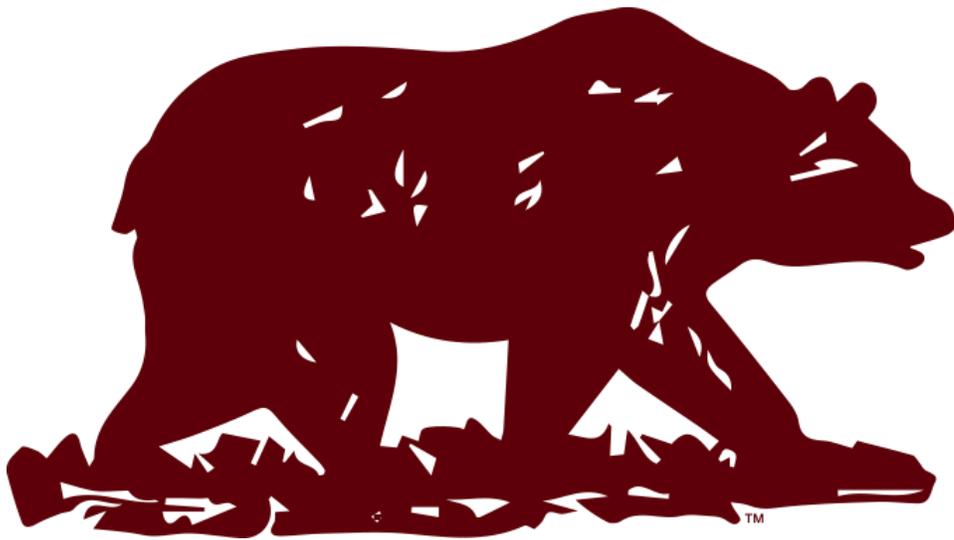


**Missouri
State**

McQUEARY COLLEGE *of*
HEALTH AND HUMAN SERVICES

STUDENT RESEARCH SYMPOSIUM



APRIL 26, 2024

3-5PM

PSU BALLROOM



McQueary College of Health and Human Services

Student Research Symposium

Welcome to the 28th Annual McQueary College of Health and Human Services Student Research Symposium. The purpose of the symposium is to highlight student research and to provide an opportunity for students to gain experience discussing their scholarly work. We are excited to continue this tradition and are looking forward to celebrating MCHHS students' outstanding work, acknowledging the faculty members who serve as mentors, and recognizing the schools and departments which support discovery.

To all McQueary College of Health and Human Services faculty, staff, alumni, board members and students, THANK YOU for participating in this year's symposium! Your hard work, dedication, and active participation is greatly appreciated.

To all McQueary College of Health and Human Services faculty, staff, alumni, board members and students, THANK YOU for participating in this year's symposium! Your hard work, dedication, and active participation is greatly appreciated.

I would also like to thank the MCHHS Student Research Symposium Committee members for their time and effort in organizing the symposium:

Dr. Ashlea Cardin, Occupational Therapy

Dr. Christie Cathey, Psychology

Dr. Michael Hudson, Public Health and Sports Medicine

Dr. Anne Marie Hunter, Public Health and Sports Medicine

Dr. Wafaa Kaf, Communication Sciences and Disorders

Dr. Bogdan Kostic, Psychology

Dr. Keith McShan, Kinesiology

Dr. Bonnie Slavych, Communication Sciences and Disorders

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Mr. Ian Alaimo, Director of Information Technology and Operations

Mrs. Rebeca Reut-Robinson, Executive Assistant II

Dr. Mark A. Smith

Dean, McQueary College of Health and Human Services

ORDER OF PRESENTERS (First Author)

1. Ahmed Amjed
2. Prince Asamoah-Baah
3. Riley Baker
4. Jennifer Barninger
5. Olive Baron
6. Lauren Bennett
7. Huiying Bian
8. Golda Biby
9. Lindsey Brandt
10. Alyssa Buchheit
11. Blair Burton
12. Sarah Caplis
13. Shane Carlson
14. Shane Carlson
15. Raven Chance
16. Zachary Chapis
17. Madison Clemens
18. Brooklynn Cook
19. Jianna Cox
20. Jasmine Crawford
21. Griffin Dabbs
22. Sophia Dela Coleta
23. Jeanette Drecker
24. Lydia Earlywine
25. Nadeau Emma
26. Caitlynn Erb
27. Rochelle Etienne
28. Cristina Flaquer Fusté
29. Kate Foster
30. Callie Fry
31. Victoria Galante
32. Paige Hemming
33. Logan Huckstep
34. Dana James
35. Arshpreet Kandola
36. Krishna Kansara
37. Corynn Knight
38. Tai Le
39. Skyler Lee
40. Emma J. Liimatta
41. Joshua Luna
42. Marissa Luney
43. Brandon MacTrinder
44. Jamila Makhloufi
45. Megan Martin
46. Madeline Merrill
47. Amanda Middleton
48. Summer Moore
49. Ryan Moser
50. Emily Nelson
51. Emily Nelson
52. Gracelin Nelson
53. Jacob Ogle
54. Alex Orr
55. Alexa Pappas
56. Ishva Patel
57. Rachel Pecka
58. Weston Phipps
59. Weston Phipps
60. Evan Reichard
61. Mystie Robinson
62. Jennifer Sample
63. Sophia Sampson
64. Catherine Scruggs
65. Quinlyn Thompson
66. Don Tufarelli
67. Stephanie Mitchell Urich
68. Victoria West Staples
69. Melanie Wolf

