

Southeast Missouri State University
27th Annual Student Research Conference
University Center Ballroom
April 17–18, 2019



We would like to thank the following individuals and organizations for their important contributions:

- ❖ Louise Bodenheimer and her AR408 Graphic Design Studio students for artwork submissions
- ❖ Zi Zhou for submitting the winning conference artwork design depicted on the cover
- ❖ Dr. Jennifer Ohs for delivering the keynote address, *When Research is Beautiful*
- ❖ Provost Tammy Randolph for supporting this conference
- ❖ Susie Moore with The Printing Co. for printing the programs
- ❖ Grant Reid for being a superhero and rescuing us from our website woes
- ❖ Allyson Heller with EDvolution Center for printing the posters for presentations
- ❖ Faculty Sponsors and Judges for supporting students and the conference
- ❖ Marge Phillips and Phi Kappa Phi for funding monetary awards for winning artwork

With sincere thanks,

The Conference Committee: Dr. Jim McGill, Jennifer Blair, Mai Campbell-Nowlin, and Cassie Prock ☺

As a courtesy to others, attendees are asked to turn off their cell phones when attending the sessions.

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Schedule of Sessions

| | | |
|---|-------------|----------------------------------|
| Keynote Luncheon – <i>11:30 am-1:00 pm</i> | April 17 | University Center Ballroom A |
| Oral Presentation Sessions | April 17-18 | University Center Ballroom A |
| Poster Presentation Sessions | April 17-18 | University Center Ballroom Patio |
| Senior Capstone Symposium Sessions | April 18 | UC Ballroom A and UC Patio |
| Roundtable Discussion Sessions | April 18 | University Center Indian Room |
| Awards and Recognitions Ceremony – <i>5:00 pm-6:00 pm</i> | April 18 | University Center Ballroom A |

Keynote Address



Dr. Jennifer Ohs
When Research is Beautiful

University Center Ballroom
Wednesday, April 17, 2019
12:00 PM – 1:00 PM

Dr. Ohs received her Ph.D. in Communication Arts and Sciences from the Pennsylvania State University and her M.A. in Speech Communication from the University of Illinois, Champaign-Urbana. Her research interests include interpersonal and health communication, with an emphasis on aging and intergenerational communication. Her research focuses on topics such as end-of-life care decisions within families, health decisions in older adulthood, ageism in society, and how people manage their personal health information throughout the adult lifespan. Dr. Ohs' work has been published in numerous journals, including *Health Communication*, *The Journal of Family Communication*, and *American Journal of Hospice and Palliative Medicine*, as well as in books, such as *Narrating Patienthood: Engaging Diverse Voices on Health, Communication, and the Patient Experience* (2019), *Contemporary Case Studies in Health Communication: Theoretical & Applied Approaches* (2011, 2015) and *The Routledge Handbook of Applied Communication Research* (2009). As Associate Professor and Graduate Program Coordinator at Saint Louis University in the Department of Communication, Dr. Ohs enthusiastically supports undergraduate and graduate student research endeavors through teaching, mentoring, and collaborative research.

Senior Capstone Symposium Presenters

GH415 Senior Seminar in History

Maxwell Abbott

Zachary Mitchell

HN499 Senior Honors Research

Hannah Alexander

Kelly Genesisio

Katie Bunselmeyer

Tyler Howard

Rebecca Gangemella

Morgan Tackett

Hannah Hufford

Zoey Logan

TRIO/McNair Scholars

Alysha Giltner

Roxanna Villasenor

UI498 Senior Seminar at the Center for Strategic and International Studies (CSIS)

Renee Bailey

Dominick Gillette

Cassie Prock

Andrew Bathon

Gretchin Hanlin

Joel Ricker

Eli Bohnert

Robert Hearnes

Marlee Russell

Simon Brown

Emily Hoffmeister

Taylor Shivelbine

Ian Cameron

Justin Jacobs

Heather
Smallwood

Conner Dittlinger

Zoey Logan

Mannat Varshney

Nicholas Fuller

Elizabeth Mack

Trent Waltz

Mareea Gaines

Justin McCulley

Lauren Wood

Michaela Gaskins

Liam Ohlendorf

Grace Ziehm

Roundtable Panelists

Sustainability Roundtable Discussion Panelists

9:30 am to 10:45 pm on Thursday, April 18, in the UC Indian Room

- ❖ Courtney Kisat – Assistant Professor, Department of History and Anthropology
- ❖ Justin Jacobs – Treasurer-Elect of Student Government; Past Chair of Student Government Sustainability Committee
- ❖ Justin Miller – Assistant Professor, Department of Theatre and Dance
- ❖ Willie Redmond – Professor, Department of Economics and Finance
- ❖ Melanie Grasso – President of Environmental Science Club

Mental Health Roundtable Discussion Panelists

11:00 am to 12:15 pm on Thursday, April 18, in the UC Indian Room

- ❖ Janice Bunch – Director, Counseling and Disability Services at Southeast
- ❖ Kirsten LaMantia – Assistant Professor, Department of Psychology and Counseling
- ❖ Ivie Walker – Sophomore Honors Student majoring in Global Cultures and Languages and minoring in Entrepreneurship
- ❖ Heather Williams – substance abuse specialist; mental health advocate; community member

Student Research Roundtable Discussion Panelists

12:30 pm to 1:45 pm on Thursday, April 18, in the UC Indian Room

- ❖ Jen Bengtson – Associate Professor, Department of History and Anthropology
- ❖ Jim Caldwell – Associate Professor, Department of Management
- ❖ Amber Cook – Assistant Professor, Department of Theatre and Dance
- ❖ Jeremy Ellermeier – Assistant Professor, Department of Biology
- ❖ Katlyn Griffin – Assistant Professor, Kent Library
- ❖ Stephen Nettelhorst – Associate Professor, Department of Psychology and Counseling
- ❖ Pam Parry – Chair, Department of Mass Media

Oral Presentation Session 1 – Wednesday, April 17 – 8:00 AM – 9:00 AM

Undergraduate Student Session – University Center Ballroom A

- 08:00 AM – 08:20 AM 20 **A Microbiological Look at Salmonella Typhimurium’s AmiA and AmiC Genes and Their Importance in Resistance to Ampicillin**
*Adrienne Brauer**; Faculty Sponsor: *Jeremy Ellermeier*
- 08:20 AM – 08:40 AM 17 **Nonverbal Affection in the Queer Community**
*Eli Bohnert**; Faculty Sponsor: *Jeanne Harris*
- 08:40 AM – 09:00 AM 94 **Analysis of Correlation between Emancipation Rate of Foster Children and State Expenditures on Child Welfare**
*Paula Wildermuth Morris**; Faculty Sponsor: *Jeremy Heider*

* Presenting Author(s)

Poster Presentation Session 1 – Wednesday, April 17 – 8:00 AM – 9:00 AM

Poster Set-Up—No Posters Scheduled in This Session

08:00 AM – 09:00 AM No Posters Scheduled in this Session

* Presenting Author(s)

Oral Presentation Session 2 – Wednesday, April 17 – 9:15 AM – 10:15 AM

Graduate Student Session – University Center Ballroom A

Oral Presentation Session 2 Concurrent with Poster Presentation Session 2

- 09:15 AM – 09:35 AM 39 **Motivational Factors for Generation Z**
*Keana Henderson**; Faculty Sponsor: *Erin Fluegge*
- 09:35 AM – 09:55 AM 24 **Reasons for Withdrawal and Continuation in Youth Sports**
*Mai Campbell-Nowlin**; Faculty Sponsor: *Jeremy Heider*
- 09:55 AM – 10:15 AM 81 **The Impact of a Student Recreation Center on a College Campus**
*Brittney Swicionis**; Faculty Sponsor: *Beth Easter*

* Presenting Author(s)

Poster Presentation Session 2 – Wednesday, April 17 – 9:15 AM – 10:15 AM

Undergraduate Student Session – University Center Ballroom Patio

Poster Presentation Session 2 Concurrent with Oral Presentation Session 2

- 8 **The Adapt Gap: Are Clothing Retailers Responding Appropriately to the Need for Disability-Accessible Clothing?**
*Nicolette Baker**; Faculty Sponsor: *Doc Billingsley*
- 40 **Furrow-Irrigated Rice Versus Flood-Irrigated Rice**
*Bud Hilburn**; Faculty Sponsor: *Indi Braden*
- 09:15 AM – 10:15 AM 14 **Gender Bias at the Local Level: Are Women More Likely to be on School Boards Than City Councils?**
*Emily Bergmann**; Faculty Sponsor: *Jason Sides*
- 89 **Language Attitudes of Heritage Speakers**
*Roxanna Villasenor**; Faculty Sponsor: *Doc Billingsley*
- 60 **Case Study on the Use of Social Media Marketing in Ministry**
*Alyssa Mohny**; Faculty Sponsor: *Lesly Krome*

* Presenting Author(s)

Oral Presentation Session 3 – Wednesday, April 17 – 10:30 AM – 11:30 AM

Undergraduate Student Session – University Center Ballroom A

Oral Presentation Session 3 Concurrent with Poster Presentation Session 3

- 10:30 AM – 10:50 AM 47 **College Students' Perceptions and Experiences with Cyberbullying**
*Jasmine Jones**; Faculty Sponsor: *Kristen Sobba*
- 10:50 AM – 11:10 AM 13 **Portrayal of People of Color in Lead Comedic Roles on TV**
*Ryan Berger**; Faculty Sponsor: *Sarah Cavanah*
- 11:10 AM – 11:30 AM 64 **Healthy Confrontation: Perceptions, Outcomes, and Implications**
*Johanna Oster**; Faculty Sponsor: *Erin Fluegge*

* Presenting Author(s)

Poster Presentation Session 3 – Wednesday, April 17 – 10:30 AM – 11:30 AM

Undergraduate Student Session – University Center Ballroom Patio

Poster Presentation Session 3 Concurrent with Oral Presentation Session 3

- 95 **Progress Toward the Purification and Crystallization of HipHop**
*Katie Bunselmeyer**; *Haileigh Hufstedler**; *Victoria Wright**; Faculty Sponsor: *Christina Ragain*
- 62 **Low Cost Beowulf Cluster for Education and Research**
*Benjamin Nielsen**; *Austin Patek**; Faculty Sponsor: *Jonathan Kessler*
- 10:30 AM – 11:30 AM
- 12 **The Evolutionary Relationships of Triodanis Remain Elusive: a Molecular Study**
*Cole Bearden**; *Julian Johnson**; Faculty Sponsor: *Jennifer Weber*
- 7 **Banana Chocolate Chip Pancake Sensory Analysis Project**
*Emily Arras**; Faculty Sponsor: *Charlotte Cervantes*

* Presenting Author(s)

Oral Presentation Session 4 – Wednesday, April 17 – 1:00 PM – 2:00 PM

Combined Graduate / Undergraduate Student Session – University Center Ballroom A

Oral Presentation Session 4 Concurrent with Poster Presentation Session 4

01:00 PM – 01:20 PM Transition from Keynote Luncheon to Oral Session 4

01:20 PM – 01:40 PM 67 **A Visit with Mrs. Wheeler**
*Cassie Prock**; Faculty Sponsor: *Joel Rhodes*

01:40 PM – 02:00 PM 50 **Development of the Organizational Values Measure**
*Sean Kleffner**; Faculty Sponsor: *Jeremy Heider*

* Presenting Author(s)

Poster Presentation Session 4 – Wednesday, April 17 – 1:00 PM – 2:00 PM

Undergraduate Student Session – University Center Ballroom Patio

Poster Presentation Session 4 Concurrent with Oral Presentation Session 4

65 **Evaluation of Cover Crop Selections for Southeast Missouri**
*Cameron Owen**; *Chase Copeland**; *Mara Mayo**; *Bud Hilburn*; *Sidney Upchurch**; *Ben Tremain*; *Reid Milburg*; Faculty Sponsor: *Indi Braden*

78 **The Kids are Alright: A Review of the Psychosocial Outcomes for Children Adopted Into LGBTQ+ Families**
*Randi Spiker**; Faculty Sponsor: *Catherine Chou*

01:00 PM – 02:00 PM

57 **The Effects of Flashcard Study Techniques on Recall & Recognition**
*Alyssa Miller**; Faculty Sponsor: *Alison Whiteford Damerall*

23 **A Bud Omen? Climate Change Drives Earlier Flowering in the Genus *Triodanis***
*Naomi Burr**; Faculty Sponsor: *Jennifer Weber*

* Presenting Author(s)

Oral Presentation Session 5 – Wednesday, April 17 – 2:15 PM – 3:15 PM

Graduate Student Session – University Center Ballroom A

Oral Presentation Session 5 Concurrent with Poster Presentation Session 5

- 02:15 PM – 02:35 PM 85 **The Depictions of "Terrorists" in Major Motion Pictures**
*Brigid Toney**; *Lauren Waldrop**; Faculty Sponsor: *Raleigh Blasdel*
- 02:35 PM – 02:55 PM 21 **What Made Maddy Run?**
*Mollie-Beth Brewer**; Faculty Sponsor: *Melissa Odegard-Koester*
- 02:55 PM – 03:15 PM 19 **Cell Death After Telomere Loss**
*Molly Brakhane**; Faculty Sponsor: *Rebecca Kurzahls*

* Presenting Author(s)

Poster Presentation Session 5 – Wednesday, April 17 – 2:15 PM – 3:15 PM

Undergraduate Student Session – University Center Ballroom Patio

Poster Presentation Session 5 Concurrent with Oral Presentation Session 5

- 87 **Understanding Consumer Preferences and Purchasing Decisions of Animal Protein Products**
*Amber Tyler**; Faculty Sponsors: *Samantha Siemers*; *Julie Weathers*
- 30 **Subpotent and Ineffective Antibiotic Analysis**
*Erin Delaney**; *Stephanie Haney**; Faculty Sponsor: *David Cunningham*
- 02:15 PM – 03:15 PM
- 52 **"Please find it in your heart to help!" How Individuals Draw Support from GoFundMe.com to Raise Money for Bail**
*Breana Kruithoff**; Faculty Sponsor: *Monica Bixby Radu*
- 43 **Disease Spread in the 21st Century**
*Hannah Hufford**; Faculty Sponsor: *Jim McGill*

* Presenting Author(s)

