that both fairness and type of social exclusion are significant factors in determining the impact of rejection on people's ability to self-regulate.

Presenter(s): Gia Macias, Delaine Baronia, and Ramiro Ferreyra

Faculty Mentor: Dr. Joseph Wellman

Department: Psychology

Title: *Understanding Latinos' Responses to Ingroup Members' Claims of Discrimination*

Abstract: Previous research has found that both group identification (GID) and status legitimizing beliefs (SLB) predict individuals' responses to claims of discrimination. Among low status individuals, GID is associated with more positive evaluations and support for in-group members who claim discrimination; however, SLBs among low status individuals are associated with decreased support for in-group claimants, as their claims threaten the stability of the status hierarchy. Across two studies, we examine the interaction between these conflicting motivations and reactions to in-group members who claim discrimination. In Study 1, we find that GID predicts support for the claimant only when SLBs are low. In Study 2, we prime SLBs and find that GID is only predictive of support when SLBs are not primed. Results suggest that SLBs override GID among Latinos in response to discrimination claimants. Implications for group identification and status legitimacy are discussed.

Presenter(s): Rachel Freeman

Faculty Mentor: Dr. Wilcox-Herzog

Department: Psychology and Child Development

Title: *Keep Your Hands to Yourself: How DAP Affects Young Children's Aggression in Group Care Settings*

Abstract: Young children are spending more time in group care settings than ever before. With this influx of children, it begs the question on what centers can do to increase their quality and what are the positive effects of high quality care. Previous research has been conducted on the benefits of quality care and developmentally appropriate practice (DAP). However, it has not been discussed how aggression is affected. Anyone who has worked with young children has seen how aggressive they can be, whether one of their needs not being met causes it or they want the same toy. Young children lack the emotional regulation to prevent these conflicts on their own and need the help of an adept teacher to achieve a resolution. Optimistically, with quality care the teachers will be more readily available to resolve and even prevent conflicts. The current research aims to fill the gap in research between quality care, DAP, and how it affects aggression. Three hypotheses were examined as a predictor of lower aggression: higher education levels of teachers, NAEYC accreditation, and a developmentally appropriate center.

Presenter(s): Gloria Magana, Michelle Orozco, Sylvia Yracheta, and Nora Muongpruan

Faculty Mentor: Dr. David Chavez

Department: Clinical Psychology

Title: *The Impact of Mental Health Strategies on Latino/a's Depression and Anxiety*

Abstract: Communities that are faced with numerous health disparities frequently suffer from a lack of community-based resources that are able to avert such disparities. San Bernardino's Department of Behavioral Health (DBH) developed an innovative, community-based project to address health disparities related to mental health awareness, service utilization, and mental health outcomes. DBH's approach relied on a community-based organization, the Inspire

Multicultural Holistic Campus, which provided preventative mental health and mental health services that were developed by the community. Within a one year evaluation period, the Latino/a sample (N=925, Female=70%, Male=29%) was observed. Methods of assessment included demographic information, logged visitor documentation, and various mental health surveys, including assessments. This study reports findings regarding mental health seeking strategies for the subsample of Latino/a participants. The sample consisted of 110 (75.9%) Latina participants and 35 (24.1%). Specifically, this study aims to address the impact of mental health seeking strategies on Latino/a's levels of depression and anxiety. It was hypothesized that endorsement of increased mental health strategies would be associated with Latino/a's decreased depression and anxiety scores. The findings of this study propose that increased knowledge of mental health strategies is associated with decreased depression and anxiety. Related evidence suggests that willingness to engage in mental health strategies were positively impacted by participation in Inspire activities and services. Given Latino/a's historic underutilization of mental health services, it is critical to develop similar community-based holistic approaches to help develop real-life tactics, such as increasing mental health strategies, in order to address depression and anxiety within this population.