Presenters and Faculty Mentors

Abdelhakiem, Arwa.....1	Brooks, Patrick.....28,50,51
Abernathy, Amber.....5,18, 58, 59, 68	Brumback, Cierra.....21
Abir, Rafi.....22	Brutton, Madelyn.....33, 41
Adams, Charles.....29	Buchheit, Alyssa.....10
Adcock, Noah.....44	Burns, Andy.....49
Allen, Mercedes.....69	Burt, Kate.....17
Allen, Natalie.....27	Burton, Blair.....11
Amjed, Ahmed.....1	Cahoj, Patricia.....7,29
Amos, Megan.....54	Campbell, Mikayla.....32
Arroyo, Monique.....52	Campbell, Samantha.....62
Arvizu, Lyric.....52	Caplis, Sarah.....12
Asamoah-Baah, Prince.....2	Carlson, Shane.....13,14
Ayers, Tyrus.....2	Carpenter, Ariel40
Baddam, Sahith.....36	Carr, David W.....42,43
Baker, Riley.....3	Chance, Raven.....15
Bandusiak, Yulia.....25	Chapis, Zachary.....16
Barber, Christopher.....13	Choudhury, Mayeen.....28
Barninger, Jennifer.....4	Christian, McCall.....64
Baron, Olive.....5,18	Clark, Ashleigh.....36
Battelle, Eric.....44	Clemens, Madison.....17
Belisle, Jordan.....32,33,41,47,49, 63	Coakley, Taylor.....5
Bennett, Lauren.....6	Cochran, Callie.....4,8,22,24,56
Besett, Makenna.....63	Coffman, Kaitlyn.....55
Bian, Huiying.....7	Coleta, Sophia Dela.....22
Biby, Golda.....8	Compton, Jaelyn.....33
Boga, Prathyusha.....2	Cook, Brooklynn.....18
Bolz, Caden.....15	Cook, Jeanne.....7,66
Brandt, Lindsey.....9	Cox, Jianna.....19
Brashers, Bailey.....15	Coyle, Matthew.....32
Broderick, Maddie.....64	Crane, Hannah.....55
Brodeur, Amanda11,28,38,46,50,51	Crawford, Jasmine.....20
Brodeur, Cole.....28	Curley, Payton.....69

Presenters and Faculty Mentors

Dabbs, Griffin.....21	Goodridge, Morgan.....69
Damron, Kendra.....63	Gordon, Ryan.....1
Davis, Bethany.....43	Green, Emily.....4
Davis, Marek.....5	Gregory, Madison.....28,50
DeMoney, Brittany.....54	Harris, Chloe.....63
Dillon, Kylee.....9	Havlicek, Marc.....30
Dodd, Caleb.....50	Hawkins, Beth.....47
Donahoe, Kaylie.....21	Hawks, Cara.....12
Doten, Taya.....53	Hayes, Kirstin.....16
Drecker, Jeanette.....23	Hein, Emily.....26
Earlywine, Lydia.....24	Helm, Katie.....51
Echols, Leslie.....4,8,22,24,56	Hemming, Paige.....32
Egeland, Joelle.....13	Hermann, Emily.....33
Emma, Nadeau.....25	Hetrick, Brooke.....3
Ennis, Kimberly.....66	Hetzler, Tona.....21
Erb, Caitlynn.....26	Himes, Marcia.....69
Etienne, Rochelle.....27	Horn, Maya.....51
Evans, Grace.....16	Horton, Zoie.....41
Falk, Andrew.....36	Houston, Mia.....11
Fallone, Melissa.....35	Hubbard, Shelby.....9
Farley, Colleen.....24	Huckstep, Logan.....33, 41
Farris, Emma.....9	Hulme, Amy.....23,30,57
Flaquer Fusté, Cristina.....28,51	Hutchison, Lauren.....47
Fonseca, Alyssa.....51	James, Dana.....34
Foster, Kate.....29	Jiang, Ginger..... 13
Fry, Callie.....30	Joyce, Shea.....62
Galante, Victoria.....31	Kaminski, Kayla.....59
George, Gretchen.....17	Kandola, Arshpreet.....35
Gibbons, Sage.....47	Kansara, Krisha.....36
Glaze, Katie.....66	Keltner, Grace.....64
Gnau, Jaime.....45, 67	Kendrick, Kelsey.....39
Goddard, Stacy.....14	Knight, Corynn.....37

Presenters and Faculty Mentors

Kramer, Lainey.....10	Nelson, Emily.....28,50,51,52
LaHue, Cortney.....9	Nelson, Gracelin.....52
Law, Skyler.....16	Newton, Sean.....12,20
Le, Tai.....38,44	Nichols, Claire.....39
Lee, Breanna.....33	Noh, Andrew.....16
Lee, Skyler.....39	Norris, Zach.....13
Liimatta, Emma.....11, 40	Ogle, Jacob.....53
Lockenvitz, Sarah.....3,6	Orlando, Vinnie.....41
Loke, Nicolas.....56	Orr, Alex.....54
Lueke, Luke.....24	Paliliunas, Dana.....32,33,41,47, 49, 63
Luna, Joshua.....41	Pappas, Alexa.....55
Luney, Marissa.....42	Pargo, Bryanna.....63
Lupfer, Christopher.....48	Parker, Olivia.....11
Lynch, Logan.....29	Parsons, Amanda.....12
MacTinder, Brandon.....43	Patel, Ishva.....56
Makhloufi, Jamilia.....44	Pecka, Rachel.....57
Maples, Makenzie.....42	Phipps, Weston.....58, 59, 68
Martin, Megan.....45	Piacentino, Micaela.....42
Martin, Patricia.....59	Powell, Taylor.....28
Mason, Zoe.....64	Rackers, Halie.....9
Matteson, Parker.....69	Reed, Tate.....50
McDaniel, Emily.....54	Reichard, Evan.....25, 60
McKeel, Autumn.....32	Rigsby, Ellen.....47
McShan, Keith.....2,13,15,36	Rivas, Christian.....39
Merrill, Madeline.....10,44,46	Roberts, Hillary.....17, 67
Middleton, Amanda.....47	Robinson, Barbara.....54
Mitchell, Wayne D.....35	Robinson, Mystie.....61
Moon, Ryan.....28,50,51	Rose, Kristin.....17
Moore, Summer.....48	Sample, Jennifer.....62
Moser, Ryan.....33, 41, 63	Sampson, Sophie.....63
Murray, Sarah.....27, 67	Schimsa, Katelyn.....16
Muthamsetty, Sai.....2	Schlotzhauer, Christopher.....20