Oral Presentation Session 6 – Wednesday, April 17 – 3:30 PM – 4:30 PM

Undergraduate Student Session – University Center Ballroom A

Oral Presentation Session 6 Concurrent with Poster Presentation Session 6

- 03:30 PM – 03:50 PM 92 **An Ecofeminist View of Frankenstein**
*Gabrielle Wicker**; Faculty Sponsor: *Christopher Rieger*
- 03:50 PM – 04:10 PM 35 **Does a Period Mean You Mean It? Perceptions of Punctuation in Text Messages**
*Molly Gibbs**; Faculty Sponsor: *Alison Whiteford Damerall*
- 04:10 PM – 04:30 PM 28 **Symptomology of Eating Disorders in Female Ballerinas**
*Peyton Cope**; Faculty Sponsor: *Ruben Gerding*

* Presenting Author(s)

Poster Presentation Session 6 – Wednesday, April 17 – 3:30 PM – 4:30 PM

Combined Graduate / Undergraduate Student Session – University Center Ballroom Patio

Poster Presentation Session 6 Concurrent with Oral Presentation Session 6

- 10 **Weight Set-Point Theory: Is One Truly Capable of Controlling Their Weight?**
*Laura Bauman**; Faculty Sponsor: *Melissa Odegard-Koester*
- 51 **The Effects of Gender Identity and Sexuality on Jealousy Reactions**
*Sean Kleffner**; *Moriah White**; Faculty Sponsor: *Jeremy Heider*
- 03:30 PM – 04:30 PM
- 25 **Microbial Growth Response to Highly Water Disposable Boron Nitride Nanotube**
*Sourav Chakraborty**; *Htet Linn**; Faculty Sponsor: *Santaneel Ghosh*
- 45 **A Preliminary Method to Protein Replication**
*Sophie Atterberry**; *Caleb Ellenburg**; *Julian Johnson**; *Alex Major**; Faculty Sponsor: *Christina Ragain*

* Presenting Author(s)

Oral Presentation Session 7 – Wednesday, April 17 – 4:45 PM – 5:45 PM

Undergraduate Student Session – University Center Ballroom A

Oral Presentation Session 7 Concurrent with Poster Presentation Session 7

- 04:45 PM – 05:05 PM 71 **Perception of Media Study**
*Devin Rhone**; Faculty Sponsor: *Sarah Cavanah*
- 05:05 PM – 05:25 PM 93 **The Ethics Surrounding Harvesting Rhino Parts**
*Keaton Wiesehan**; Faculty Sponsor: *Bambi Robinson*
- 05:25 PM – 05:45 PM 58 **Involuntary Sterilization of Persons with Mental Disabilities**
*Landon Mitchell**; Faculty Sponsor: *Bambi Robinson*

* Presenting Author(s)

Poster Presentation Session 7 – Wednesday, April 17 – 4:45 PM – 5:45 PM

Undergraduate Student Session – University Center Ballroom Patio

Poster Presentation Session 7 Concurrent with Oral Presentation Session 7

- 29 **Mindfulness-Acceptance-Commitment Approach**
*Crystal Cordia**; Faculty Sponsor: *Scott Brandhorst*
- 83 **Family Farm Succession Planning and Involvement of the Next Generation**
*Kimberly Thole**; Faculty Sponsor: *Samantha Siemers*
- 04:45 PM – 05:45 PM
- 16 **Weird Stuff Going on in a Triodanis Hybrid Zone Near the Biology Greenhouses**
*Cody Bohnert**; *Colette Berg*; *Elijah MacBride*; *Jordan Yglesia*; Faculty Sponsor: *Jennifer Weber*
- 74 **An Application of Frictional Forces on Dance Floors**
*Emilia Schempp**; Faculty Sponsor: *Margaret Hill*

* Presenting Author(s)

Oral Presentation Session 8 – Thursday, April 18 – 8:00 AM – 9:00 AM

Undergraduate Student Session – University Center Ballroom A

Oral Presentation Session 8 Concurrent with Poster Presentation Session 8

- 08:00 AM – 08:20 AM 42 **Effectiveness of Social Issue Documentaries on Lifestyle Changes**
*Jordan Huff**; Faculty Sponsor: *Sarah Cavanah*
- 08:20 AM – 08:40 AM 18 **Genetic Background Effects on Cell Response to DNA Damage**
*Grace Boyum**; Faculty Sponsor: *Rebecca Kurzals*
- 08:40 AM – 09:00 AM 70 **Break Out of Your Routine with Gamification**
*Tracy Retherford**; Faculty Sponsor: *Irina Ustinova*

* Presenting Author(s)

Poster Presentation Session 8 – Thursday, April 18 – 8:00 AM – 9:00 AM

Senior Capstone Symposium – University Center Ballroom Patio

Poster Presentation Session 8 Concurrent with Oral Presentation Session 8

- 82 **Analysis of the Melanin Biosynthetic Pathway and Oculocutaneous Albinism**
*Morgan Tackett**; Faculty Sponsor: *Jim McGill*
- 6 **Order Versus Disorder in 1,2,3- and 1,2,6- Trimethylpyridinium Chloro Cuprate (II) Salts**
*Habeeb Al-Mashala**; *Brendan MacAinsh**; Faculty Sponsor: *Marcus Bond*
- 08:00 AM – 05:45 PM
- 79 **A Review of Single-Phase Single-Stage DC/AC Boost Inverter Topologies and Their Controllers**
*Adam Stone**; Faculty Sponsor: *Md. Rasheduzzaman*
- 54 **Genetic Diversity of *Triodanis Perfoliata*, A Native Annual Herb to North America**
*Olivia Lopez**; *Colette Berg*; Faculty Sponsor: *Jennifer Weber*

* Presenting Author(s)

Oral Presentation Session 9 – Thursday, April 18 – 9:15 AM – 10:15 AM

Senior Capstone Symposium – University Center Ballroom A

Oral Presentation Session 9 Concurrent with Poster Presentation Session 9

- 09:15 AM – 09:35 AM 84 **Storytelling in NFL Productions**
*Jared Thomas**; Faculty Sponsor: *Sarah Cavanah*
- 09:35 AM – 09:55 AM 36 **Individual Differences in College Students' Social Media Addiction**
*Alysha Giltner**; Faculty Sponsor: *Stephen Nettelhorst*
- 09:55 AM – 10:15 AM 34 **Perceptions of Fairness in Academia**
*Kelly Genesio**; Faculty Sponsors: *Natallia Gray; Jim Caldwell*

* Presenting Author(s)

Poster Presentation Session 9 – Thursday, April 18 – 9:15 AM – 10:15 AM

Senior Capstone Symposium – University Center Ballroom Patio

Poster Presentation Session 9 Concurrent with Oral Presentation Session 9

- 22 **Variables Affecting the Stability of Secretory IgA Upon Exposure to Simulated Intestinal Conditions**
*Katie Bunselmeyer**; Faculty Sponsor: *Jim McGill*
- 49 **Hegemonic Masculinity and the Challenges of Women with Tattoos**
*Brandy Kelly**; Faculty Sponsor: *Shawn Guiling*
- 09:15 AM – 10:15 AM
- 11 **The Use of Powder X-ray Diffraction to Determine the Structure and Quality of Magnetic Intermetallic Compound $Gd_3Co_{29}Si_4B_{10}$**
*Krishna B C**; Faculty Sponsor: *Margaret Hill*
- 15 **Furthering the Reduction Potential Predictions for Twenty 3-Aryl-Quinoxaline-2-Carbonitrile 1,4-Di-N-Oxide Derivatives with Known Anti-Tumor Properties**
*Shambhu Bhattarai**; *Pradeep Mareta**; Faculty Sponsor: *Christina Ragain*

* Presenting Author(s)

Oral Presentation Session 10 – Thursday, April 18 – 10:30 AM – 11:30 AM

Senior Capstone Symposium – University Center Ballroom A

Oral Presentation Session 10 Concurrent with Poster Presentation Session 10

- 10:30 AM – 10:50 AM 3 **Wielding the 'Sword of Fear'**
*Maxwell Abbott**; Faculty Sponsor: *Joseph Snyder*
- 10:50 AM – 11:10 AM 5 **Healthcare Experiences with the Culture and Language Barrier**
*Hannah Alexander**; Faculty Sponsor: *Debbie Lee-Distefano*
- 11:10 AM – 11:30 AM 59 **In the Kitchen or in the Town Square? Women and the French Revolution**
*Zachary Mitchell**; Faculty Sponsor: *David Cameron*

* Presenting Author(s)

Poster Presentation Session 10 – Thursday, April 18 – 10:30 AM – 11:30 AM

Undergraduate Student Session – University Center Ballroom Patio

Poster Presentation Session 10 Concurrent with Oral Presentation Session 10

- 61 **Surviving Supervision: Animal Assisted Therapy (AAT) on Language Goals**
*Callista Nickelson**; *Maddie Henry*; *Kristen Zahner*; Faculty Sponsor: *Susan Fulton*
- 91 **Testing Memory Stimuli Using ASL and Auditory Cues**
*James Walshaw**; Faculty Sponsor: *Alison Whiteford Damerall*
- 10:30 AM – 11:30 AM
- 46 **The Effect of Life Quality on Online Self-Presentation Among Emerging Adults**
*Braden Johnston**; Faculty Sponsor: *Catherine Chou*
- 63 **Intersectionality and the Matrix of Domination**
*Kaleigh Oliver**; Faculty Sponsor: *Shawn Guling*

* Presenting Author(s)

Oral Presentation Session 11 – Thursday, April 18 – 11:45 AM – 12:50 PM

Senior Capstone Symposium – University Center Ballroom A

Oral Presentation Session 11 Concurrent with Poster Presentation Session 11

- 11:45 AM – 12:05 PM 41 **Numerical Analysis of Putting on a Predefined Surface**
*Tyler Howard**; Faculty Sponsors: *Margaret Hill; Jonathan Kessler*
- 12:05 PM – 12:30 PM 32 **Resources of the Modern World**
*Mareea Gaines**; *Michaela Gaskins**; *Dominick Gillette**; *Elizabeth Mack**; *Marlee Russell**;
Faculty Sponsors: *Missy Nieveen-Phegley; Willie Redmond*
- 12:30 PM – 12:50 PM 77 **Planning Sustainability for Today and Tomorrow**
*Eli Bohnert**; *Nicholas Fuller**; *Liam Ohlendorf**; *Heather Smallwood**; Faculty Sponsors:
Missy Nieveen-Phegley; Willie Redmond

* Presenting Author(s)

Poster Presentation Session 11 – Thursday, April 18 – 11:45 AM – 12:45 PM

Undergraduate Student Session – University Center Ballroom Patio

Poster Presentation Session 11 Concurrent with Oral Presentation Session 11

- 55 **High Pressure Liquid Chromatography for Counterfeit Drugs**
*Destiny Mayes**; *Madison Mumma**; Faculty Sponsor: *David Cunningham*
- 9 **The Effects of Social Media on Recruitment Strategies for a Fictitious University vs the U.S. Army**
*Alexander Bansbach**; *Nate Brinkhoff**; *Audrey Tilley**; Faculty Sponsor: *Lesly Krome*
- 11:45 AM – 12:45 PM
- 80 **NBA vs Society**
*Aunya Stovall**; Faculty Sponsor: *Eric Sentell*
- 73 **The Investigation of a Non-Natural Amino Acid IR Probe and FMN Ligand in the pHENR Protein**
*Hannah Hufford**; *Eleni Robinson**; Faculty Sponsor: *Christina Ragain*

* Presenting Author(s)

Oral Presentation Session 12 – Thursday, April 18 – 12:50 PM – 2:00 PM

Senior Capstone Symposium – University Center Ballroom A

Oral Presentation Session 12 Concurrent with Poster Presentation Session 12

- 12:50 PM – 01:10 PM 72 **Issues Related to Technological Change**
*Renee Bailey**; *Joel Ricker**; *Taylor Shivelbine**; *Trent Waltz**; Faculty Sponsors: *Missy Nieveen-Phegley*; *Willie Redmond*
- 01:10 PM – 01:35 PM 44 **Issues in Global Conflict and Security**
*Andrew Bathon**; *Simon Brown**; *Robert Hearnes**; *Justin Jacobs**; *Mannat Varshney**; Faculty Sponsors: *Missy Nieveen-Phegley*; *Willie Redmond*
- 01:35 PM – 02:00 PM 96 **International Politics and Regional Issues**
*Ian Cameron**; *Conner Dittlinger**; *Zoey Logan**; *Cassie Prock**; *Grace Ziehm**; Faculty Sponsors: *Missy Nieveen-Phegley*; *Willie Redmond*

* Presenting Author(s)

Poster Presentation Session 12 – Thursday, April 18 – 1:00 PM – 2:00 PM

Undergraduate Student Session – University Center Ballroom Patio

Poster Presentation Session 12 Concurrent with Oral Presentation Session 12

- 88 **Aphasia and Constraint-Induced Auditory Therapy**
*Lauren Uskiwich**; Faculty Advisor: *Susan Fulton*
- 37 **Earth at Mars: GCM ModelE Simulation of an Earth-like Planet Placed in Mars' Orbit**
*Samantha Hasler**; Faculty Sponsor: *Michael Cobb*
- 01:00 PM – 02:00 PM
- 69 **Evaluation of Steer and Heifer Performance in Confinement**
*Dakota Reckman**; Staff Co-Author: *Collin Schabbing*; Faculty Sponsors: *Samantha Siemers*; *Julie Weathers*
- 31 **Positive Impacts of Growth Hormone Implants on the Beef Production Industry**
*Kristen Eversgerd**; Faculty Advisor: *Samantha Siemers*

* Presenting Author(s)

Oral Presentation Session 13 – Thursday, April 18 – 2:00 PM – 3:20 PM

Senior Capstone Symposium – University Center Ballroom A

Oral Presentation Session 13 Concurrent with Poster Presentation Session 13

- 02:00 PM – 02:20 PM 56 **Educating a Better Generation**
*Gretchin Hanlin**; *Emily Hoffmeister**; *Justin McCulley**; *Lauren Wood**; Faculty Sponsors:
Missy Nieveen-Phegley; *Willie Redmond*
- 02:20 PM – 02:40 PM 86 **Emerging Adults and the Need to Belong**
*Sarah Tucker**; Faculty Sponsor: *Catherine Chou*
- 02:40 PM – 03:00 PM 53 **Hurtful Teasing: A Paradox in Romantic Relationships**
*Zoey Logan**; Faculty Sponsor: *Paul Madlock*
- 03:00 PM – 03:20 PM 33 **Going Back to Elementary School**
*Rebecca Gangemella**; Faculty Sponsor: *Hilary Peterson*

* Presenting Author(s)

Poster Presentation Session 13 – Thursday, April 18 – 2:15 PM – 3:15 PM

Combined Graduate / Undergraduate Student Session – University Center Ballroom Patio