Presenter(s): Sailesh Maharjan

Faculty Mentor: Dr. Michael Lewin

Department: Clinical Psychology

Title: *Is the Relationship between Trait Mindfulness and Psychological Outcomes Indirect?*

Abstract: Mindfulness meditation and related practices are increasingly popular with a large number of people and have been incorporated into many western psychotherapies (e.g., Mindfulness-Based Stress Reduction, Mindfulness-Based Cognitive Therapy). There is considerable debate over whether mindfulness is best studied as a state, trait or procedure. Although many studies have found that trait and state mindfulness is related to healthy physical

and mental health outcomes, less is known about the mechanism(s) through which mindfulness (purposeful attention with acceptance or nonjudgment) enhances health outcomes. The current study explored the role of potential mediators of the relationship between trait mindfulness and the psychological outcomes of psychological distress. Specifically, we examined whether the relationship between trait mindfulness and psychological outcomes was indirect, with mediators such as emotion regulation, experiential avoidance, cognitive flexibility, and acceptance accounting for the relationship. We measured mindfulness, psychological distress, emotion regulation, cognitive flexibility, experiential avoidance and acceptance in a large sample of undergraduate students. The analyses suggested that enhanced psychological flexibility intervened the relationship between trait mindfulness and psychological outcomes. Results have implications for enhancing treatment packages that include mindfulness practices. Limitations of the use of trait mindfulness versus the state of mindfulness were discussed.

Presenter(s): Elisa Sequeira, Carol Castillo, and Jaclyn Contreras

Faculty Mentor: Nancy Acevedo-Gil

Department: Social Work

Title: *CSU Early Start: Examining Student Experiences in a Developmental Education Residential Program*

Abstract: This qualitative case study addresses the national imperative of college readiness. In particular, the study examined one site of the Early Start Program (ESP) required by the California State University system. Qualitative methods included focus group interviews and individual semi-structured interviews with first-time students who had to take a developmental math and/or English course as part of the ESP requirement. The study utilized a critical race theory in education framework and Chicana feminist epistemology. Findings reveal how students experienced the math courses, how participation in a summer bridge residential program influenced student transitions to college from high school, and how participating in ESP

influenced student academic self-perceptions and self-efficacy towards completing college.

Presenter(s): Amanda Castro

Faculty Mentor: Dr. Cherstin Lyon

Department: Social Sciences & Globalization

Title: *Mental Health Memories: Exploring the Memories of Those with Mental Health Experiences*

Abstract: This project was developed to fill a void in resources available that represent the mentally ill within historical discourse. The stories of individuals with mental health experiences have been captured in oral history projects with little to no other resources being used to document their personal histories. As a history based project the goal of the archive is to document participant contributions and stories. There is a negative stigma which surrounds those with mental illnesses. One way to fight back against the perpetuation of these negative stereotypes is by those with mental illness telling their stories of everyday life and in some cases treatment. This multidimensional approach can individually contribute to the collective story. In order to understand any portion of their lives it is of the utmost importance to hear their stories on their own terms. By allowing participants to share not only oral histories, but also visual and material culture, it is my hope that we will gain a more profound and heterogeneous understanding of individuals' experiences and new resources can become available for contemplation.

Presenter(s): Jessenia Oertel

Faculty Mentor: Not Indicated

Department: Social Sciences

Title: *Bachaqueros: Food Smuggling in Venezuela*

Abstract: Despite having the world's largest reserves of oil there are shortages of basic necessities in Venezuela which is causing the illicit trading of food across the border of Columbia. To begin it is important to firstly address what the cause of this food crisis is before moving onto its effects. As Venezuela's economy continues to spiral downwards, the food

smuggling business is booming. This is a perilous time in Venezuelan history and a precarious time for those who are trying to amend the situation or simply survive. Therefore this paper seeks to establish what caused the food crisis in Venezuela, how the smuggling is helping or hurting the food shortage, and to what extent globalization has contributed to this situation. I will conclude that there needs to be a referendum constructed against president Maduro relieving him from power. Secondly, the Venezuelan military's control of the food industry needs to be relinquished to help end some of the corruption and people that are actually expert economists of who have education in the agro-industry should replace them. Moreover, price controls in the region have been aimed at helping the poor through bust times they have overstayed their welcome; they have now empowered the black market which has incentivized smuggling and shortages and extremely high inflated prices on the black market made it known. In a country that has been so dependent on oil to supply everything they need they have neglected cultivation of other aspects of the economy that could produce during the times oil does not.