Presenters and Faculty Mentors

Schmoll, Emily M.	40	Wheatley, Addison.....	10
Schroeder, Haley.....	54	Whitley, Lilly.....	25
Scruggs, Catherine.....	64	Williamson, Elizabeth.....	9
Shabazz, Neema.....	69	Willis, Jessica.....	9
Shipley, Lauren.....	9	Wilson, David S.....	47
Shrestha, Archana	40	Wilson, Kaden.....	50
Simcoe, Elizabeth.....	38	Witkowski, Collette.....	10
Slavych, Bonnie.....	26, 53, 61, 65	Wolf, Melanie.....	69
Smith, Joshua.....	19,28,40,50,51	Worley, Katherine.....	9
Snodgrass, Alexis.....	25	Wright, Sabrina.....	16
Stange, Reagan.....	38	Yadon, Carly.....	52
Stemple, Blayne.....	41, 63	Yari, Kian.....	15
Storms, Jacob.....	16	Young- Jones, Adena	25, 60
Stuckey, Caroline.....	41	Zimmerman, David.....	62
Tarkany, Edyn.....	69	Zimmerman, Scott.....	31
Taylor, Hadley.....	3		
Taylor, Kailey.....	38		
Thompson, Quinlyn.....	65		
Tindall, Wyatt.....	54		
Towery, Ashlyn.....	42		
Tufarelli, Don.....	66		
Ulbricht, Randi.....	39, 44,48		
Urich, Stephanie	67		
Vaughn, Cameron.....	15		
Viehmman, Christopher.....	16		
Wallentine, Scott.....	16, 66		
Wang, Jianjie.....	34,37,44		
Ward, Andrew.....	16, 66		
Wells, Chris.....	51		
West-Staples, Victoria.....	58, 68		

1. The Effect of Resistance Exercise or Whey Protein on Fat Mass and Lean Body Mass in Young Men Participating in Ramadan

Ahmed Amjed, Arwa Abdelhakiem, Ryan Gordon

Faculty Supervisor: Ryan Gordon
Kinesiology

The month of Ramadan requires Muslims to abstain from food and fluid from sunrise to sunset. Prior research shows that Ramadan fasting alters body composition by decreasing total body mass, body fat percentage, and lean mass. Studies also support beneficial effects of resistance training and protein intake during periods of fasting, both of which can preserve or increase lean body mass. This study assessed the effect of fasting on measures of body composition by investigating how resistance training or increased protein intake, through whey protein, can aid in preserving lean muscle mass while also promoting decreases in body fat percentage and total body mass throughout Ramadan. Thirty healthy Muslim men were recruited and divided into three groups (n=10 per group). Group one fasted and resistance trained three times a week, group two fasted and increased protein intake by consuming whey protein every day during eating windows, and group three served as a control group, with no alterations in physical activity or diet. Body composition was measured at three different timepoints with DXA Scan. These findings will provide further insight into dietary and exercise interventions that may preserve lean body mass while fasting.

2. Exploring Task and Ego Orientations: A Qualitative Analysis of Motivational Goal Orientations in Sport and Exercise

Prince Asamoah-Baah, Tyrus Ayers, Prathyusha Boga, Sai Muthamsetty, Keith McShan PhD

Faculty Supervisor: Keith McShan
Kinesiology

This study examines sports motivational goal orientations (i.e., how a person defines success), focusing on task and ego orientations' impact on a

diverse cohort of 10 athletes. Utilizing research, including Szemes et al. (2017) work on age-related differences and Singh and Pathak's (2017) investigation into motivation's influence, our study aims to provide practical insights. Interviews via Zoom and in-person, lasting 20-30 minutes, sought comprehensive insights into the task (e.g., self-reference definition of success) and ego (e.g., comparing oneself to others) orientations. Demographic: 6 males and 4 females from African American, Asian, and Caucasian backgrounds. Participants age ranged from 20 to 28 years old. Findings revealed themes: task and ego orientations, subcategories: pride, self-centeredness, enjoyment, and self-improvement. In conclusion, this research illuminates motivational goal orientations, emphasizing task and ego orientations, suggesting athletes adopt a task-oriented perspective for increased intrinsic motivation. The study offers practical insights for tailoring approaches for gratifying sporting experiences across a diverse group of athletes and skill levels.

3. Melodic Guide to Speech Therapy: A Manual for Parents and the New SLP

Riley Baker, Brooke Hetrick, Hadley Taylor

Faculty Supervisor: Sarah Lockenvitz
Communication Sciences & Disorders

Speech-language pathologists (SLPs) utilize musical elements within therapy to encourage their patients to communicate effectively. As the field continues to grow, the amount of research and resources becomes overwhelming to newly graduated SLPs or parents of children with communication disorders. Thus, the "Melodic Guide to Speech Therapy: a Manual for Parents and the New SLP" aims to cumulate information about using songs and poems within speech therapy sessions or at home to treat articulation errors. Musical elements were analyzed to calculate the prevalence of the specific speech sound compared to the total amount of sounds. The songs were then listed for that speech sound for professionals to use if the individual is experiencing difficulty producing that sound. The melodies in the manual have a higher percentage of the sound than

typically used in conversation. These songs expose the individual to the phoneme at a higher rate than what would be achieved during everyday communication. The “Melodic Guide to Speech Therapy” is a tool to be used by anybody who may need to navigate a complicated articulation disorder.

4. Gender Differences in the Bystander Effect in Adolescence

Jennifer Barninger, Emily Green, Callie Cochran, Leslie Echols

Faculty Supervisor: Leslie Echols
Psychology

Bullying is a complex form of interpersonal aggression that can be both a one-on-one process and a group phenomenon. Bullying negatively affects the victim, the bully, and those who witness the behavior (Swearer 2015). Bystanders, or witnesses of bullying, may refrain from speaking up for victims of bullying because of negative social influences or fear of retaliation from the bully. Recent studies suggest that there are differences in gender related attitudes that can influence bystander behavior. Hoxmeier et al. (2017) found that students’ perception that intervening was “none of my business” was commonly reported as a barrier to intervening, particularly by males. This research utilizes survey data from two Midwest middle schools to identify adolescent gender differences in the bystander effect. Understanding bystander behavior may improve outcomes for victimized adolescents empowering them and the people around them to make their schools a friendlier place to thrive.