Poster Presentation Session 13 Concurrent with Oral Presentation Session 13

- 4 **Integrating a Vision System to a Robot**
*Sultan Al Nasser**; Faculty Sponsor: *Md. Rasheduzzaman*
- 66 **Ethical Implications of Conversion Therapy**
*Sarah Patrick**; Faculty Sponsor: *Melissa Odegard-Koester*
- 02:15 PM – 03:15 PM
- 75 **Effects of Constraint-Induced Auditory Therapy on Auditory Comprehension in Aphasia**
*Megan Schmidt**; *Lydia Cameron*; Faculty Sponsor: *Susan Fulton*
- 27 **Seeing Beneath the Surface: Geophysical Survey at a Local Archaeological Site**
*Meghan Cook**; *Matthew McCauley**; *Sarah Portell**; *Emily Reese**; Faculty Sponsor: *Jennifer Bengtson*

* Presenting Author(s)

Oral Presentation Session 14 – Thursday, April 18 – 3:30 PM – 4:30 PM

Senior Capstone Symposium – University Center Ballroom A

Oral Presentation Session 14 Concurrent with Poster Presentation Session 14

| | | | | |
|----------|---|----------|----|--|
| 03:30 PM | – | 03:50 PM | 2 | Haled’s Song: An Examination of Middle Eastern Representation in Musical Theatre <i>Madalyn Abbott*</i> ; Faculty Sponsor: <i>Joshua Harvey</i> |
| 03:50 PM | – | 04:10 PM | 90 | Social Media, Cyberspace, and Bullying: Understanding the Effects of Social Media and Bullying Behavior Among Adolescents <i>Lauren Waldrop*</i> ; Faculty Sponsor: <i>Kristen Sobba</i> |
| 04:10 PM | – | 04:30 PM | 48 | Mental Health Among Collegiate Division I Student-Athletes <i>Madilin Karstens*</i> ; Faculty Sponsor: <i>Alison Whiteford Damerall</i> |

* Presenting Author(s)

Poster Presentation Session 14 – Thursday, April 18 – 3:30 PM – 4:30 PM

Senior Capstone Symposium – University Center Ballroom Patio

Poster Presentation Session 14 Concurrent with Oral Presentation Session 14

| | | | | |
|----------|---|----------|----|--|
| | | | 38 | Structure/Function Claims on Food Products and How They Relate to the Ingredient Content <i>Ashlyn Hayes*</i> ; Faculty Sponsor: <i>Francis Tayie</i> |
| | | | 76 | Interaction Between Nanoparticle Covered Carbon Nanotubes and Human Blood <i>Jacob Seabaugh*</i> ; <i>Sidney Siebert*</i> ; Faculty Sponsor: <i>Santaneel Ghosh</i> |
| 03:30 PM | – | 04:30 PM | 68 | Himmelberger House to Jane Stephens Honors House: The Physical Legacy of the Himmelbergers’ Community Driven Spirit <i>Cassie Prock*</i> ; Faculty Sponsor: <i>Lily Santoro</i> |
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* Presenting Author(s)

Full Abstracts

2 **Haled's Song: An Examination of Middle Eastern Representation in Musical Theatre**

*Madalyn Abbott**; Faculty Sponsor: *Joshua Harvey*

In June of 2018, faculty sponsor Joshua Harvey and I traveled to New York City to study Middle Eastern Representation within Musical Theatre. This trip was made possible by grants from the Middle Eastern Studies Department as well as the Provost of Southeast Missouri State University. During the trip, Harvey and I saw three Broadway productions (*The Band's Visit*, *Come From Away*, and *Aladdin*), held multiple interviews with respected experts in their fields, and studied at the New York Public Library's Theatre and Film Archive. Our research prior to and after the trip has ranged from the impacts of 9/11 within entertainment media to analyzing stereotypes and everything in between. The most evident observations from this research have made it clear that representation provided to true Middle Eastern cultures within musical theatre is either lacking, inappropriate, and/or non-existent. We also discovered that even the current "best" example of representation is indeed faulty at its core. The project, *Haled's Song: An Examination of Middle Eastern Representation in Musical Theatre*, is still ongoing as we continue to delve deeper into new research.

3 **Wielding the 'Sword of Fear'**

*Maxwell Abbott**; Faculty Sponsor: *Joseph Snyder*

This paper examines the role of British propaganda in affecting the public opinion of American citizens and specifically the attitude of Missouri citizens about Britain, the Allies, and United States' involvement in World War I. Beginning with Charles Masterman's operation at Wellington House and tracking various facets and developments of the British propaganda program, it discusses the differences between the way that propaganda was utilized and implemented in the American context. The main argument is that the overall objective of British propaganda in America was not necessarily to bring America into the conflict but was to present an image of the German forces as the embodiment of autocracy and the British forces as the defender of democracy. It examines the way that Britain produced and distributed propaganda to the United States and why that specific program made it hard for pro-British propaganda. The paper also argues that while British propaganda might have had some impact in Missouri cities like St. Louis and Kansas City, most Missourians were unaware of British propaganda campaigns and their distrust of Germany and their German-American neighbors resulted more from enhanced feelings of nativism and patriotic duty.

4 **Integrating a Vision System to a Robot**

*Sultan Al Nasser**; Faculty Sponsor: *Md. Rasheduzzaman*

This research will cover the vision system which will include the robot and conveyor belts. My mission is to develop and install a vision system that can be connected to the conveyor and robotic arm. The purpose of this project is to develop an environment that has a vision system. Having a vision system will create a realistic manufacturing company environment. Students will have hands-on learning with the vision system like the vision system implemented in an actual company. This research has not been implemented before at Southeast Missouri State University. Building an automation system using the vision to locate parts on the conveyor which will lead the robot to pick up parts and place those parts in a fixed position.

5 **Healthcare Experiences with the Culture and Language Barrier**

*Hannah Alexander**; Faculty Sponsor: *Debbie Lee-Distefano*

The disparities between the Latino/Hispanic population and the American Healthcare system are greatly numbered. Today, a growing number of Latino/Hispanic patients are seeking aid, yet the problems still outweigh the solutions on a national level. The main issue seen in research is language-related, but the specific problems that real medical providers see are varied. Interviews of medical providers and insiders demonstrate their viewpoints as to the actual problems and solutions in today's healthcare.

6 **Order Versus Disorder in 1,2,3- and 1,2,6- Trimethylpyridinium Chloro Cuprate (II) Salts**

*Habeeb Al-Mashala**; *Brendan MacAinsh**; Faculty Sponsor: *Marcus Bond*

Crystallography is the study of crystals, their unique structure, and the atoms that compose them. This type of chemistry brings light to a better understanding of how atoms and molecules interact with one another in materials and in 3-dimensional space. Copper(II) complexes are generally have crystal structures and unique geometries that are unpredictable, depending on the counterion. The research is a continuation of previously published information using trimethylpyridinium and its isomers, specifically 1,2,3 and 1,2,6. Both counterions have very similar shapes and geometries yet yield distinctly different copper (II) complex crystals and thermochromic properties. This work examines whether or not these two counterions can mix in a single crystal, and which copper (II) complex would be favored.

7 **Banana Chocolate Chip Pancake Sensory Analysis Project**

*Emily Arras**; Faculty Sponsor: *Charlotte Cervantes*

The purpose of this project was to improve the nutrient density of a popular, energy dense breakfast food item while maintaining desirable sensory attributes. Throughout the 16 weeks, the popular breakfast food recipe was modified from an energy dense food that was high in empty calories to a nutrient dense food that maintained high levels of likeability. Following pilot data collection on three developmental recipes, students (n = 18) ranked the final recipe on five categories: appearance, taste, texture, shape and overall likeability. Appearance received a mean rating of 4.3 out of 5. Taste received a mean rating of 3.9 out of 5. Texture received a mean rating of 4.3 out of 5. Shape received a mean rating of 4.2 out of 5. Overall likeability received a mean rating of 3.8 out of 5. The average score between all categories totaled a 4.1 rating out of 5. The benefits of sharing this project with peers is to show an example of how energy dense foods can be modified into delicious, nutrient dense foods. This technique can be applied to many other applications to increase nutrient density, such as other popular breakfast items, popular lunch items or popular desserts items.

8 **The Adapt Gap: Are Clothing Retailers Responding Appropriately to the Need for Disability-Accessible Clothing?**

*Nicolette Baker**; Faculty Sponsor: *Doc Billingsley*

When shopping for clothing, what factors into the final decision? Is it appearance, price, or brand name? For those with mobility issues, these are not the only considerations; safety and ease of dressing are included as well. As persons with disabilities might experience difficulties in dressing, special considerations need to be taken into account when designing and marketing clothes. Unfortunately, this is an underrepresented demographic in the apparel industry. Select retailers have responded to this, including Tommy Hilfiger and Target. However, these brands can be overpriced or bland when it comes to adaptable clothing. Additionally, there is not a Tommy Hilfiger in Cape Girardeau and Target stock is limited. This research project will examine adaptable clothing options available locally, as well as proposals for creating stylish yet functional clothing for those with special clothing needs. It will involve the construction of a pair of adaptable pants, interviews with researchers and a detailed evaluation of adaptable clothing retailers in Cape Girardeau. The purpose of this research project is to bring awareness to this issue and propose solutions for creating better, more locally-available adaptable clothing.

9 **The Effects of Social Media on Recruitment Strategies for a Fictitious University vs the U.S. Army**

*Alexander Bansbach**; *Nate Brinkhoff**; *Audrey Tilley**; Faculty Sponsor: *Lesly Krome*

In this study the researchers were interested in whether social media platforms (Facebook, LinkedIn, and Twitter) had an influence regarding recruitment factors for two organizations: a fictitious university and the U.S. Army. A sample of 241 individuals were utilized for this study which consisted of college students attending Southeast Missouri State University. In this study we found that there was no significant effect of social media platforms on recruitment outcomes including attractiveness of the organization, sense of institutional belongingness, and self-efficacy to complete the program. However, there was a significant effect on organization type: participants rated the U.S. Army as a more attractive option but had a greater sense of belongingness and personal efficacy for the fictitious university. These findings suggest the army should reorganize its recruitment strategy to increase feelings of efficacy and belongingness among this target population. Additionally, limitations of the current study and directions for future research are discussed.

10 **Weight Set-Point Theory: Is One Truly Capable of Controlling Their Weight?**

*Laura Bauman**; Faculty Sponsor: *Melissa Odegard-Koester*

Many people measure body weight based on a formula such as body mass index, however, research consistently overrides this concept. It is proposed that each individual contains a unique weight set-point at which the body is programmed to function optimally, predetermined by several factors and regulated by mechanisms in the brain. Furthermore, studies indicate that the body defies shifting from this range as indicated by substantial metabolic adjustments, hormonal shifts, and significant modifications at the neurobiological level following either weight loss or gain (MacLean, et. al., 2011). These mechanisms provide an explanation as to why few people are able to maintain the weight lost from extensive dieting, as well as why many after reaching their highest weight become seemingly incapable of gaining any further (Rosenbaum and Leibel, 2013). Given these findings, it is suggested that while the body endures weight loss or gain to a degree, there is a set weight range it defends, thus, proposing a useful concept not only for individuals attempting to alter weight, but for clinicians working with individuals presenting with concerns related to food and/ or body image.

11 **The Use of Powder X-ray Diffraction to Determine the Structure and Quality of Magnetic Intermetallic Compound $Gd_3Co_{29}Si_4B_{10}$**

*Krishna B C**; Faculty Sponsor: *Margaret Hill*

One of the methods of discovering and improving new magnetic materials is to take a known sample with interesting properties and substituting different elements. One interesting compound is $Gd_3Co_{29}Si_4B_{10}$, which shows a complex ferrimagnetic ordering and promising magnetocaloric behavior as a function of temperature. By changing the transition metal in this material, it may be possible to increase the magnetic entropy change and tune the magnetic transition temperatures to produce more useful magnetic materials. Here, we have investigated the feasibility of substituting Ni for Co in this material. Samples of $Gd_3Co_{29-x}Ni_xSi_4B_{10}$ were prepared by arc melting and the structure and purity of the samples were investigated using powder x-ray diffraction. X-ray measurements showed primarily single-phase samples with tetragonal crystal structure $P4/nmm$. The lattice constants of the crystal were also calculated.

12 **The Evolutionary Relationships of Triodanis Remain Elusive: A Molecular Study**

*Cole Bearden**; *Julian Johnson**; Faculty Sponsor: *Jennifer Weber*

Understanding the evolutionary relationships among species is a fundamental concept in biology. These evolutionary or phylogenetic relationships among species in the genus *Triodanis* (Campanulaceae) are not well understood. Species in this genus are known to hybridize readily and previous phylogenetic work suggests that these species have diverged fairly recently. These factors complicate discerning evolutionary relationships. In this project we used markers for multiple chloroplast and nuclear genes to try to resolve these relationships. We optimized PCR to amplify genes of interest and sent the samples for sequencing. Subsequently our coauthors generated evolutionary trees with our data and data from previous samples. These trees include specimens from the sister genus, *Legousia*. Here we present the results of this work which indicate a very unresolved phylogeny. Future work will entail the use of genomics to incorporate hundreds of genes with the goal of providing much more evolutionary resolution.

13 **Portrayal of People of Color in Lead Comedic Roles on TV**

*Ryan Berger**; Faculty Sponsor: *Sarah Cavanah*

This presentation examines the portrayal of non-white minority actors in comedic programs on television. Specifically, this presentation looks at minority actors in lead comedic roles. A content analysis of Wikipedia and IMDB synopses of characters and television productions was conducted. The author, who has a background in comedy, was led to this subject based on the current socio-political environment in the United States. The goal of this research was to better understand how actors of color were portrayed on television in comparison to white actors, which would allow the researcher to better understand how all facets of society were portrayed. The results of this research would suggest that non-white characters were portrayed more negatively than white characters. However, this conclusion cannot be accepted as valid because this research lacked intercoder reliability.

14 **Gender Bias at the Local Level: Are Women More Likely to be on School Boards Than City Councils?**

*Emily Bergmann**; Faculty Sponsor: *Jason Sides*

By comparing the difference of percentages of women on school boards vs women on city councils through a multivariate analysis against education, income, population, age, and ethnicity, I hypothesize that there will be more women on school boards than city councils.