Presenter(s): Heather Garrett

Faculty Mentor: Dr. Cherstin Lyon

Department: Social Science and Globalization

Title: *Alien Enemies, American Citizens: Japanese American Postwar Resettlement, Identity, And Community Development In Los Angeles And South Bay*

Abstract: The post-incarceration redevelopment of the Japanese American community presents a complex and unique circumstance to the study of ethnic populations and community development. The purpose of this thesis is to contribute to the lacking research and literature of the immediate postwar period between the late 1940s resettlement period and the 1960s. In the 1960s, the Sansei (third generation) started to reshape the character and cultural expressions of Japanese American communities, including their development of the Yellow Power Movement in the context of the Black and Brown Power Movements in California.

Furthermore, this thesis contributes to the nearly absent literature of Japanese American community redevelopment in the transboundary Los Angeles/South Bay area. This locale hosted the largest and fastest growing postwar Japanese American population in the country. The community built lasting networks and relationships, and laid the foundations for later social activism and the redefining of the Japanese American community, through the revival of cultural celebrations like Obon and Nisei Week, sport and recreation – namely baseball and bowling, and ethnic resources in the form of food and ethnic markets.

Presenter(s): Kliff Cramer

Faculty Mentor: Dr. Nerea Marteache

Department: Criminal Justice

Title: *Preventing IUU Fishing from a Situational Crime Prevention Perspective*

Abstract: Illegal, unreported, and unregulated (IUU) fishing is a very serious problem. It affects marine ecosystems, economic stability of developing countries, and fish stocks worldwide. Although this issue has been studied mainly from a conservation point of view, in the last few years it has begun to be addressed from a criminological perspective as well. In particular, environmental and situational crime prevention theories have been used to better understand the problem of IUU fishing, and situational crime prevention measures have been suggested as a way to reduce the opportunities to engage in this behavior. This study will review current initiatives and interventions designed to curb IUU fishing at the local, national, regional, and international levels, and will categorize them according to the 25 Situational Crime Prevention technique grid. The goal is to determine which of those techniques are being used, which ones are most effective, and whether there are other possible viable options that have not been explored by governments and fisheries management organizations.

Presenter(s): Nicholas Chavez

Faculty Mentor: Not Indicated

Department: Criminal Justice

Title: *Amazing G.R.A.C.E.: Redirecting At-Risk Youth from Gang Involvement*

Abstract: The Gang Reduction and Community Engagement (GRACE) program, developed by the City of Riverside Parks, Recreation, and Community Services Department in partnership with Operation New Hope, provided 87 at-risk youth from three gang-entrenched neighborhoods with a comprehensive program of life skills training, job development, and work experience so as to change the trajectory of their lives. By enhancing employability and facilitating personal growth, program staff sought to redirect at-risk youth away from gang involvement. This presentation reports key findings and lessons learned from the evaluation of this CalGRIP project.

Presenter(s): Diane Lucero

Faculty Mentor: Dr. Teresa Velasquez

Department: Anthropology

Title: *Latina Adults who emigrate from Mexico Face Unique Barriers in Their Quest for Education*

Abstract: Fontana Adult School (FAS) is a place where adult learners can begin their path towards education. Much of the student body is enrolled in English as a Second Language (ESL) and/or General Education Degree (GED) classes. With a largely Latina population at this school I want to attempt to find out why Community College and Career program mentoring appointments and transfer rates are low. I am focusing on Latina adult learners who have emigrated from Mexico since this describes most of the women I have come in contact with. In my research I will engage with learners who seek College and Career mentoring, informal and structured interviews, and in class presence as an instructor's assistant in a College & Career class. Interviews will include instructors, staff, and students who can shed light on the issues that are part of these women's lives. In this research project I am studying the socio-cultural and economic factors

that prevent Latina adult learners from continuing their education goals beyond the GED, because I want to find out why Latina learners at Fontana Adult School are not taking advantage of the resources available, in order to understand the influence that economics and family obligations have over ones desire to stay or get on the a path of education. It is the sincere purpose of this research to define barriers that will allow FAS to be able to identify ways to help these women.