5. Closer Than You Think?: The Relationship Between Subthreshold Autism Traits and Parasocial Relationships

Olive Baron, Taylor Coakley, Marek Davis

Faculty Supervisor: Amber Massey-Abernathy
Psychology

The current study examined the relationship between subthreshold autism traits and parasocial

interactions. Participants were given a series of questionnaires including the Subthreshold Autism Trait Questionnaire (SATQ) and the Parasocial Interactions Processes scale. Individuals with Autism may display different parasocial relationships compared to neurotypical peers. Past research has been done on the relationship between autism and empathy (Smith, 2009) and between empathy and parasocial relationships (PSIs; Scherer et al., 2022), but there has been no direct research on the link between subthreshold autism traits and parasocial relationships.

Our findings conclude individuals with subthreshold autism traits may engage in more parasocial relationships or behaviors and cognitions related to parasocial interactions. More specifically, those engaging in parasocial cognitions/thinking were high on the subthreshold autism traits of oddness and rigidity. The parasocial affective subscale was positively related to oddness as well. Autistic individuals might seek out parasocial relationships as they are less complex and a way to cope socially. They may stray from more normal tendencies in interacting with these figures.

6. Shared Interactive Book Reading Script

Lauren Bennett

Faculty Supervisor: Sarah Lockenvitz
Communication Sciences & Disorders

This study investigated how scripted interactive book reading containing sensory elements influenced reading experiences in young children. Previous literature suggests that books containing sensory interactions (strings, texture, sound) can result in increased interest, interaction, and engagement (Zhang et al, 2020) as well as overall positive experience (Ten Brug, et al). In addition, interactive book reading has also been found to support language development as it promotes children to create sentences and share thoughts and opinions (Simsek, 2015). In this study, parents (N= 14) were provided a children's book (adapted to include sensory elements), a script, and two questionnaires. The script’s purpose was to encourage discussion of the story while also

targeting early literacy skills such as rhyming, prediction, and answering wh- questions. The questionnaires lent insight into the children's typical reading behaviors (pre-script questionnaire) as well as the child's level of engagement, parent perspectives, and parent confidence in relation to the script (post-script questionnaire). Findings indicated that parents felt that their child was more engaged (N=7) and that it was a positive experience (N=13).

7. The Efficacy of Hyperbaric Oxygen Therapy in the Treatment of Osteomyelitis

Huiying Bian, Dr. P. Cahoj, Dr. J. Cook

Faculty Supervisor: Patricia Cahoj
Physical Therapy

Introduction: Osteomyelitis is a therapeutic challenge due to the limited blood supply to bones. Hyperbaric oxygen therapy (HBOT) is used clinically, though its efficacy remains a debate. This systematic literature review, an update from the systematic review done in 2018, aims to evaluate studies done over the past 5 years on the overall efficacy of HBOT for osteomyelitis.

Methods: Database searches include CINAHL, Cochrane, MEDLINE, Academic Search Complete, EBSCOhost, and PubMed. Using inclusion and exclusion criteria resulted in 13 articles including RCTs, cohort studies and case reports. Key words were (hyperbaric oxygen therapy or HBOT) AND (osteomyelitis or deep infection or DFO) AND (lower extremity).

Results: HBOT shows effectiveness in 5 (83%) of 6 RCTs and 5 (100%) of 5 case reports. The studies demonstrate both increased effectiveness of chronic osteomyelitis and decreased expansion of acute infections caused by antibiotic resistant pathogens. It also aids the penetration of certain antibiotics to improve infectious control. Two of 2 retrospective comparative studies found no significant difference between diabetic foot osteomyelitis and normal diabetic foot ulcer cases.

Conclusion: It is reasonable to conclude that HBOT can be a primary or alternative treatment for both acute and chronic osteomyelitis, exhibiting promise

in accelerating wound healing, infection control for neurologic or post-trauma osteomyelitis patients.

8. The Relationship Between Empathy and Peer Aggression in Adolescence

Golda Biby, Callie Cochran, Leslie Echols

Faculty Supervisor: Leslie Echols
Psychology

Bullying is a form of peer victimization that involves recurring aggressive behavior (e.g., physical, social, verbal) and an imbalance of power between the victim and the aggressor (Olweus, 1997). Empathy, defined as the ability to share another person's emotions, consists of two key components: affective, which involves feeling and reacting with the same emotions of another person, and cognitive, which involves the ability to understand another person's emotions and perspective (Gladstein, 1983). Previous research has presented conflicting hypotheses regarding the relationship between empathy and bullying, with some suggesting that bullies may be lacking in both empathetic components and others supporting the idea that bullies actually have a greater understanding of other people's emotions (Gini et al., 2007; Sutton et al., 1999). The present study continues to examine the relationship between bullying behaviors and empathy in adolescence through self-reported interpersonal reactivity and self-reported bullying behaviors using a sample of adolescents from two Midwest middle-schools.

9. The Effect of Time of Day and Cognitive Demand on Reactive Balance in Young Adults

Lindsey Brandt, Kylee Dillon, Emma Farris, Shelby Hubbard, Cortney LaHue, Lauren Shipley, Halie Rackers, Katherine Worley, Beth Williamson, Jessica Willis

Faculty Supervisor: Elizabeth Williamson
Physical Therapy

Purpose: This study examined the effect of balance related to time of day, the direction of instability, and the degree of intensity. **Subject:** While

completing a cognitive task, 56 participants, ages 21-30, were tested in the morning (6:00-7:30) and evenings (6:00-7:30). Methods: Participants walked on a treadmill with randomized perturbations in the direction of left, right, forward, and backward. The participants walked at randomized intensity levels of low (15cm), moderate (20cm), and high (25cm) and were graded on a 4-point scale. A 2 (time of day) x3 (direction) x3 (perturbation of degree) repeated measure ANOVA was conducted (forward direction was not analyzed). Results: Significant main effects included time of day, (participants were more stable in the evening compared to the morning), direction (balance was least stable in the backward direction compared to left and right) and intensity (highest intensity of 25cm was more unstable than 15cm and 20cm). The combination of time of day, direction of instability, and degree of intensity also impacted participants' balance. Conclusion: Our findings defined useful parameters to study fall risk among older adults.