15 **Furthering the Reduction Potential Predictions for Twenty 3-Aryl-Quinoxaline-2-Carbonitrile 1,4-Di-N-Oxide Derivatives with Known Anti-Tumor Properties**

*Shambhu Bhattarai**; *Pradeep Mareta**; Faculty Sponsor: *Christina Ragain*

The ability for DFT: B3LYP calculations using the cc-pvtz basis sets to predict the electrochemical properties of twenty (20) 3-Aryl-Quinoxaline-2-Carbonitrile 1,4-Di-N-Oxide derivatives with varying degrees of cytotoxic activity in dimethylformamide (DMF) and dimethyl sulfoxide (DMSO) was investigated. This series of quinoxaline 1,4-Di-N-Oxide derivatives have been previously shown to have anti-tumor properties. The quinoxaline derivatives were drawn in GaussView 5 and Gaussian 09 computational program was used to carry out the simulation. The analysis of the computational result with the cc-pvtz basis set, predictions with two similar basis sets and the experimental results are still underway.

16 **Weird Stuff Going on in a Triodanis Hybrid Zone Near the Biology Greenhouses**

*Cody Bohnert** *Colette Berg*; *Elijah MacBride*; *Jordan Yglesia*; Faculty Sponsor: *Jennifer Weber*

Triodanis perfoliata, *Triodanis biflora*, and a hybrid between the two were studied in the summer of 2018 by students of Weber Lab at the biology greenhouses on the SEMO campus. 240 plots were created that were 2x2 meters in size or smaller to provide adequate sampling plots. Specimens were counted, collected, and studied by multiple students of Weber Lab. Elevation, light levels, and additional factors that could influence the health and growth of the plants were noted. Ratios of open and closed flowers on the collected specimens were counted and noted. This study provides a baseline for future studies to note possible differences in flowering time due to climate change, factors that affect the growth and success of these plants, the reproductive processes of these plants, and more.

17 **Nonverbal Affection in the Queer Community**

*Eli Bohnert**; Faculty Sponsor: *Jeanne Harris*

In my research, I am seeking to find out if queer identifying people are less likely to use nonverbal signs of affection as well as to find out what signs of affection have higher and lower level of comfort in being used and identifying background factors that may cause differences within the community itself. To accomplish this, I have surveyed queer identifying students on campus with an anonymous survey tool to gain insight into what students are comfortable and uncomfortable with in terms of nonverbal signs of affection. I have taken on this topic due to the lackluster data that is available in the communication discipline and begin the process of shedding light onto this marginalized and ignored community. My intention is to find societal factors that could influence the level of nonverbal affection queer people are comfortable with as well as finding the links that the influence of peers and family have.

18 **Genetic Background Effects on Cell Response to DNA Damage**

*Grace Boyum**; Faculty Sponsor: *Rebecca Kurzhals*

In fly research, we use a process called the Bar and Telomere Loss (BARTL) assay, which breaks a DNA chromosome in the eye cells of flies. When DNA is damaged, the cell kills itself to prevent faulty DNA from being passed on in cell replication, so the BARTL assay is a controlled way to observe the effects of different factors in cell death in the eye. Factors that enhance cell death will result in smaller eyes while those that repress cell death will cause larger eyes. Another tool commonly used in fly genetics is balancers, rearranged chromosomes that ensure traits are passed on in a traceable pattern between generations. It was observed that experiments that used both of these tools yielded unexpected results in eye sizes. This experiment hypothesized that specific varieties of balancers may affect the BARTL assay. To test this, we crossed male BARTL flies with several lines of female flies with different balancers and measured the eye sizes of the offspring. Statistical analysis using R software demonstrated that some balancers do affect cell death by increasing either fatality or survival. In the future, then, we will not use these lines in conjunction with the BARTL assay.

19 **Cell Death After Telomere Loss**

*Molly Brakhane**; Faculty Sponsor: *Rebecca Kurzals*

Linear chromosomes are made of DNA and are protected by telomeres at the ends. Damage to these telomeres can lead to improper repair, which is known to lead to cancer. We mimic this damage in fruit fly cells by breaking a telomere. We would expect these cells to die, but we observed a surprising amount of cell survival despite telomere loss - a characteristic of cancer. After more investigation, we found if we increase the amount of the gene spitz we observed increased cell survival after telomere loss. By studying this occurrence, we can better understand the development of cancer in cells with DNA damage. We want to explore the way spitz affects these cells by examining the genes involved in spitz regulation. We observed that more spitz leads to increased cell survival to a certain point and decreased kills all cells, regardless of whether or not they have telomere loss. This data suggests that the level of spitz is important for cells to survive or die, consistent with previous studies. We also are examining the quantity of cell death or survival after telomere loss through cell imaging.

20 **A Microbiological Look at Salmonella Typhimurium's AmiA and AmiC genes and Their Importance in Resistance to Ampicillin**

*Adrienne Brauer**; Faculty Sponsor: *Jeremy Ellermeier*

Salmonella enterica serovar Typhimurim is a bacterium that causes gastroenteritis in humans and a typhoid-like disease in mice. The twin-arginine translocation (Tat) system moves 30 folded proteins from the cytoplasm into the periplasm of the cell. Previous work demonstrated that three of these substrates in particular, AmiA, AmiC, and SufI, are critical for integrity of the cell wall. Thus, we predicted that a deletion of the Tat system would impair growth of *S. Typhimurium* in the presence of cell wall targeting antibiotics as compared to the wild type. Preliminary data suggests that the tat deletion is more susceptible to ampicillin than is wild type *Salmonella*. Further, we will test deletions of various Tat substrates to determine which are critical for this antibiotic susceptibility. We predict AmiA, AmiC, and SufI, which are involved in maintenance of the peptidoglycan during cell division will be critical. Our data suggests that deletions of *amiA* and *amiC* are more susceptible to ampicillin than wild type, however it is not to the same degree as the total *tat* deletion. We plan to make a Δ *amiA* Δ *amiC* Δ *sufI* triple mutant that we predict will be equivalent to Δ *tat*.

21 **What Made Maddy Run?**

*Mollie-Beth Brewer**; Faculty Sponsor: *Melissa Odegard-Koester*

1 in 5 adults have a mental health condition. Still, 56% of Americans diagnosed with such conditions do not receive mental health treatment. 90% of people who complete suicide have a mental illness at the time of their death (SAMHSA, 2018). In 2017, 47,173 Americans completed suicide. Depression is the leading cause of suicide and is highly treatable with interventions such as counseling and/or medications. Unexpressed feelings and concerns can worsen depression (AFSP.org, 2018) Mediation analyses revealed that higher anticipated stigma among Americans was associated with decreased help-seeking. When people suffering from depression do not seek treatment, suicide can be the result (Fox, Smith, Vogt, 2018.). In this presentation, we will explore current suicide data, as well as the stigma behind seeking mental health services for suicidality.

22 **Variables Affecting the Stability of Secretory IgA Upon Exposure to Simulated Intestinal Conditions**

*Katie Bunselmeyer**; Faculty Sponsor: *Jim McGill*

Enterotoxigenic *E. coli* is a major cause of severe diarrheal disease and death among children in developing countries. Oral delivery using recombinant secretory immunoglobulin A (sIgAs) is an attractive option that could potentially provide instant protection against infection from enteric bacterial pathogens. sIgAs are a complex, high molecular weight (~380 kDa) immunoglobulin class found in mucosal surfaces. Various digestive enzymes in the stomach and intestinal tract enzymatically degrade sIgA, so a successful biotherapeutic drug candidate must be at least partially resistant to proteolysis and subsequent inactivation. Thus, an in vitro model using simulated digestive conditions is currently under development using simulated gastric and intestinal conditions. The objective of this study was to test a myriad of variables in the intestinal portion of the model and to determine the critical variables that affect proteolysis of a polyclonal sIgA (that was purified from human colostrum). The variables examined in this study were: digestion time, temperature, solution pH, enzyme:protein ratio, and the use of enzyme extract vs. individual, purified pancreatic enzymes. Based on the results of this study, a solution pH of 7.0, a temperature of 37°C, and the use of enzyme extract are the most critical variables affecting sIgA stability during the intestinal phase of the in vitro digestive model.

23 **A Bud Omen? Climate Change Drives Earlier Flowering in the Genus *Triodanis***

*Naomi Burr**; Faculty Sponsor: *Jennifer Weber*

We are examining the potential impact of climate change on phenology, seasonal life cycle patterns, in seven species in the genus *Triodanis* (Campanulaceae). We used publicly available, digitized herbarium records from 25 herbaria, and compiled over 5000 records spanning 1880 to present. In four species, we found that flowering time as significantly advanced (shifted to earlier in the year). Shifts to earlier flowering is consistent with many other studies of spring flowering annuals in temperate ecosystems. However few studies have examined changes in phenology at the genus level. Our study suggests that species in the genus *Triodanis* may have the evolutionary capacity to respond to climate change by shifting flowering time.

24 **Reasons for Withdrawal and Continuation in Youth Sports**

*Mai Campbell-Nowlin**; Faculty Sponsor: *Jeremy Heider*

Most everyone plays sports at some point in their childhood. There are many reasons why athletes play certain sports and why they do not play others. Self-efficacy and expectancy-value theory play a role in the decision to withdraw or continue in certain sports. High school sophomores were surveyed about their reasons for withdrawal or continuation. There were 25 students (10 females, 15 males) who filled out a profile demonstrating the sports they played, if they withdrew or continued to play, and how long they played. Across the sample, 23 out of the 25 students (92%) withdrew from at least one sport. 21 of those participants (84%) continued to play at least one sport. The hypothesis that other sports took too much time, they were not good enough, or there was too much pressure would be the main reasons for withdrawal was supported. When examining reasons for continuation, the hypothesis that athletes continue to play a sport for opposite reasons is partially supported. The results from this study could be used to better train coaches and learn new ways to encourage participations in athletics.

25 **Microbial Growth Response to Highly Water Disposable Boron Nitride Nanotube**

*Sourav Chakraborty**; *Htet Linn**; Faculty Sponsor: *Santaneel Ghosh*

Microbial Growth Response to Highly Water Dispersible Boron Nitride Nanotubes Boron Nitride Nanotubes (BNNTs) have characteristically high thermal stability, are less cytotoxic than carbon nanotubes (CNTs), and possess excellent piezoelectric properties; making them an extremely for potential biomedical applications. However, several issues (e.g., poor dispersibility, agglomeration in the intracellular environment) limit the use of BNNT based systems for biomedical applications. In this study we report the biocompatibility of surface functionalized water dispersible BNNTs on *Escherichia coli* (*E. coli*). In the present work, monitored *E. coli* served as a model for how of cells respond in the presence of surface functionalized BNNTs. In the presence of surface functionalized BNNT system (diameter \geq 50nm), the *E. coli* growth curves were generated in 5 mL of LB media containing BNNT suspension at relatively higher (1200 μ g/mL) and lower (600 μ g/mL) concentration. Data has been generated based on time (0-300 min) dependent growth kinetics of the *E. coli*. From the growth curves, no inhibition of bacterial growth at 600 μ g/mL of BNNT which reveals biocompatibility. However, microbial growth inhibition was observed at 1200 μ g/mL of BNNT. In higher concentration of BNNT, delivering gene through electroporation could be potential search.

26 **Transformation of PGEX2T and MOI Genes into *E. coli* DNA to Observe Gene Expression and Optimization**

*Maddie Christian**; *Hannah Hufford**; Faculty Sponsor: *Christina Ragain*

The ability to transform a gene into a segment of DNA to observe the expression under varying conditions allows for the discovery of protein function and optimization. In this study, PGEX2T, a bacterial vector that expresses fusion proteins, and Modigliani (MOI) gene were utilized to transform bacterial DNA for protein expression. Even though MOI is a common gene in the *Drosophila* family, it is not well understood. To better understand the gene, gene expression was observed, after completion of a series of experiments. A transformation step was completed to introduce the PGEX2T and MOI into the *E. coli* genome. After transforming the bacteria, an induction step was used to determine the optimal time for gene expression, with results shown in an SDS page gel. This led to the conclusion that the PGEX2T gene was best expressed in the t=overnight solid culture and the MOI gene was not expressed well in the SDS page gel. The initial experiment is to be used to scale up the procedure in order to crystallize the protein. Due to the lack of expression of the MOI gene in the initial experiment, only the PGEX2T will be used in the scaled up procedure. This ongoing project is to be continued throughout the remainder of the semester.

27 **Seeing Beneath the Surface: Geophysical Survey at a Local Archaeological Site**

*Meghan Cook**; *Matthew McCauley**; *Sarah Portell**; *Emily Reese**; Faculty Sponsor: *Jennifer Bengtson*

Archaeological geophysics is an increasingly important science that both aides and redefines what archaeologists are able to determine about sites. This poster presents data and interpretations from geophysical explorations of a late prehistoric archaeological site in Cape Girardeau County, MO. Under the supervision of archaeological geophysics specialist Dr. Robert McCullough (Illinois State Archaeological Survey) and Mississippian archaeologists Dr. Jennifer Bengtson (Southeast) and Dr. Tamira Brennan (Southern Illinois University-Carbondale), Southeast Missouri State University archaeology students collected magnetometry, resistivity, and ground penetrating radar data at the site, which was used to create a map of subsurface archaeological features. This allows for the formulation of new and more precise interpretations of community organization and village life in this pre-Columbian, Mississippian era community. Gleaning deeper insights into the culture and ways of life of the people at this particular site is important for understanding how the Mississippian tradition was expressed in Southeast Missouri.

28 **Symptomology of Eating Disorders in Female Ballerinas**

*Peyton Cope**; Faculty Sponsor: *Ruben Gerding*

This paper explores research conducted across a variety of studies to investigate the symptomology of eating disorders in female ballerinas in comparison to non-dancers. It also attempts to discover the answer of why this is a common phenomenon in dancers and discuss possible solutions to combat the epidemic of disordered eating patterns in adolescent and adult-female ballerinas. The paper examines possible contributing factors related to eating disorders and other related conditions, internal and external influences on dancer's mental health, and available treatments. Additionally, this paper attempts to connect data from these studies to explain the culture, and related influences, that cause this issue to be so relevant and necessary for future empirical research.

29 **Mindfulness-Acceptance-Commitment Approach**

*Crystal Cordia**; Faculty Sponsor: *Scott Brandhorst*

The mindfulness-acceptance-commitment (MAC) approach is a popular method that sports psychologists utilize when working with competitive athletes. The MAC protocol is an effective method for increasing athletic performance as well as reducing sports anxiety. When the MAC approach was first introduced, it was five-phase program. The phases clients would undergo were the psychological, mindfulness, values identification and commitment, acceptance, and integration and practice phase. The protocol was to be completed with eight sessions. The updated version of the MAC approach consists of seven phases. The phases are: preparing the client with psychoeducation, introducing mindfulness and cognitive diffusion, introducing values and values-driven behavior, introducing acceptance, enhancing commitment, skill consolidation and poise-combining mindfulness, acceptance, and commitment, and maintaining and enhancing mindfulness, acceptance, and commitment. This modification allows practitioners to have more flexibility with their clients. The purpose of the protocol is not to change and or challenge one's thinking, like in cognitive therapy, but allows one to be aware and understand their thoughts.