Presenter(s): Valeria Velez Zaragoza

Faculty Mentor: Not Indicated

Department: Anthropology

Title: *InDignity*

Abstract: InDignity is a project conducted by the Anthropology museum in which we are working towards displaying an exhibit that targets both the indignities and dignities that we face as humans. This includes the sharing of discrimination, prejudice, and other stories of anguish where individuals have felt suppressed or treated less than who they are. At the same time, we bring to light on what each of our dignities are: what we are proud of, how we can promote compassion and acceptance, and how we can grow as a society. These topics intend to focus on both the positive and negative aspects of who we are as individuals by referring to different stories and circumstances within the experiences of the people in our community that we will be interviewing. The overall aim of the InDignity exhibit is for visitors to leave with a better understanding of the discrimination and prejudice that our society faces today, and what they can do to better our community and society. The purpose of our research is to address certain issues in our current society, such as the different types of discrimination and prejudices embedded in our everyday culture, and to develop our research into a well-executed museum exhibit that will leave a positive and powerful impact on our visitors.

Presenter(s): Shannon Clarendon

Faculty Mentor: Dr. Amy Gusick

Department: Applied Archaeology

Title: *Fire Affected Rock: An Investigation into Diagnostic Utility*

Abstract: The post-firing variability of fire affected rock (FAR); specifically recovered from stone-grilling platforms (SGP) within prehistoric stone grills was examined. This examination tests the physical properties of FAR recovered from prehistoric stone grills in the Crowder Canyon Archaeological District in San Bernardino California. There is a lack of archaeological research in this area of Southern California; however, this project will establish a fundamental perspective of facility reuse and episodes of firing activity for prehistoric cooking features by examining the physical changes fire affected rock (FAR) experience due to various heat exposure. Regional archaeologists encounter these features often as they speckle the landscape of upland desert mountain regions in California. This examination moves further to compare these cultural stones' properties to those of non-cultural origin, which have been fired various times during controlled replicative experimentation. The end comparison identifies the FARs' change in physical conditions. Repeated exposure to high temperatures has a direct relationship to the stability and matrices of rock in this particular case schist. As the stone is exposed repeatedly its durability and structural components begin to deteriorate allowing these physical manifestations measurable qualities, in particular the stones' porosity which is measuring by testing their varying ability to absorb water after various numbers of firing, e.g. cooking. As a result, it is proposed that FAR can now be used as a diagnostic artifact to infer multiple firing episodes, confirm facility reuse, and or support suggested mobility with respect to available resources and temporal episodes through AMS dating, and other analytical contributors such as seasonal micro-botanical analysis.

Presenter(s): Alexandria Flowers

Faculty Mentor: Dr. Teresa Velasquez

Department: Anthropology

Title: *A Fight to the Finish! Challenging Environmental Racism in San Bernardino, CA*

Abstract: I became an intern for a non-profit organization, The Center for Community Action and Environmental Justice (CCA EJ) based in Jurupa Valley, CA. My main work has been conducted in San Bernardino in the South West end. I am studying the working-class Latino communities in Westside San Bernardino because I would like to see how community members experience discrimination and how they organize themselves against corporate polluters for my readers to understand how environmental racism has affected working-class Latino communities. In order to find my answers I've been using the methods of participant-observation, informal interviewing, and semi-structured interviewing. My fieldwork is ongoing and I will be presenting my findings.