10. The Global Opioid Epidemic

Alyssa Buchheit, Lainey Kramer, Madeline Merrill, Addison Wheatley, Dr. Colette Witkowski

Faculty Supervisor: Colette Witkowski
Biomedical Sciences

The Opioid Epidemic has been a pervasive global health issue for many years. In 2021, 60 million people worldwide engaged in non-medical use of opioids, accounting for 20% of drug users. The opiate and opioid class cause more drug-related harm than any other class of drug, resulting in 69% of deaths overall from drug use. Opioids cause a release of endorphins that trigger reward centers in the brain. The body quickly builds a tolerance to this reaction, making them extremely addictive and dangerous, as over-stimulation of mu receptors causes respiratory depression and sometimes death. Abuse can result in chronic health conditions such as lung and bowel injury, seizures, and infections. Factors contributing to the opioid epidemic include over-prescription and strong synthetic opioids in the illegal drug supply. There are ongoing efforts to curb the increasing prevalence of abuse including

making overdose reversal agents more available, beginning initiatives like global legislation, and increasing education to fight both the improper use of opioids and the social inequities and risk factors that impact use.

11. Global Contamination of Water as a Cause of Infectious Diarrheal Disease

Blair Burton, Mia Houston, Emma Liimatta, Olivia Parker, Amanda Brodeur M.D., PhD

Faculty Supervisor: Amanda Brodeur
Biomedical Sciences

The global water crisis refers to the lack of sufficient access to quality water sources for drinking and sanitation purposes. Quality water can be defined as water pure from chemical, physical and biological factors which negatively affect human health. Contaminated water can lead to infectious waterborne illnesses that are associated with diarrheal disease, the eighth leading cause of death worldwide and the second leading cause of death in children under five years of age. Diarrheal disease can lead to severe dehydration caused by the dysregulation of intestinal ion transporters that control fluid and solute levels. Pathogens that contaminate the water are able to infect through unregulated and informal water sources. Fertilizers, human sewage, and animal waste are a few sources of contaminants that may affect water supplies around the world, which may be further exacerbated by natural disasters. There are several organizations seeking to improve global water conditions such as the World Health Organization (WHO) that monitors the global progress of WASH (water, sanitation, and hygiene) related illnesses and World Vision which is the leading nongovernmental provider of clean water in the developing world.

12. Use of Eccentric Muscle Contraction of the Rotator Cuff to Increase Muscle EMG Activity or ER Strength

Sarah Caplis, Amanda Parsons, Cara Hawks

Faculty Supervisor: Sean Newton
Physical Therapy

Shoulder pain has been identified in the general population as the third most common musculoskeletal condition for patients seeking a healthcare professional (Urwin et al., 1998) with a prevalence of 7-10% (Huisstede et al., 2006). Amongst the leading causes of shoulder pain are rotator cuff pathologies and subacromial impingement syndrome. In physical rehabilitation of such conditions there is often a need to strengthen the rotator cuff and surrounding musculature. Historically, rehabilitation programs using exercise-based treatment for shoulder pain have focused on isotonic concentric contraction; however, recent attention has been given to eccentric exercises, which involve lengthening of the muscle during loading rather than shortening (Valier et al., 2016; Wells et al., 2016). Therefore, the following research question is proposed. Can the use of eccentric contraction exercises change the pattern of muscle fiber recruitment of lateral shoulder rotators as measured by the Noraxon surface electromyography (sEMG) or overall strength in external rotation as measured by a dynamometer?

13. Reflections of Former Athletes: A Qualitative Study Exploring the Coach-Athlete Relationship Within Youth Sports

Shane Carlson, Christopher Barber, Joelle Egeland, Ginger Jiang, Zach Norris, Keith McShan
PhD

Faculty Supervisor: Keith McShan
Kinesiology

This study explored the relationship between coaches and athletes in youth sports from the athletes' perspective. This research aimed to help adults who played youth sports reflect on their past coach-athlete relationship experiences. Participants

were ten people (5 males and 5 females) between 18 and 24 years. The mean age was 22 years old. The semi-structured interviews were conducted verbally and lasted between 15-30 minutes. The ethnicities of the group include Caucasians, Asians, and Hispanics. Semi-structured interviews were conducted with participants. The interviews were recorded and transcribed word-for-word, and the results were analyzed using the Dedoose qualitative software. Three main themes emerged: closeness, commitment, and complementarity. Multiple sub-themes also emerged: relatedness improving closeness, personal relationships linking to commitment, and a passionate coach linking to complementarity. Close bonding, reciprocal commitment, and complementary partnerships are essential for a better coach-athlete relationship. These insights offer valuable perspectives for enhancing the youth sports experience.

14. Promoting Positive Perceptions of Aging: College Students' Perspectives on Older Adults' Health and Fitness

Shane Carlson, ACSM-EP, Stacy Goddard, DHeD, MCHES, ACSM-EP

Faculty Supervisor: Stacy Goddard, DHeD, MCHES, ACSM-EP
Kinesiology

As global populations age, projections indicate that older people will soon outnumber young children (WHO, 2011). It becomes increasingly critical to tackle the challenges older adults face in partaking in health/fitness activities. Older adults also face biases and stereotypes that discourage their involvement in recreational and sports communities, negatively affecting their health and well-being. College exercise science majors will in the future work with older adults in fitness, rehab, and community settings. They may help develop policies related to resource availability for older adults and their overall health. This study explores students' perceptions of elders physical abilities/capabilities pre-/post-working to assess health, fitness levels, barriers, and motivation to exercise. After one-on-one assessments and group interactions, college

students may have a more positive view of aging. Students' perceived stereotypes and biases related to older adults will change by instituting these designed activities that facilitate intergenerational interactions. The findings aim to enhance community well-being by addressing the needs and preferences of older adults in health and fitness initiatives.