30 **Subpotent and Ineffective Antibiotic Analysis**

*Erin Delaney**; *Stephanie Haney**; Faculty Sponsor: *David Cunningham*

Degradation is declining to a lower condition or quality; when trimethoprim is formulated with sulfamethoxazole, it becomes a tablet called co-trimoxazole used to treat various conditions of bacterial infections such as pneumonia, bronchitis, also infections of the ears and intestines. In the areas of Southeast Asia and African countries, counterfeit pharmaceutical drugs, such as Strim-sid, is a recurring issue. The tablet obtained from Kenya had a total content weight of 193mg (labeled content 400 mg Sulfamethoxazole, 80 mg Trimethoprim) and indicated there was 97.3% active ingredient. After grinding the tablet, accelerated degradation was performed by incubating 50 mg portions at 102C for 2-33 days. Techniques such as HPLC and C18 columns were used to receive a picture of chromatography and to find the degradation process can be reversible without any permanent damage to the column. The change in the appearance and chemical functionality of these structures determine if degradation was achieved.

31 **Positive Impacts of Growth Hormone Implants on the Beef Production Industry**

*Kristen Eversgerd**; Faculty Advisor: *Samantha Siemers*

Information was gathered from multiple animal experts on the positive impacts growth hormone implants have had on the beef production industry. Hormones, which are naturally found in the bodies of humans, animals and plants are inserted in beef cattle simply to increase average daily gain, feed efficiency, and growth rate to help feed a growing world. The implant contains a small amount of natural growth hormone, typically estrogen based, which is released into the animal's blood stream in minute amounts. This small increase in hormone levels has shown a quarter to a half a pound increase in average daily gain compared to beef calves that had not been implanted. The small hormonal increase improves feed efficiency in the cattle which means less feed per animal is required, allowing the producer to cut production costs by 5-10%. The supplemented hormone implants are approved by the FDA which only approves product use after extensive research and experimentation. It is important to recognize that growth promoting products have been on the market for more than sixty years and still have no documentation of leading to negative effects on human health.

32 **Resources of the Modern World**

*Mareea Gaines**; *Michaela Gaskins**; *Dominick Gillette**; *Elizabeth Mack**; *Marlee Russell**; Faculty Sponsors: *Missy Nieveen-Phegley*; *Willie Redmond*

This presentation covers a collection of issues that relate to *resource management*. It is a product of the students' participation in a special University Studies course, which includes a four-day seminar at the Center for Strategic and International Studies (CSIS) in Washington, D.C. In the seminar, Southeast students interact with researchers who advise national and international leaders in the top levels of the public and private sectors, as they develop policies and strategies that affect the U.S. and the global community.

33 **Going Back to Elementary School**

*Rebecca Gangemella**; Faculty Sponsor: *Hilary Peterson*

This presentation is a documentary style video about SEMO athletes that volunteer at Franklin Elementary. The video describes how the service opportunity began, a couple of athletes' personal reactions and stories, and the overall impact of the volunteering. It includes interviews with coaches, athletes, the old principal who was there when the service began, and b-roll of the athletes working and establishing shots of the school.

34 **Perceptions of Fairness in Academia**

*Kelly Genesis**; Faculty Sponsors: *Natallia Gray*; *Jim Caldwell*

The purpose of my study was to compare perceptions of fairness in various academic disciplines of different gender balances. I wanted to determine whether negative experiences were common to all gender-minority students, or only women in male-dominated fields, and whether this potential effect varied among different fields. I studied two male-dominated disciplines (economics and computer science,) two female-dominated disciplines (elementary education and nursing,) and one gender-balanced discipline, accounting. I constructed an anonymous survey using measures of interpersonal justice, informational justice, procedural justice, distributive justice, and perceived organizational support. As of right now, we are still collecting responses.

35 **Does a Period Mean You Mean It? Perceptions of Punctuation in Text Messages**

*Molly Gibbs**; Faculty Sponsor: *Alison Whiteford Damerall*

Existing research shows that the role of punctuation in digital communication differs from formal writing and written communication (Zhou, 2007 and Gunraj, Drumm-Hewitt, Dashow, Upadhyay, & Klin, 2016). Other studies show that a period following a negatively valenced word may convey insincerity, which was interpreted as abruptness (Houghton, Upadhyay, & Kiln, 2018). In the present study, we are interested in replicating and extending Houghton, Upadhyay, and Kiln's 2018 experiment #1 in their paper "Punctuation in text messages may convey abruptness. Period." In this paper, the researchers found that participants were sensitive to the inclusion of a period and rated messages ending in a period as "less positive" (Houghton, Upadhyay, & Kiln, 2018). We are interested in extending punctuation use to the exclamation point (!) and determining if this punctuation mark has an effect on perceived sincerity and abruptness. This research study is currently in progress and will have pilot data by the time of the Student Research Conference.

36 **Individual Differences in College Students' Social Media Addiction**

*Alysha Giltner**; Faculty Sponsor: *Stephen Nettelhorst*

People are becoming increasingly fixated with online social media. Currently, social media addiction is not included in the Diagnostic Statistical Manual of Mental Disorders (DSM; American Psychiatric Association, 2013); however, it is currently recognized as a significant problem for many individuals. One important aspect of research regarding social media addiction is to investigate whether different types of people (e.g. personalities) are more likely to become addicted than others. This study used a between-participant quasi-experimental design to investigate whether individuals' levels of loneliness and self-esteem predicted social media addiction. The two subject variables were loneliness and self-esteem, and the dependent variable was social media addiction. One hundred and eighty-six introductory psychology student participants signed up using Sona Systems and were led to SurveyMonkey (2012). The Rosenberg Self-esteem scale was used to assess self-esteem (Rosenberg, 1965). The UCLA Loneliness Scale was used to assess levels of loneliness (Russell, Peplau, & Cutrona, 1980). The results showed that loneliness significantly predicted social media addiction. An odds ratio calculation found that participants were 1.45 times more likely to have social media addiction when the individual showed a high level of loneliness. Self-esteem did not significantly predict social media addiction and there was no significant interaction.

37 **Earth at Mars: GCM ModelE Simulation of an Earth-like Planet Placed in Mars' Orbit**

*Samantha Hasler**; Faculty Sponsor: *Michael Cobb*

With its current chemical makeup, Earth would freeze solid if placed at Mars' orbit. This research explores the possibility of an Earth like planet maintaining liquid water in an orbit like Mars'. Using the Global Circulation Model software (ModelE) provided by the Goddard Institute for Space Studies, Earth was re-positioned to the orbit of Mars. Then, the amount of greenhouse gases (primarily CO₂) was increased in the atmosphere in an attempt to keep the entire planet from freezing solid.

38 **Structure/Function Claims on Food Products and How They Relate to the Ingredient Content**

*Ashlyn Hayes**; Faculty Sponsor: *Francis Tayie*

There are three categories of claims defined by the Food and Drug Administration (FDA): health claims, nutrient content claims, and structure/function claims. Structure/function claims, in particular, describe the effect that a specific nutrient or dietary ingredient has on the human body, for example, "calcium builds strong bones." Manufacturers use these claims to promote health benefits of their products. The FDA has been urged to enforce stricter oversight of these claims because they are often proved as misleading and lack scientific support. The objectives of this study were to determine if the structure/function claims among a sample of products were supported by the ingredient content and to assess whether the most frequently used claim among the sample is supported in at least 50% of the products. This study employed an observational method with a cross-sectional design. Data collection utilized convenience sampling in which only products exhibiting structure/function claims were observed. Results demonstrated that the majority of products observed in this study did not contain reliable structure/function claims. Unfortunately, this is a reoccurring concern in the food and drug industry as the FDA currently lacks the authority to review or approve these claims before products enter the market.

39 **Motivational Factors for Generation Z**

*Keana Henderson**; Faculty Sponsor: *Erin Fluegge*

More and more employers and professors are struggling to connect with the new wave of job candidates and students who are entering the workforce and higher education. There is no doubt that technology has played a significant role in how the different generations interact and communicate with one another. The purpose of this study is to identify factors that help to motivate members of Generation Z in the work and academia setting. The main goal is to assist others outside of Generation Z to understand and connect with Generation Z better. For this study, enrolled students at Southeast Missouri State University were recruited via email and a class announcement to participate in an online survey. Only the responses from the students who were born after the year 1995 will be analyzed and reported on anonymously. Findings of this study are currently being evaluated, and results will include a discussion of motivational factors. Once the findings are completely evaluated, the conclusion of the study will be detailed also.

40 **Furrow-Irrigated Rice Versus Flood-Irrigated Rice**

*Bud Hilburn**; Faculty Sponsor: *Indi Braden*

Row rice or furrow-irrigated rice is a term that many did not really know or use until the past 3-4 years for the most part, it is a trending farming technique that is growing, and becoming more common. Furrow irrigated rice got its first start in the 80's but due to weed control methods not being where they are today it soon dissolved and was not further pursued. Farmers, and producers are always striving to reach new levels of production by any means possible, and row rice is proving to be a sustainable solution in modern day farming. Row rice is an alternative to the traditional flood irrigation method in rice farming where the whole field is not flooded but instead the rice is irrigated through furrows that go through the entire field. Furrow irrigated rice is a concept to help the farmer have more options, take better care of their field, and become more sustainable.

41 **Numerical Analysis of Putting on a Predefined Surface**

*Tyler Howard**; Faculty Sponsors: *Margaret Hill; Jonathan Kessler*

Making a putt in golf is one of the biggest requirements and challenges to improving one's golf game. Numerous works have been performed with analysis being performed on the dynamics of a golf ball, maps being constructed to aid in the direction of one's putt (i.e., reading the green), but no one has provided an analysis of putting on a golf course green. This work used MATLAB generated programs with physical values to evaluate the trajectories from multiple places on the "green." Trajectories generated from fixed values were analyzed and compared with a pro golfers' skills to determine optimal placements on the "green" for the easiest shot. Results of this work can then be incorporated with physical "green" data and programmed into an app that any person may use where a pin may be placed, and the accuracy required to make the shot determined.

42 **Effectiveness of Social Issue Documentaries on Lifestyle Changes**

*Jordan Huff**; Faculty Sponsor: *Sarah Cavanah*

This study is concerned with whether social issue documentaries affect a person's lifestyle changes. A survey was conducted with 123 respondents to determine their experience with documentaries and specifically social issue documentaries. The survey also determined if the respondents have changed an aspect of their lives because of the last social issue documentaries they saw. The findings showed those who had seen four to nine social issue documentaries in the last three months experienced the most lifestyle changes. However, this trend did not continue for all documentaries; the most change was seen in the one to three films range. The results also showed that the respondent's feeling of involvement was a positive significant factor in whether that person made a lifestyle change. The findings support the hypothesis that those who have seen a moderate amount of social issue documentaries are more likely to change an aspect of their life because of the documentary than those who have seen few or many documentaries. However, the findings only partially supported the hypothesis that the greater emotional response and feeling of involvement people have to a social issue documentary, the more likely they are to make a lifestyle change because of the documentary.

43 **Disease Spread in the 21st Century**

*Hannah Hufford**; Faculty Sponsor: *Jim McGill*

Antibiotics and vaccines play key roles in minimizing the spread of disease seen in the 21st century. Each have their own mechanisms to prevent disease. Throughout this study, the individual roles of antibiotics and vaccines in disease prevention and the types of diseases they protect against was researched. Vaccination research was conducted on the theory behind vaccine efficacy was studied and vaccine protection was explained. To emphasize the importance of vaccines, the rate of vaccine preventable diseases between people who received vaccines to those who did not was compared. To better address the public concerning the importance of vaccines, a pamphlet detailing the importance of vaccines was created. Concerning antibiotics, the rate of antibiotic resistance for several well-known antibiotics was researched. The properties of the bacteria and antibiotics that led to the resistance was outlined. Antibiotic resistance is a major problem that is affecting the treatment of minor injuries. In the near future, this problem can become overwhelming. Research was done to understand how this problem can be helped, and potentially, eradicated.

44 **Issues in Global Conflict and Security**

*Andrew Bathon**; *Simon Brown**; *Robert Hearnest**; *Justin Jacobs**; *Mannat Varshney**; Faculty Sponsors: *Missy Nieveen-Phegley*; *Willie Redmond*

This presentation covers a collection of issues that relate to *conflict* and *security*. It is a product of the students' participation in a special University Studies course, which includes a four-day seminar at the Center for Strategic and International Studies (CSIS) in Washington, D.C. In the seminar, Southeast students interact with researchers who advise national and international leaders in the top levels of the public and private sectors, as they develop policies and strategies that affect the U.S. and the global community.

45 **A Preliminary Method to Protein Replication**

*Sophie Atterberry**; *Caleb Ellenburg**; *Julian Johnson**; *Alex Major**; Faculty Sponsor: *Christina Ragain*

The genus *Drosophila* contains interesting DNA, specifically DNA dealing with telomere capping. The purpose of this experiment is to find a reliable method to replicate a gene (K81) related to telomere capping in the genus *Drosophila*. The problem with DNA replication is that it is very slow, and sometimes difficult to achieve. This experiment uses the knowledge that certain DNA vectors can be incorporated into the plasmids of *E. coli*, which allows for quick replication of the gene and easy data collection. *E. coli* was inoculated with K81 and a control, and then sonicated and an SDS page gel was run on the samples. The experiment was successful in inoculation and found that the genes reside in the solid phase of the samples. K81 is best extracted at 4 hours of incubation and the control (PGEX2T) is best extracted at 6 hours of incubation.

46 **The Effect of Life Quality on Online Self-Presentation Among Emerging Adults**

*Braden Johnston**; Faculty Sponsor: *Catherine Chou*

The purpose of this study is to examine the relationship between stress, self-esteem, and life satisfaction on online self-presentation of young adults. A total of 339 undergraduate students participated in the study. Participants completed an online survey including measures of online self-presentation, life satisfaction, perceived stress, and self-esteem. Results showed that perceived stress was positively correlated with social media use, photo posting, social comparison, photo editing, and selfie feedback. Life satisfaction was negatively associated with social comparison, while self-esteem was negatively correlated with social comparison and photo editing. Moreover, the interactions of life satisfaction, stress, and self-esteem were tested in the regression models. The effect of life satisfaction on photo posting and selfie-taking depended on the levels of one's self-esteem. This study gives us some insight as to how young adults use social media to find out who they are, and their perceived life quality may play a role in their online behaviors. Future research could further focus on the relationship between life quality and other social factors when exploring young adults' social media use in the process of identity exploration.