Presenter(s): Jodi Buckley

Faculty Mentor: Dr. Steven Childs

Department: National Security Studies

Title: *Japan: Developing Nuclear Weapons to Improve Self-Defense Capabilities*

Abstract: In this paper, the hypothesis challenges, "Will Japan develop Nuclear weapons?" The research of this paper focuses on the results saying yes. Japan will develop nuclear weapons to increase their self-defense capabilities. Japan abides by four pillars of nuclear policy. The Pillars promote the peaceful use of nuclear energy. The pillars support Japan's efforts towards a global disarmament. The pillars reinforce Japan's reliance on the United States for nuclear deterrence. Lastly, the pillars encourage the people of Japan to sustain and uphold the three principles during each transition of leadership and administration. The legislation does not support the nuclear pillars of Japan as an enforced law. The pillars to Japan are tantamount to the Declaration of Independence to the United States. Thus, it will take a unique series of

circumstances to force Japan into the development of nuclear weapons. The development of nuclear weapons will improve their self-defense capabilities. It is the focus of this paper to identify possible circumstances that are not only ripe but currently active.

Presenter(s): Pedro Bravo, Monique Lopez, and Jazmin Fernandez

Faculty Mentor: Dr. Meredith Conroy

Department: Political Science

Title: *Presidential Unilateralism, and the Role of Institutional Checks*

Abstract: "Presidential unilateralism" depicts the behavior of American presidents who act independent of Congress to address problems, crises, or public policy initiatives. Presidents exercise unilateralism using "executive actions." Executive actions include executive orders, proclamations and memoranda. The legality of executive actions is ground in the vague authority given to presidents in the Constitution, but individual orders must uphold the Constitution, and comply with current statutes (Thrower 2017). There are three checks on presidential unilateralism. First, a successor can undo past presidents' unilateral actions by revocation. Second, Congress can pass legislation that rescinds or overrides unilateral actions. Third, the courts can overturn actions, if a case against an order is brought before them. Unfortunately, the last known comprehensive assessment of congressional and judicial checks on unilateral actions was last updated through 1998. That study (Howell 2003) found that between 1945 and 1998, Congress proposed 45 bills to overturn an executive order; only four were successful. As for the judicial branch, the courts heard 83 cases challenging executive actions; the president won 86 percent of the time. But the use of unilateral actions by presidents has changed considerable since 1998. Moreover, so have the dynamics of Congress, which is much more prone to polarization and gridlock today, than ever before (Hopkins and Sides 2016). This project would update this data, as well as develop a unique theory for when and why executive actions are used, and the role of incoming presidents, congress, and the

courts in permitting or checking this growth of executive power.

Presenter(s): Sam Worrall

Faculty Mentor: Dr. Christina Hassija

Department: Clinical/Counseling Psychology

Title: *The Influence of Trait Resilience and Psychopathic Characteristics on PTSD Symptom Severity*

Abstract: Psychopathy is a continuous personality characteristic that includes high impulsivity and thrill-seeking, while typically maintaining low empathy and anxiety (Paulhus & Williams, 2002). Exposure to traumatic events can lead to the development of posttraumatic stress disorder (PTSD); however, symptom severity can differ depending on characteristics of risk resilience (Moeller & Hell, 2003; Connor & Davidson, 2003). Past research on psychopaths has shown positive relationships with PTSD; however, most studies involving psychopaths are conducted on inmates (Dutton, 1995). The purpose of the present study was to examine the relationship between trauma exposure, aspects of resilience, and psychopathic characteristics. Our sample consisted of 215 psychology students (139 females and 76 males) at a western university. Results revealed psychopathy was positively associated with PTSD symptom severity, $r = .15$, $p = .05$ and resilience, $r = .035$, $p = .61$. PTSD symptom severity was negatively associated with resilience, $r = -.14$, $p = .05$. Results from moderation analyses revealed a significant interaction between resilience and psychopathy, $b = -.007$, $p = .009$. Overall, our hypotheses were supported. Limitations of the study are that it is cross-sectional and correlational in nature and specific to psychology students. Implications of this study can add to the body of knowledge of PTSD, resiliency, and psychopathy on a normally functioning population. Future research should assess other populations (non-college, non-inmate) to investigate for similar outcomes.

Presenter(s): Khalil San Martin

Faculty Mentor: Dr. Michael Lewin

Department: Psychology

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

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.

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Dr. Francisca Beer, Co-Director of the Office of Student Research

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