15. Exploring How Collegiate Athletes Coach-Athlete Relationships With Their Youth Sport Coach Affects Their Sports Experience

Raven Chance, Caden Bolz, Bailey Brashers, Cameron Vaughn, Kian Yari, Keith McShan Ph.D

Faculty Supervisor: Keith McShan
Kinesiology

The role of youth sport coaches and their relationship with athletes today shape the landscape of college athletics. This study explored how current college athletes feel about their relationships with their youth sport coaches and how it affects their level of participation in sports. Research participants consisted of 21 (14 males) team-sport and individual-sport collegiate athletes in their upperclassmen years. Participants were interviewed in person using predetermined questions relating to closeness, commitment, and complementarity with room for follow up questions and answers. Duration of the interviews ranged from 35 minutes to an hour. The main themes discovered during the study were that coach-athlete relationships improved as the coaches' knowledge and mutual respect for players grew, the more relatable and motivational coaches were, and the more the coaches realized players' potential and worked with them to increase their skill sets. In conclusion, an association has been seen that athletes who have a strong relationship with their youth coaches tend to compete at the next level and tend to have more of a lasting passion for the sport.

16. Changes in Hip Flexion Strength, ROM, and Pain With Varied Interventions for Hip Micro-Instability

Zachary Chapis, Scott Wallentine, Andrew Ward, Jacob Storms, Skyler Law, Kirstin Hayes, Grace Evans, Katelynn Schimsa, Christopher Viehmann, Andrew Noh, Sabrina Wright

Faculty Supervisor: Scott Wallentine
Physical Therapy

Research suggests that the interventions of postural education and volitional pre-emptive abdominal contractions (VPAC) are successful treatments to improve both strength and pain-free range of motion in the hip for patients presenting with signs and symptoms of posterior hip microinstability. Goniometric range of motion measurements and visual analog scale pain ratings were taken at the onset of pain and/or limitation for passive supine hip flexion and passive supine internal rotation, prone passive internal rotation, and supine resisted hip flexion. Patients were randomly selected to perform one of three interventions; no intervention, posture modification, or trunk muscle stabilization training (VPAC) for a total of 6 weeks.

17. Educational Intervention and Its Impact on Understanding Weight Bias Among Dietetic Students

Madison Clemens, Kristin Rose, Hillary Roberts, Gretchen George, Kate Burt

Faculty Supervisor: Hillary Roberts
Public Health and Sports Medicine

Weight stigma among nutrition and dietetic students can contribute to reduced quality of future care, leading to decreased patient well-being. Early educational integration of weight-inclusive interventions can cultivate better patient-practitioner relationships and improve patient care. The purpose of this research was to investigate if a weight bias assignment impacted nutrition and dietetic students' awareness and attitudes of body size enrolled in three separate didactic programs. Students from each didactic program completed a pre-survey including

demographic questions and 49 questions from the Fat Attitudes Assessment Toolkit (FAAT). Then, students completed a classroom assignment prompting them to find diverse body image messages and answer three questions. Once the assignment was finished, students completed a post-survey including the same FAAT questions administered in the pre-survey. Results revealed the intervention changed participants' view of how health and body size are related and helped increase understanding of various factors contributing to body size. Although this research suggests a potential intervention for increasing weight-inclusivity in nutrition and dietetics curriculum, more research is necessary.

18. Perfectly Disconnected: Examining the Role of Neuroticism in the Perfectionism Social Disconnection Model

Brooklynn Cook, Olive Baron, Amber Massey-Abernathy

Faculty Supervisor: Amber Massey-Abernathy
Psychology

Studies have demonstrated that social support is a predictor of physical health, longevity, and subjective well-being (Siedlecki et al., 2014; Vila, 2021). Research has examined how various personality traits can influence perceived social support. Neuroticism is a higher-order personality trait characterized by the tendency to endure negative affect and emotional instability, and has been negatively related to perceived social support in previous studies (Barańczuk, 2019; Smith et al., 2016). Perfectionism has been regarded as a multidimensional personality trait that can hinder the perceived availability of social support (Zhou et al., 2013). The Perfectionism Social Disconnection Model (PSDM) suggests that perfectionism traits lead to interpersonal disconnection due to perceiving rejection from others and presenting as cold, hostile, or distant in relationships (Hewitt et al., 2017). While researchers have employed several variables to further examine the interpersonal nature of perfectionism, neuroticism has yet to be considered in the model as a factor that may moderate this

relationship. Results from this study could advance clinical implications for increasing social support appraisal for some perfectionists.

19. The Effects of the Overexpression of RAD51 and DMC1 on Genomic Stability in Tetrahymena Thermophila

Jianna Cox, Joshua Smith

Faculty Supervisor: Joshua Smith
Biomedical Sciences

Two RecA homologs, Dmc1 and Rad51, work to repair DNA double-strand breaks within the cell through the recombination of homologous sections of DNA. Dmc1 works to repair programmed breaks through meiotic recombination, while Rad51 functions to repair breaks caused by DNA damaging agents. Many chemotherapeutics work to form DSBs in cancer cells, attempting to inhibit the cell's growth. A hyper-recombinant phenotype is often seen in cancer cells due to the overexpression of RAD51, leading to drug resistance, the persistence of cancers, and an overall poor patient outcome. In the model organism *Tetrahymena thermophila*, an amacronuclear phenotype is observed at elevated growth temperatures (35 °C), when RAD51 is overexpressed. Further evidence shows that this phenotype is more affected from the change in temperature rather than only the temperature itself. A complication in the elongation of the macronucleus occurs but DNA synthesis is not halted, resulting in a macronucleus containing up to 5 times the normal genetic content. Further study between the two RecA homologs will help elucidate how RAD51 overexpression leads to genomic instability in the cell, providing information that can be used in the optimization of cancer treatments.

20. Can Shoulder Abduction Torque be Temporarily Increased through Cutaneous Input?

Jasmine Crawford, Christopher Schlotzhauer

Faculty Supervisor: Sean Newton
Physical Therapy

Nineteenth Century British surgeon and medical educator Dr. John Hilton observed and described that when a nerve supplies motor signals to a muscle, it receives signals from the muscle receptors, skin, and connective tissue embedded in the muscle. The authors recommend that therapists helping patients with rehabilitation of impaired muscles place their hands on the skin overlying that muscle, with the belief that the tactile input will increase neural output to those muscles. Previous research has shown that brushing the skin overlying muscles transiently affects cutaneous nerve output, implying that brushing might also facilitate muscle recruitment. We plan to measure maximum voluntary isometric contraction (MVIC) of shoulder abduction at a shoulder angle of 30 degrees for three trials after brushing of the skin or application of tape to the same area of the skin. The subjects will have the order of treatment alternated to normalize the potential effect of fatigue from the MVICs. The values of the MVIC's will be averaged, converted to Newton meters by multiplying the force generated by the distance from the lateral tip of the acromion to the lateral epicondyle of the humerus.