47 **College Students' Perceptions and Experiences with Cyberbullying**

*Jasmine Jones**; Faculty Sponsor: *Kristen Sobba*

Research reveals that cyberbullying is an ongoing problem among adolescents. However, research also indicates that college students are also susceptible to this form of harassment. The purpose of the current research was to understand the research question, "what is the relationship between correlates of cyberbullying and being a cyberbully. Secondary data was used for this project. College students from a southern university took a survey regarding their demographics, personal experiences, and perceptions of cyberbullying. Only preliminary correlations could be achieved for the current study. The findings showed numerous correlations. Implications of this research could lead to a better understanding of cyberbullying by utilizing college students' perception of cyberbullying to combat victimization.

48 **Mental Health Among Collegiate Division I Student-Athletes**

*Madilin Karstens**; Faculty Sponsor: *Alison Whiteford Damerall*

Recent research has explored the competition at the Division I level in collegiate sports in its extremely demanding and mentally taxing nature. Scholars often wonder if there is a relationship between the strains of being a Division I athlete and their mental health status since college has been found to be a time of stress for all to begin with. The study presented explored the levels of perceived stress and depression among student-athletes at Division I universities in the Midwest region of the United States. Comparisons were made between in-season and off-season competition. Using a qualitative approach, the researcher surveyed the athletes of six different sports in their current season of play of their Spring semester. Data was collected using the two focus groups including male and female athletes, also considering the load of their majors and year in school. Results showed that athletes were likely to report mild depressive symptoms with no effect of demographic and sport related factors.

49 **Hegemonic Masculinity and the Challenges of Women with Tattoos**

*Brandy Kelly**; Faculty Sponsor: *Shawn Guiling*

How is a woman with tattoos perceived? Is she rebellious, promiscuous, or simply trying to express herself? The societal norm is to view her as a rebellious, unfeminine, and against-the-grain character. This is what hegemonic masculinity embodies, the ideas and perceptions that validate the dominant positioning of men in our society which then justify the subordination of women. The overall perspective has shifted numerous times but despite the shift to a more accepting perspective a stigma remains. The actual reasoning behind women choosing tattoo body modification projects can range from self-concept empowerment to simply mapping their journey on an intimate and personal canvas.

50 **Development of the Organizational Values Measure**

*Sean Kleffner**; Faculty Sponsor: *Jeremy Heider*

Locke's Range of Affect Theory (1976) posits that individuals place different emphasis upon different values. This concept can be applied to Person-Organization Fit and the Job Characteristics Model when analyzing recruitment and selection strategies. Previous models have attempted this application, most notably Cable and Judge (1997), as well as McFarlin (1995). These applications provided analysis through the perception of value congruence on behalf of interviewers. The current proposed model would provide an objective approach that may be used in tandem with or instead of unstructured interview measures. The proposed measure will consist of two stages and 70 total items. A factor analysis and subsequent power analysis will be required to ensure the reliability and validity of the measure.

51 **The Effects of Gender Identity and Sexuality on Jealousy Reactions**

*Sean Kleffner**; *Moriah White**; Faculty Sponsor: *Jeremy Heider*

Reactions to infidelity carried out by romantic partners vary between males and females. Often, men focus more heavily on the sexual aspect of these acts. On the other hand, women tend to focus on the emotional aspect. The reasoning behind these reactions can be found in Evolutionary Psychology and the theory of Jealousy as a Specific Innate Module (JSIM). According to the JSIM, men react to the potential loss of paternity when a female partner is unfaithful. Women react to the potential loss of resources, as their male partners are not solely focused on them. Previous research has analyzed these reactions through a variety of circumstances, such as online relationships, age differences, and previous experiences. However, few have taken gender identity or sexuality into account. The present study analyzes the effects that gender identity and sexuality have in infidelity reactions. Participants will complete a scale to measure masculinity and femininity, provide reactions to various scenarios involving infidelity, and provide information regarding their sexualities. It is believed that, regardless of biological sex, those rating higher in masculinity will report higher focus on sexual infidelity, whereas those with high femininity will report higher focus on emotional infidelity. Androgynous participants will not rate one aspect higher than the other.

52 **“Please find it in your heart to help!” How Individuals Draw Support from GoFundMe.com to Raise Money for Bail**

*Breana Kruithoff**; Faculty Sponsor: *Monica Bixby Radu*

The ability to secure bail has implications for many different areas of life. In fact, research suggests that securing bail can mean the difference between guilt and innocence. Additionally, being able to afford bail may influence whether an individual is able to retain employment, meet family obligations, and maintain housing. Recently, requesting financial assistance via crowdfunding has emerged as a new alternative for securing bail. Therefore, this study explores how individuals frame their requests for bail assistance for a family member or friend who is unable to meet the financial requirements of their bail. Drawing from the crowdfunding website GoFundMe.com, this study qualitatively analyzes a sample of 17 narratives. Through this analysis, several themes emerged. First, several requesters highlighted that the individual in need deserved help because they were a “good person” with strong character. An additional theme included descriptions regarding how the request was on behalf of an individual who was a victim of abuse and arrested because they were protecting themselves. Other narratives spoke to larger issues within the criminal justice system, such as racism and discrimination. These findings are important because they have implications for future research and a closer examination of the bail system.

53 **Hurtful Teasing: A Paradox in Romantic Relationships**

*Zoey Logan**; Faculty Sponsor: *Paul Madlock*

This study examined hurtful teasing as a paradox in romantic relationships. The conceptualization of hurtful teasing was also offered. Of the 196 individuals who reported being involved in a current romantic relationship 87.9% reported being targets of hurtful teasing perpetrated by their relational partner, and all the targets reported some truthfulness to the hurtful tease. Support for the assertion that hurtful teasing is paradoxical was found in that 94.7% of perpetrators reported using strategies such as contradictory messages to hide the truthfulness of a hurtful tease. Loneliness was positively related to hurtful teasing, and hurtful teasing was inversely related to satisfaction. Mediation models demonstrated that perceived truthfulness partially mediated the relationship between hurtful teasing and relational satisfaction and loneliness.

54 **Genetic Diversity of *Triodanis Perfoliata*, A Native Annual Herb to North America**

*Olivia Lopez**; *Colette Berg*; Faculty Sponsor: *Jennifer Weber*

Triodanis perfoliata (Campanulaceae) is an annual wildflower native to North America that utilizes a mixed mating system. This consists of the ability for some flowers to self-fertilize, while the others fertilize through outcrossing. We were interested in how this mixed mating system influenced the population genetics of this species. Our study focused on genetic variation across eighteen *T. perfoliata* populations spanning the contiguous US. The main objective was to discern phylogenetic and genetic diversity among populations, as well as infer biogeographic and migration history. We found that populations in the eastern, midwestern, and western US shared genetic similarities, though overall genetic diversity was quite low for this species. This suggests a potential history of high inbreeding despite *T. perfoliata* having the potential to both self-fertilize and cross-fertilize. The dispersal pattern of these populations supports bidirectional migration that likely originates from somewhere in the midwest, with subsequent migration to both the eastern and western states of the contiguous US.

- 55 **High Pressure Liquid Chromatography for Counterfeit Drugs**
*Destiny Mayes**; *Madison Mumma**; Faculty Sponsor: *David Cunningham*

Co-trimoxazole contains sulfamethoxazole and trimethoprim which is used to treat ear infections, shingles, and traveler's diarrhea. A high-performance liquid chromatography method was used to analyze the accelerated degradation of a tablet (KPN Strim-side, single table in foil obtained in Kenya 2013-2016). The tablet was aliquoted into equal portions and incubated at 102 C for 2-33 days. The active ingredients were calculated to be 97.3% of the weight. Mobile phase preparation included a mixture of water, acetonitrile, and triethylamine, and then treated with glacial acetic acid. Stock standards were diluted with methanol and results were analyzed by calculating concentrations from chromatographs and comparing elution times from reference chromatographs.

- 56 **Educating a Better Generation**
*Gretchin Hanlin**; *Emily Hoffmeister**; *Justin McCulley**; *Lauren Wood**; Faculty Sponsors: *Missy Nieveen-Phegley*; *Willie Redmond*

This presentation covers a collection of issues that relate to *educational innovations*. It is a product of the students' participation in a special University Studies course, which includes a four-day seminar at the Center for Strategic and International Studies (CSIS) in Washington, D.C. In the seminar, Southeast students interact with researchers who advise national and international leaders in the top levels of the public and private sectors, as they develop policies and strategies that affect the U.S. and the global community.

- 57 **The Effects of Flashcard Study Techniques on Recall & Recognition**
*Alyssa Miller**; Faculty Sponsor: *Alison Whiteford Damerall*

The goal of this experiment was to explore what specific study practices using flashcards are most effective in learning new vocabulary. Sixty-four undergraduate psychology students served as participants in this study. For this experiment, participants were placed into one of three conditions: one group was instructed to read the flashcards front and back as they normally would (reading group), another group was instructed to read the vocabulary word and say the definition aloud (speaking group), and the third group was instructed to read the word and write down the definition (writing group). The participants were allotted thirty minutes to study forty vocabulary terms from the Graduate Record Examination. After this study period, participants were asked to work on a crossword puzzle as a distractor task for fifteen minutes. Following the distractor task, participants were asked to complete a multiple-choice exam to assess the effectiveness of their study session. Of interest was whether the study condition affects scores on the multiple-choice exam. It was predicted that the writing condition would produce higher test scores, followed by the speaking and reading conditions respectively.

- 58 **Involuntary Sterilization of the Mentally Retarded**
*Landon Mitchell**; Faculty Sponsor: *Bambi Robinson*

In this essay I show the history of the argument involving involuntary sterilization of the mentally retarded. I present both sides of the debates and produce the conclusion that once it has been determined that the individual cannot provide for the physical, mental, emotional, and/or social needs of a child then it is the moral obligation of the courts and family to sterilize the individual. Several different rights come into play in this argument including reproductive rights, right to autonomy, and right to privacy. These rights are important to our existence as persons, however they can be suspended when it is shown that you either lack the capacity to retain them or you cannot handle the obligations that are the results of your actions.

59 **In the Kitchen or in the Town Square? Women and the French Revolution**

*Zachary Mitchell**; Faculty Sponsor: *David Cameron*

For ten years, the people of France fought numerous wars both physical and ideological. As such, many minorities, including women, have gotten swept under the rug when recounting this era until recently. The question of if women were active agents during the French Revolution is not under debate. What is being asked is what exactly women could do in this new age of republicanism. This paper examines the position of women in French society both before and throughout the French Revolution as well as how a woman's position may have changed over time. Many are quick to discredit the Old Regime for repressing women and praise the equality ushered in by the Revolutionaries, but the situation is slightly more nuanced than that. While some positive changes were made under the new revolutionary governments, something less tangible was stripped away from women in return: their voice.

60 **Case Study on the Use of Social Media Marketing in Ministry**

*Alyssa Mohney**; Faculty Sponsor: *Lesly Krome*

In this qualitative case study, a student researcher investigated the use of social media as a promotional and evangelical resource in Catholic ministry. The goals of this study were to a) investigate social media activity among local churchgoers, b) learn which parish social media posts received the most engagements, and c) discuss further applications for social media in Catholic parishes. After the completion of the social media campaign, the student researcher qualitatively analyzed the sentiments of parishioners in response to the campaign and also noted trends during the social media campaign, noting increases in exposure, likes, and interactions with posted content. It was found that the posts and content that parishioners interacted with most, and what was most important to survey respondents was being informed of upcoming events that they could attend to become more actively involved, in addition to spiritually enriching content about their faith. Limitations such as length and scope of the campaign, variables influencing the successful execution of the social media campaign, and generalizability of the findings are discussed, as well as future applications in Catholic ministry.

61 **Surviving Supervision: Animal Assisted Therapy (AAT) on Language Goals**

*Callista Nickelson**; *Maddie Henry*; *Kristen Zahner*; Faculty Sponsor: *Susan Fulton*

Animal Assisted therapy (AAT) is a therapy technique used to elicit and/or enhance a variety of behaviors in conjunction with traditional treatment. Prior studies have demonstrated that patients who receive AAT experience a variety of emotional, physical and psychological benefits. Two children from a rural elementary school in Southeast Missouri, each with a diagnosed language disorder, participated in this study. Each child was randomly assigned either a wait-group status, or an AAT status at the beginning of this study. Data from each group were collected, then the children alternated either wait-group or AAT. This study focuses on the dichotomy of motivation, measured by the Pediatric Motivation Scale (PMOT), and overall engagement during therapy prior to receiving AAT. Qualitative data has been collected through questionnaires with data from the supervisors, caregivers, and animal handlers. The overall dichotomy of motivation to participate in language therapy with Animal Assisted therapy versus traditional therapy has been assessed.

62 **Low Cost Beowulf Cluster for Education and Research**

*Benjamin Nielsen**; *Austin Patek**; Faculty Sponsor: *Jonathan Kessler*

A Beowulf Cluster is a platform that utilizes parallel processing in order to accomplish higher order calculations. Consisting of set of seven Raspberry Pi units, the economic resources necessary for construction of a cluster is lower, by a significant margin, than a traditional computer. This provides an intriguing alternative for education and research where money is scarce. Each Pi was networked together using the Raspbian Unix platform. One Pi was deemed the "Head Unit" and acted as the common node between the other six Slave Pi units. The Head Unit Pi was able to divide and assign tasks to the Slave Pi units by establishing a communication link through a Message Passing Interface (MPI). As a test, a 2D simulation was constructed to resemble a well filled with particles that act as a fluid. Each of the six Slave Pi units controlled one subset of particles in the well. By building the simulation to react in real time it was possible to see the power of the parallel processing in action. In addition, a case was designed and built to contain the Beowulf Cluster and provide ease of access to the entire setup.

63 **Intersectionality and the Matrix of Domination**

*Kaleigh Oliver**; Faculty Sponsor: *Shawn Guiling*

My presentation is over intersectionality and the matrix of domination. Intersectionality works to identify how interlocking systems of power impact those who are most marginalized or overlooked in society. Intersectionality says that different forms of social division, such as class, race, sexual orientation, age, religion, disability and gender do not exist separately from each other, but are woven together to create every unique individual. The various intersections of social inequality are referred to as vectors of oppression and privilege, or the "matrix of domination". This term simply means that the issues of oppression that deal with race, class, and gender, among others, though they are seen as different social classifications, are all interconnected and based upon the power each classification gives an individual. As the matrix implies, there are many different ways one might experience domination, in which one obstacle, such as race, may overlap with other sociological features, such as gender. The matrix of domination is a way for people to acknowledge their privileges in society. In the field of psychology, providers must take intersectionality and the client's placement in the matrix into account when giving advice or proceeding with legal issues.

64 **Healthy Confrontation: Perceptions, Outcomes, and Implications**

*Johanna Oster**; Faculty Sponsor: *Erin Fluegge*

Confrontation is a skill that can always be developed through continuous practice. This project is part of an independent study in business in which two workshops were presented on the topic of healthy confrontation. The workshops included topics involving theories of confrontation, how to confront, how to be confronted, personal responses to conflict, and strategies for confronting on a personal level and in a group setting. The research question was to understand students' ability to engage in healthy confrontation. Thus, the goals of the current research were two-fold, 1) to identify students' most common conflict handling strategies, and 2) how to best handle a confrontation situation. The workshop was presented in two locations – one in a sorority setting and the other in a session of an upper-level business class. Approximately 100 students participated in the workshops and then were asked to complete an anonymous survey about their experience. Findings suggest that both groups of participants more frequently engaged in unhealthy than healthy conflict handling behaviors, but they were confident in their ability to effectively handle confrontation in the future. These results suggest that educating people about healthy confrontation strategies is a valuable pursuit and is worthy of future investigation.

65 **Evaluation of Cover Crop Selections for Southeast Missouri**

*Cameron Owen**; *Chase Copeland**; *Mara Mayo**; *Bud Hilburn*; *Sidney Upchurch**; *Ben Tremain*; *Reid Milburg*; Faculty Sponsor: *Indi Braden*

Cover crops are becoming more popular over the last few years. Cover crops help to prevent soil erosion, reduce nutrient runoff, provide natural herbicides, and improve overall soil health. Multiple species of grasses and legumes were planted in randomized complete blocks to compare benefits and survival of cover crops. Cover crop species included grasses, such as cereal rye (*Secale serale*), barley (*Hordeum vulgare*), oats (*Avena sativa*), wheat (*Triticum aestivum*), annual ryegrass (*Lolium multiflorum*), perennial ryegrass (*Lolium perenne*), and triticale (*Triticosecale*), and legumes, such as crimson clover (*Trifolium incarnatum*), hairy vetch (*Vicia villosa*), sweet clover (*Melilotus officinalis*), winter pea (*Pisum sativum*), and other species, such as oilseed radish (*Raphanus sativus*) and turnip (*Brassica sp.*). Treatments were planted in single species grass, mixture of grass/legume and mixture of multiple species. Each treatment was replicated four times and included a control (no cover crop). Data was collected on soil conditions, above-ground biomass, and plant tissue nutrient analysis. Results will provide insight into the cover crop species or mixtures that are best suited for southeast Missouri.

- 66 **Ethical Implications of Conversion Therapy**
*Sarah Patrick**; Faculty Sponsor: *Melissa Odegard-Koester*

Conversion therapy, also known as sexual orientation change efforts, is the practice of attempting to change an individual's sexual orientation through various methods such as talk therapy and physical aversion therapy and many who undergo this treatment describe it as torture (Brinton, 2018). Research has shown that this practice can result in countless negative mental health outcomes including suicide and depression (Wood, 2018). Many mental health associations such as the American Psychological Association, American Counseling Association, and the American Psychiatric Association condemn this practice, yet the majority of states still allow this harmful practice (Human Rights Campaign, 2019) and many counselors do not know it is still in use. Recently, some counselors have fought for its use even with condemnation from national mental health agencies (Schmidt, 2019). Counselors need to be, not only aware of this practice, but also active in advocating for a national ban on conversion therapy for all ages.

- 67 **A Visit with Mrs. Wheeler**
*Cassie Prock**; Faculty Sponsor: *Joel Rhodes*

Matilda Wheeler is the ideal upper middle-class Victorian matriarch. She was born of Henry and Marouerite Stratman on September 20, 1853. As a child, she lived through the Civil War and the famed Battle of 1863 in Cape Girardeau, MO. Her husband was auditor of the Cape Girardeau Southwestern Railway under the leadership of Louis Houck, and they had 6 children together. In this living history performance, she is about to go on a trip on the new steamboat La Mascotte with her daughters, Lily and Daisy. They are very excited about the trip but could never have predicted what would happen next. Cassie Prock will be portraying Matilda Wheeler, using the research conducted on her life and the world around her. This research involved looking into the world of the character using the "Five Sphere" concept developed by Stacy Roth: personal sphere, local sphere, occupational/domestic sphere, stational sphere (relating to one's social class), and worldly sphere. Come to the Student Research Conference and see what happens to Matilda and her two daughters on their steamboat trip.

- 68 **Himmelberger House to Jane Stephens Honors House: The Physical Legacy of the Himmelbergers' Community Driven Spirit**
*Cassie Prock**; Faculty Sponsor: *Lily Santoro*

Every house has its story. This project looks at the history of Southeast Missouri State University's Jane Stephens Honors House. Research was conducted using large variety of primary and secondary sources from Kent Library, Special Collections and Archives at Southeast Missouri State University, Cape Girardeau County Archive Center, and Cape Girardeau County Assessor's Office. Built in 1921-22 by the son of the revolutionary local businessman John H. Himmelberger, this house has lived to symbolize a family that has served the Cape Girardeau community and continues to serve after his passing. The Himmelbergers brought Cape Girardeau its first skyscraper and drained swampy Southeast Missouri for fertile farmlands, but they also provided a unique facility to the students of Southeast Missouri State University. From the Home Economics "Home Management House" to the homey offices of Student Development to the News Bureau and finally to the Jane Stephens Honors Program "clubhouse." This facility has provided a practice home for Home Economics Students, comfortable offices for the offices of Student Development and the News Bureau, and a unique space for honors students to study and relax.

- 69 **Evaluation of Steer and Heifer Performance in Confinement**
*Dakota Reckman**; Staff Co-Author: *Collin Schabbing*; Faculty Sponsors: *Samantha Siemers; Julie Weathers*

Traditionally, cattle feeding enterprises were spread throughout the Corn Belt. As agriculture became more mechanized and enterprises became less diverse, cattle feeding moved away from its traditional region and into the Western Plains. A main reason for this change was due to a more suitable climate in the Western states to feed cattle year-round. Cattle in the confined feed lot were weighed and given a Body Condition Score (BCS) every week starting the first week of February and ending in March in order to determine Average Daily Gain (ADG) and determine if sex influences ADG and BCS.

70 **Break Out of Your Routine with Gamification**
*Tracy Retherford**; Faculty Sponsor: *Irina Ustinova*

An innovative process used to present material, practice content and measure assessment in a variety of settings is the use of gamification. Breakout boxes are just one style of gamification that is being used by educators, employers, medical professionals, coaches and businesses to gamify knowledge. When given the opportunity to learn through breakout boxes, the participants can team-build, collaborate, problem-solve with the use of critical thinking skills and creativity. The element of immediate feedback that breakout box learning produces is an essential component to the learning process and is participant-led. Increased motivation often is a consistent result of learning gamification because of the high engagement level of the methodology. The efficacy of educating anyone from an athlete to an auto mechanic through gamified lessons is proof that participants excel. Game on!

71 **Perception of Media Study**
*Devin Rhone**; Faculty Sponsor: *Sarah Cavanah*

Modern television shows showcase many different personalities that spill out into the real world and can lead to random acts happening. Some are evil acts and some happen just by chance to transpire. An in-group is an exclusive, typically small, group of people with a shared interest or identity. Social identity theory explains that part of our identity is the groups we belong to--groups with which we identify and feel the closest connection. Violent activity, such as robbery, physical abuse, or murder, happens on a daily basis. We deal with a range of violence, from verbal to physical. This research uses a survey to collect real-time data. The survey consists of 13 questions, that I have created to determine the types of violence people suffer and how they think of violence. The media may play a part in what type of violence we experience. In the paper we will find out if and how media depicts violent behavior and how people adapt to what they watch.

72 **Issues Related to Technological Change**
*Renee Bailey**; *Joel Ricker**; *Taylor Shivelbine**; *Trent Waltz**; Faculty Sponsors: *Missy Nieveen-Phegley*; *Willie Redmond*

This presentation covers a collection of issues that relate to *technological change*. It is a product of the students' participation in a special University Studies course, which includes a four-day seminar at the Center for Strategic and International Studies (CSIS) in Washington, D.C. In the seminar, Southeast students interact with researchers who advise national and international leaders in the top levels of the public and private sectors, as they develop policies and strategies that affect the U.S. and the global community.

73 **The Investigation of a Non-Natural Amino Acid IR Probe and FMN Ligand in the pHENR Protein**
*Hannah Hufford**; *Eleni Robinson**; Faculty Sponsor: *Christina Ragain*

Over the course of the semester, we have computationally analyzed the interaction between PR probes and a ligand in the pHENR protein. The study set out to verify findings of pi bonding between the probe and ligand. In this study, we observed the confirmation molecules, potentially showing pi bonding between the PR probe and ligand. To complete this, we utilized the MOE program to run confirmation searches on eight variations of probe location and rotation. We completed four searches for the azide probe in the 124 and 155 nucleotide position in both the S and R configurations. This was repeated for the cyano probe in both the 124 and 155 nucleotide positions. This project is a correlation to an ongoing study at SIUC in Carbondale, IL.

74 **An Application of Frictional Forces on Dance Floors**
*Emilia Schempp**; Faculty Sponsor: *Margaret Hill*

This project investigated different physics principles and their application in dance. The effects of different dance surfaces and manipulations was studied in order to investigate frictional forces. The differing coefficients of friction were calculated and used to provide an explanation for the development of the various adaptations that have structured the tradecraft of dance performance. These manipulations included a water wash, 1/16 ratio coke to water wash, a 1/32 ratio coke to water wash, and a damp shoe. The data was recorded using the bottom surface of a canvas ballet shoe on a Marley dance floor in a studio setting.

75 **Effects of Constraint-Induced Auditory Therapy on Auditory Comprehension in Aphasia**

*Megan Schmidt**; *Lydia Cameron*; Faculty Sponsor: *Susan Fulton*

This single-subject case study investigated the efficacy of Constraint-Induced Auditory Therapy (CIAT) for a participant diagnosed with Wernicke's aphasia following a cerebrovascular accident (CVA). Deficits in auditory comprehension are a hallmark symptom of Wernicke's aphasia, affecting speech comprehension, conversational skills, and overall quality of life. Interventions aimed at remediating this deficit have received minimal investigative and conclusive research. CIAT provides auditory training through isolated dichotic listening activities, requiring the listener to attend to a stimulus in the ear which shows a deficiency and ignore a stimulus in the other ear. The underlying intent of this practice is to strengthen weak auditory neural pathways via neuroplasticity. Prior to the start of CIAT training, the participant completed a full hearing evaluation (pure-tone audiometry, tympanometry, speech recognition thresholds, speech reception thresholds, and otoscopy). Outcome measures for this study were obtained via pre- and post-testing of the participant's auditory comprehension status before and after a four-month-long period of intensive bi-weekly CIAT sessions. Pre- and post-test data were objectively tracked using the Dichotic Digits Test and Competing Environmental Sounds Test. These standardized tests provided a generalized means of evaluating the participant's auditory comprehension neural pathway functioning and proficiency. If proven to be a significantly beneficial intervention strategy for the participant in this study, continued CIAT discussion and research should be conducted so that others with similar symptoms may also experience improved auditory comprehension and quality of life.

76 **Interaction Between Nanoparticle Covered Carbon Nanotubes and Human Blood**

*Jacob Seabaugh**; *Sidney Siebert**; Faculty Sponsor: *Santaneel Ghosh*

Surface functionalized multifunctional nanostructures are being developed as potential drug carriers for specific tumor targeting and/or central nervous system disease related treatment. These nanocarriers can be loaded with single or multiple therapeutic agents and can be designed to release the therapeutic agents gradually, on demand at target locations. Since the nanocarriers must be designed for systemic administration, the hemocompatibility of the nanocarriers is a crucial factor that must be considered. In this work, we have evaluated the intracellular uptake and the hemocompatibility of these nano-carriers. A multifunctional magnetite (Fe₃O₄)/Gold (Au) nanoparticle (NP) decorated dextran covered carbon nanotube system (NP-CNTs) was synthesized. The hemocompatibility of the nano-carriers was evaluated with a focus on hemolytic activity. Results indicated minimal hemolysis with concentrations up to 200µg/mL for the nano-carriers. In vitro human red blood cell lysis percentages ranged from 0.74 – 4.00% of complete hemolysis from our positive control. The data indicates that these nano-carriers have potential blood compatibility at various doses. Our results show that these nanocarriers have great potential in the field of cancer treatment and treatment for neurological damage.

77 **Planning Sustainability for Today and Tomorrow**

*Eli Bohnert**; *Nicholas Fuller**; *Liam Ohlendorf**; *Heather Smallwood**; Faculty Sponsors: *Missy Nieveen-Phegley*; *Willie Redmond*

This presentation covers a collection of issues that relate to *population and demographic change*. It is a product of the students' participation in a special University Studies course, which includes a four-day seminar at the Center for Strategic and International Studies (CSIS) in Washington, D.C. In the seminar, Southeast students interact with researchers who advise national and international leaders in the top levels of the public and private sectors, as they develop policies and strategies that affect the U.S. and the global community.

78 **The Kids are Alright: A Review of the Psychosocial Outcomes for Children Adopted Into LGBTQ+ Families**

*Randi Spiker**; Faculty Sponsor: *Catherine Chou*

The adoption of children by lesbian, gay, or non-binary parents (LGBTQ+) is a subject of much debate among both politicians and social scientists. Researchers have explored concerns about the immediate welfare of minor children, and the long-term effects of being raised in a non-heteronormative family unit. This literature review examines both the current and historical research surrounding the psychosocial outcomes for children raised in LGBTQ+ parent homes. Topics discussed include the emotional, psychological and social developmental needs and outcomes of these children, as well as educational concerns and results. Despite objections voiced by opponents of LGBTQ+ adoption, researchers have overwhelmingly found very few negative associations between child mental health and development and living within a non-heteronormative family unit. Limitations of current research, and suggestions for further study are also offered for consideration.