21. Concussion Knowledge of Coaches in the State of Missouri

Griffin Dabbs, Kaylie Donahoe, Cierra Brumback

Faculty Supervisor: Tona Hetzler
Public Health and Sports Medicine

This study aimed to evaluate the concussion knowledge level among coaches in Missouri high schools. The Concussion Knowledge Survey (CKS) utilized seven questions from Josh Shroyer's Knowledge Questions and eight questions from the National High School Federation Concussion Recognition Tool 6. Missouri high school coaches in

the Clell Wade Coaches' directory received the CKS. The total score of coaches' knowledge was calculated (9.9/15). There was no significant correlation between years of coaching and the coach's knowledge, $r(513) = 0.042$, $p = .344$, $r^2 = .002$. There was no statistical difference between multisport and single sport coaches, $t(511) = 1.666$, $p = .096$, $d = 0.147$. There was a statistical difference between those who coached male vs. female sports, $t(210) = 2.640$, $p = .009$, $d = 0.366$. Those who coached male sports were found to have a higher knowledge score than female sports. There was no significant difference found, $F(2, 257)$, $p = .567$, $n^2 = .004$ in coaches' knowledge of whether an athletic trainer was present at the high school. Overall, coaches have a similar level of concussion knowledge across MSHSAA-affiliated sports. More research is needed to examine specific knowledge, such as management and return to play.

22. Racial and Ethnic Variations in the Frequency of Bullying Victimization in Adolescence

Sophia Dela Coleta, Rafi Abir, Callie Cochran, Leslie Echols

Faculty Supervisor: Leslie Echols
Psychology

Although it is difficult to pinpoint what exactly leads bullies to choose their victims, ethnic prejudice has been found to facilitate aggression (Iannello et al., 2021). Adolescents may begin exhibiting racial and ethnic prejudice from a young age (Levy et al., 2004). Additionally, bullying victimization has been shown to vary for adolescents from different races and ethnicities (Fuentes et al., 2019). Therefore, the current study seeks to identify variations in the frequency of victimization for adolescents from different racial and ethnic groups. This will be accomplished by examining self-reported victimization and demographic data from two Midwest middle-schools participating in a larger study on peer relationships.

23. SPTBN1 Involvement in Reverse Transcription of HIV-1 in CHME3 Cells

Jeanette Drecker, Dr. Amy Hulme

Faculty Supervisor: Amy Hulme
Biomedical Sciences

Human Immunodeficiency Virus 1 (HIV-1) is a lentivirus that infects CD4+ cells causing Acquired Immunodeficiency Syndrome (AIDS). HIV utilizes host proteins to replicate. A genome wide screen by Brass has shown that the molecular scaffolding protein, SPTBN1, is essential for HIV-1 infection. However, the viral replication steps that SPTBN1 impacts are not known. In previous work, SPTBN1 knockdown delayed HIV capsid uncoating but did not impact viral fusion kinetics. HIV-1 uncoating and reverse transcription occur simultaneously. Therefore, our goal was to analyze the impact SPTBN1 has on reverse transcription of HIV-1 in microglial cells. Knockdown SPTBN1 cells were infected with pseudotyped HIV-GFP cells and exposed to a reverse transcriptase inhibitor at different time intervals to test for completion of reverse transcription. The knockdown cells showed delayed infection but similar completion of reverse transcription as controls. Next, the process of reverse transcription will be examined by performing qPCR on early, intermediate, and late cDNA products. This study will better describe how SPTBN1 influences HIV replication and could be helpful in developing therapeutic targets for HIV-1 patients.

24. The Effects of Cyberbullying Perpetration on Depression

Lydia Earlywine, Lucy Lueke, Colleen Farley, Callie Cochran, Leslie Echols

Faculty Supervisor: Leslie Echols
Psychology

With the gradual rise in popularity of the internet, interacting with others has never been easier. Defined as the intentional use of online platforms to harass, threaten, or intimidate others, cyberbullying has become a pervasive problem among adolescent

populations (Nixon, 2014). Cyberbullying perpetrators may experience heightened stress leading to internalizing problems like depression and anxiety as well as decreased empathy and self-esteem. (Marciano, 2020). This extends to prior findings, which have identified heightened anxiety, depression, and physical health issues among both cyberbullying perpetrators and their victims (Nixon, 2014). Our study seeks to understand the interplay between cyberbullying perpetration and self-reported depression scores, while identifying gender and ethnicity-related differences in self-reported internet aggression. This research utilizes survey data from two Midwest middle schools participating in a broader examination of peer relationships.

25. Natural Lighting and Greenery: Impact of Classroom Environments on Perceived Testing Ability

Nadeau Emma, Alexis Snodgrass, Lilly Whitley, Yulia Bandusiak, Evan Reichard, Adena Young-Jones

Faculty Supervisor: Adena Young-Jones
Psychology

Heightened arousal associated with test anxiety can decrease self-efficacy expectations (von der Embse, 2018). However, self-efficacy can be increased by natural elements (e.g., plants, window-lighting; Hescong et al., 2002; Kuller & Lindsten, 1992), which serve a restorative function and provide psychological, physiological, and cognitive benefits (Benfield et al., 2015). To study the effects of plant, window, and time conditions on test anxiety, psychology students (N = 397) were recruited from an introductory course and exposed to one of six classroom conditions (real plants only, artificial plants only, window only, real plants and window, artificial plants and window, or control). Participants completed a pre- and post-test measure of test anxiety along with a survey packet assessing individual differences and demographics. The present study provides further evidence for the benefits of window lighting; however, the case for plants requires additional study. Universities should consider these benefits when designing institutional

buildings (Mardaljevic, 2021). Future research may examine the relationship between individuals' personal affinity to nature and these observed differences in arousal.