79 **A Review of Single-Phase Single-Stage DC/AC Boost Inverter Topologies and Their Controllers**

*Adam Stone**; Faculty Sponsor: *Md. Rasheduzzaman*

A classical voltage source inverter (VSI) generates an ac voltage that is lower than the DC input voltage. A boost inverter is different from a VSI in the sense that it can generate an ac voltage whose peak can be either higher or lower compared to that of the DC input voltage. Although two-stage boost inverters are very common, there has been a growing interest in singlestage boost inverters. This review focuses on single-phase, singlestage boost inverters where a load is connected differentially between two boost converters to produce a sinusoidal wave. The main drawback of this type of inverter lies in its control algorithm since the controller has to deal with a variable-operating point condition. Considering this issue, different kinds of controllers have been proposed in many works. This work also presents a review of those controller algorithms. Finally, it is concluded that due to the bilinear nature of the boost inverter an accurate small-signal model of the boost inverter is still a work in progress.

80 **NBA vs Society**

*Aunyah Stovall**; Faculty Sponsor: *Eric Sentell*

This research paper should serve as an informational report. It will be able to help the reader understand that professional NBA athletes have a place in society just as much as a minority. The Fox News host Laura Ingraham told LeBron James to "Shut up and dribble," implying that his voice has no value, and he should continue to just play basketball. The majority of the NBA athletes that speak out on injustice are African American. Society has been a place where many African Americans are getting belittled. This report will shed light on the impact of African American athletes speaking out on social injustice. Being NBA players does not make them excluded from the injustice taking place in society, their society.

81 **The Impact of a Student Recreation Center on a College Campus**

*Brittney Swicionis**; Faculty Sponsor: *Beth Easter*

The purpose of this study is to analyze the usage of the Student Rec Center and see why or why not students are utilizing our on-campus facility and what draws our students in (intramurals, group fitness, etc.). The research design will consist of gathering sign in data from the previous school year and surveying students in-person and online about why they do or do not come to our facility. We will also be looking at the types of programming brings in today's college students. Data will be the first of its kind involving the Student Recreation Center but can also be compared to other Division I institutions apart of NIRSA in the Midwest that have approximately 12,000 students.

82 **Analysis of the Melanin Biosynthetic Pathway and Oculocutaneous Albinism**

*Morgan Tackett**; Faculty Sponsor: *Jim McGill*

Oculocutaneous Albinism type 1 is a recessive genetic disorder leading to the absence of melanin in the eyes, skin and hair. The enzyme Tyrosinase catalyzes the rate determining step of melanin synthesis. Albinism occurs when there is no functioning tyrosinase in the organism. This project will outline the biochemical synthesis of Melanin including each substrate and enzyme used. The steps of this pathway which could lead to Albinism are also seen and spoken about.

83 **Family Farm Succession Planning and Involvement of the Next Generation**

*Kimberly Thole**; Faculty Sponsor: *Samantha Siemers*

According to the USDA, over the next 20 years, approximately 70 percent of farmland in the United States will change ownership. Most of this farmland belongs to family farms. Continued business in past generations of farming relied on successors prepared to take ownership. Today, considerably large numbers of family farms are going out of business due to a lack of succession planning for the next step in the life of the farm. While many farm owners understand the importance of succession planning, they do not understand how to communicate, create, or execute a plan. There is a tremendous importance that needs to be placed on the involvement of the next generation in both planning and implementing succession details. The survey involved in this research was completed by 36 participants; 28 of which were age 18 to 25. The rapid change in farm ownership has a significant economic impact. Reports have shown a decline in rural communities, environmental damage, and altered agricultural regulations due to the shift of dominating corporations in place of family farms.

84 **Storytelling in NFL Productions**

*Jared Thomas**; Faculty Sponsor: *Sarah Cavanah*

American football has risen to become the most popular sport in the United States. Filmmaker Ed Sabol created a new way to show sports on television by using football in his experiment. From there, football has used storytelling to grab viewer's attention for decades. Compared to other sports like baseball and basketball, football stands above them all in attracting viewers and advertising dollars. For my research project, I conducted an experiment to prove that emotional storytelling in NFL productions gains the interest of viewers. A control survey of a scenario with no emotional storytelling, along with two surveys with two different scenarios of emotional storytelling were created and given to a random sample. My results were correct, and it proved that emotional storytelling does gain the interest of viewers.

85 **The Depictions of "Terrorists" in Major Motion Pictures**

*Brigid Toney**; *Lauren Waldrop**; Faculty Sponsor: *Raleigh Blasdell*

This study contributes to the social constructionist literature by conducting a content analysis of U.S. major motion pictures involving terrorism. Using the Unified Film Population Sampling Methodology, the top-grossing films were identified to examine the frequency and context of several constructs of terrorism; comparisons of these issues, as depicted in film, were then made with the extant academic literature on terrorism. The findings provide notable information regarding the representation of terrorism by the film industry, as well as insight into the discrepancies between the scholarly literature and depictions in popular films. Using the theoretical foundation of social constructionism, the results, highlighting vast differences between fiction and reality, provide information on how inaccurate depictions in film can influence society's beliefs about terrorism and terrorists, which can translate into support or opposition for related policies.

86 **Emerging Adults and the Need to Belong**

*Sarah Tucker**; Faculty Sponsor: *Catherine Chou*

Emerging adulthood is a time where the natural human instinct for acceptance is much more prevalent (Pharo et al., 2011). We define that instinct for acceptance as a Need to Belong. In our self-reflection questionnaires, we found that college student who positively correlated with a need to belong showed more signs of being successful emerging adults, while students who negatively correlated with a need to belong showed more signs of struggling with being an emerging adult (Leary et al., 2013). There are several positive (Identity Exploration and Subjective Well Being) and negative (Feeling In Between and Instability) things related to emerging adulthood. We found that those college students who self-identify with the more negative aspects tend to struggle more with adjusting to emerging adulthood, and those who self-identified with the more positive aspects had a much smoother journey towards successful adulthood.(Baggio et al., 2017; Reifman et al., 2007). What we wanted to learn by doing this study was how college students and their identifications with the positive and negative aspects of emerging adulthood may affect their need to belong. The data from this study comes from the EAMMi2 project (Grahe et al., 2017).

87 **Understanding Consumer Preferences and Purchasing Decisions of Animal Protein Products**

*Amber Tyler**; Faculty Sponsors: *Samantha Siemers; Julie Weathers*

Understanding consumer preferences and purchasing decisions of animal protein products is critical. The purpose of this study was to identify if niche terms, such as Antibiotic-Free, Hormone-Free, and Organic, were influencing the primary purchaser of protein products within the household. Specifically, focus was placed on the preferences regarding eggs and poultry products. A survey questionnaire was developed and administered via university email and Facebook. Participants (n=69) responded to questions pertaining to protein consumption, purchase location, and food labels. Respondents (n=68 of 69) revealed they regularly consume animal protein products such as eggs and poultry. Results also indicated that consumers (n=58 of 69) would not pay more for animal protein products that contain a health-conscious label, as they are not making purchasing decisions based on niche terms such as Antibiotic-Free, Hormone-Free, and Organic. From an agricultural industry point of view, these results are reassuring and favorable.

88 **Aphasia and Constraint-Induced Auditory Therapy**

*Lauren Uskiwich**; Faculty Advisor: *Susan Fulton*

The purpose of this research is to study aphasia after the onset of a stroke and the effect of constraint induced auditory therapy on improving it. This research will examine the two types of aphasia, Broca's and Wernicke's, as well as the physiology behind strokes themselves. In addition to explaining aphasia, it will also analyze the methods of constraint induced auditory therapy, or CIAT. This would include the pre-testing and the post-testing, as well as the treatment itself. This research will also contain information from a study currently taking place at Southeast Missouri State University within the Speech and Hearing Clinic involving constraint induced auditory therapy.

89 **Language Attitudes of Heritage Speakers**

*Roxanna Villasenor**; Faculty Sponsor: *Doc Billingsley*

Serving as an exploratory exercise to identify themes and develop questions in preparation for a larger-scale survey this project aims to explore Spanish heritage speaker attitudes about language use in the Cape Girardeau County region, where Hispanics constitute 2.4% of the total population (U.S. Census Bureau, 2018). These include but are not limited to educational experiences, social group interactions, and sentiments towards linguistic borrowing and self-identity journeys. Study procedures will include a brief interview with heritage speakers and a description-based activity. The structure of the interview will be informal, allowing the participants to navigate existing social institutions that influence home life, the entertainment industry, and other variables concerning the use of language varieties. The data collected in this study will be used to develop a robust interview schedule for longitudinal research on setting-specific activity and how these relate to underlying ideologies of language.

90 **Social Media, Cyberspace, and Bullying: Understanding the Effects of Social Media and Bullying Behavior Among Adolescents**

*Lauren Waldrop**; Faculty Sponsor: *Kristen Sobba*

Research reveals that bullying and cyberbullying can lead to many negative effects including depression, low self-esteem, and suicidal tendencies. Understanding the negative effects of bullying and social media is necessary when creating policy and programs. The current review shows the differences between traditional bullying and cyberbullying, the effects social media has on bullying behavior along with the importance it plays among the lives adolescents, as well as the connection between bullying and youth suicide. Additionally, theoretical and practical implications will be addressed to present the importance of the outcomes of bullying. Designing implications that bring attention to these effects can help raise public awareness to the issues surrounding bullying behavior. Furthermore, these implications work to eliminate such problems and promote a positive lifestyle for adolescents.

- 91 **Testing Memory Stimuli Using ASL and Auditory Cues**
*James Walshaw**; Faculty Sponsor: *Alison Whiteford Damerall*

The purpose of the experiment was to test the concept that information is more likely to be remembered if it is given through multiple forms of stimuli. This experiment tested if participants are more successful at learning when they are taught visually and auditorily than if they were taught just visually. One group was put in the seeing-learning-seeing-testing (SS) category. The next group was put into the seeing/hearing-learning-seeing-testing (SHS) category. Participants in the SS group were tested on the visual memory by seeing pictures of a woman signing using American Sign Language (ASL). They had 45 signs to attempt to memorize, with only a few seconds to study each sign before automatically moving on to the next sign. Participants in the SHS category received information visually and auditorily simultaneously during the learning phase. This means that when they saw a sign, they also heard a nonsense word. After they heard the word and saw the sign for the allotted time, they were automatically moved on to the next sign and nonsense word. The results were that those in the SS category had greater accuracy than those in the SHS category.

- 92 **An Ecofeminist View of Frankenstein**
*Gabrielle Wicker**; Faculty Sponsor: *Christopher Rieger*

This paper presents an ecofeminist view of Mary Shelley's novel Frankenstein originally published in 1818. The goal of the paper is to demonstrate how Victor Frankenstein's creation symbolically represents the will of both nature and women as the Creature not only seeks to punish Victor for perverting the natural process of the world by creating life without women, but also to prove the necessity of the role of women in society. The paper begins by briefly presenting an overview of the history and basics of the field of ecofeminism as well as the rights of women in the early nineteenth century. The paper continues with a discussion of how women are viewed throughout Frankenstein and how nature is represented through stereotypically feminine descriptions. The paper furthermore examines the Creature's alignment with nature and the female sex in addition to Victor's fear of women's sexuality and independence. Lastly, the paper describes the importance of the female characters in the novel and how Victor's arrogance leads to his inevitable downfall.

- 93 **The Ethics Surrounding Harvesting Rhino Parts**
*Keaton Wiesehan**; Faculty Sponsor: *Bambi Robinson*

This paper presents an ethical solution to the problem present in China regarding the harvest of rhino and tiger parts. China desired to improve upon their traditional medicinal treatments by utilizing these animal parts at the cost of the well-being of both animals. The solution posed here condemns the actions of China in the passing of the laws to legalize the harvesting of these animal parts. Many positions are entertained in this paper to try and better understand the solutions that popular ideologies might pose to this ethical dilemma. There must be condemnation or praise for China's decision and this paper explains why there ought to be condemnation.

- 94 **Analysis of Correlation between Emancipation Rate of Foster Children and State Expenditures on Child Welfare**
*Paula Wildermuth Morris**; Faculty Sponsor: *Jeremy Heider*

Each state in the U.S. spends a significant part of its budget on child welfare including foster care. As these budgets are planned, there are significant disagreements on how much funding is needed. The purpose of this study was to determine if a simple linear correlation could be established between the percentage of children in foster care who age out and the amount of state spending on child welfare. It seemed that more spending would correlate to more permanent placement of foster children. This study analyzed archival data retrieved from the Kids Count Data Center and from the database maintained by Child Trends. The data include money budgeted for child welfare for all fifty states and the entire population of foster children during the years 2010, 2012, 2014, and 2016. The percentage of children in each state who aged out of the foster system was compared with the spending of each state on child welfare per foster child. The results of this study show little correlation between state spending and the success of finding permanent placement for foster children. States that spent more per foster child were not more likely to have less children aging out of the system.

95 **Progress Toward the Purification and Crystallization of HipHop**

*Katie Bunselmeyer**; *Haileigh Hufstedler**; *Victoria Wright**; Faculty Sponsor: *Christina Ragain*

Telomeres prevent chromosome ends from repaired as double-strand breaks. This capping function prevents end fusion by maintaining a chromatin state that is independent of its underlying sequence. One important subunit of this capping complex is the protein HipHop. This HipHop protein is enriched at the telomeres, and loss of the subunit renders the telomeres susceptible to fusion. In order to study this protein, we must be able to isolate and purify the gene and then induce expression. Here we investigate one method of purification and expression to determine the optimal induction time that produces the most expression of our protein. The HipHop plasmid was introduced to *E. coli* for transformation and then expressed using IPTG induction. Once the induction of the protein began, aliquots were taken of the samples every hour and a half for four samples, and then one more aliquot was taken the following morning allowing us to run SDS-Page on the samples to determine which time produced the best expression. For the HipHop protein, the most prominent streaks for the molecular weight of our protein were resultant from the t=4.5 aliquots, which suggest that optimal expression was reached 4.5 hours after the start of induction.

96 **International Politics and Regional Issues**

*Ian Cameron**; *Conner Dittlinger**; *Zoey Logan**; *Cassie Prock**; & *Grace Ziehm**; Faculty Sponsor: *Missy Nieveen-Phegley*; *Willie Redmond*

This presentation covers a collection of issues that relate to *governance and regional concerns*. It is a product of the students' participation in a special University Studies course, which includes a four-day seminar at the Center for Strategic and International Studies (CSIS) in Washington, D.C. In the seminar, Southeast students interact with researchers who advise national and international leaders in the top levels of the public and private sectors, as they develop policies and strategies that affect the U.S. and the global community.

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