26. Cross-Sectional Study on the Development of Students' Ability to Create Patient Education Pamphlets

Caitlynn Erb, Emily Hein

Faculty Supervisor: Bonnie Slavych
Communication Sciences & Disorders

This presentation will report on the results of a study aimed to determine the level at which graduate-level Communication Sciences and Disorders (CSD) students are prepared to create and present patient education materials (PEMs). Participants in this study were at least 18 years old and in their first semester of study in the Missouri State University Speech-Language Pathology graduate program. This was phase one of a longitudinal study into the incidental learning effects of health literacy for CSD students. Health literacy is the degree to which a person can find, understand, and use information to inform health-related decisions. Students enrolled in CSD 720 Voice and Upper Airway Disorders were instructed to create a patient-education pamphlet for a voice disorder that contained the following: (a) diagnosis and its etiology, (b) possible treatments, and (c) additional resources. The Suitability Assessment of Materials (SAM) and Patient Education Materials Assessment for Printable Materials (PEMAT-P) were used to assess the health literacy of PEM.

27. Use of Social Media as a Marketing Tool for Data Analytics and Statistics in Nutrition and Dietetic Programs of Midwest

Rochelle Etienne, Natalie Allen, MEd, RDN, LD,
Sarah Murray, PhD, RDN, LD

Faculty Supervisor: Natalie Allen
Public Health and Sports Medicine

Research justifies using social media as a marketing platform. College-aged students turn to social media when making decisions about where to attend and

what to study. This study explores the use of social media in Nutrition and Dietetic programs across the Midwest and analyzes deeper data from one public university. Data for the study was collected through observation of social media participation among undergraduate and graduate Nutrition and Dietetic programs within 7 midwestern states. Of the 27 programs observed, 12 had social media pages, 3 had Student Dietetic Association pages only, 3 had sports nutrition pages only, and 9 had no presence. Facebook(FB) and Instagram(IG) were the 2 platforms widely utilized. Analytics indicate younger audiences utilize IG, whereas older audiences utilize FB. IG consistently demonstrated a higher share rate. Additionally, having a combination of pictures and reels increases engagement and reaches a wider audience on both platforms. Social media presence promotes academic program features and engages prospective students making it a valuable marketing tool. Therefore, a targeted social media campaign can be an effective method to recruit and retain students.

28. Hypochlorous Acid Antiseptic: Impact on Osteoblasts and Pseudomonas Aeruginosa

Cristina Flaquer Fusté, Emily Nelson, Cole Brodeur, Mayeen Choudhury, Taylor Powell, Madison Gregory, Ryan Moon, Patrick Brooks, Joshua Smith, and Amanda Brodeur

Faculty Supervisor: Amanda Brodeur
Biomedical Sciences

Hypochlorous acid (HOCl), a natural antimicrobial, has been used for its potential to reduce infection in compound fractures without affecting osteoblast biology. Cultured osteoblasts were exposed to different HOCl concentrations to determine survivability and proliferation. Optimal osteoblast survivability was found at 40ppm HOCl, with media proving more supportive than HEPES and PBS at room temperature. This study suggests that HOCl supports short-term osteoblast proliferation, influenced by incubation solution buffering. The most common pathogens associated with osteomyelitis following compound fracture are *E. coli*, *Pseudomonas Aeruginosa*, and *Staphylococcus*

Aureus. To examine antimicrobial effects of HOCl, this work looked at the ability of HOCL to inhibit growth of *P. aeruginosa*. Bacterial cultures were exposed to HOCl and remaining colony forming units were observed. Overall, this study contributes to the growing body of research that hypochlorous acid may be safe as an irrigation solution for osteoblasts, while maintaining its antimicrobial properties.

29. The Effect of Lower Extremity Orthotics as a Treatment of Low Back Pain - A Systematic Review

Kate Foster, Charles Adams, Logan Lynch

Faculty Supervisor: Patricia Cahoj
Physical Therapy

Introduction: This systematic review looks at the relationship between foot orthotics and/or inserts and low back pain.

Methods: The following systematic review looks at studies that tested the correlation between low back pain and foot orthotics/inserts. The following was the inclusion criteria: non-specific low back pain with no history of lumbar surgery, lower extremity orthotics such as knee-ankle-foot orthotics, ankle-foot orthotics, full-length shoe inserts, no prior treatment with lower extremity orthotics or inserts, age < 64, articles published between 2000 to 2023, and the participants had to have at least three weeks of treatment. The following was the exclusion criteria: age 65 or older.

Results: The articles that met the exclusion and inclusion criteria show that foot orthotics can reduce low back pain and improve the quality of life with patients who fit the criteria.

Discussion: More research needs to be done in the future to solidify this conclusion and improve our knowledge of this relationship. Based on the selected articles and the data collected a compelling conclusion can be found.

Conclusion: The administration and wearing of shoe orthotics/inserts have a significant effect on the reduction of low back pain.

30. Determining the Role of SPTBN1 in HIV-1 Uncoating

Callie Fry, Marc Havlicek, Amy Hulme

Faculty Supervisor: Amy Hulme
Biomedical Sciences

HIV-1 is the virus that causes acquired immunodeficiency syndrome (AIDS), and currently, there is no cure once an individual is infected. The development of new drugs targeting HIV-1 replication steps is essential for keeping viral levels at a minimum and to prevent further transmission. An attractive replication step for new drug targets is viral capsid uncoating, where the virus loses the protein structure encapsulating the genome. The exact mechanism of capsid uncoating is unknown; however, a few host-cell proteins are of interest for further research specifically, SPTBN1. Recent studies have shown a significant decrease in viral infectivity when this protein is knocked down, yet its role in uncoating has not been characterized. Preliminary data revealed a delay in early time points of uncoating in vivo when SPTBN1 was knocked down. Using the cyclosporine washout assay, we aim to determine the role of SPTBN1 in HIV-1 uncoating. We anticipate that understanding uncoating kinetics and the role of host cell factors will open a door for the development of new capsid inhibitors.

31. Acute Exercise and its Influence on Production of Integral Proteins Involved in the Suppression of Alzheimer's Disease

Victoria Galante, Scott Zimmerman

Faculty Supervisor: Scott Zimmerman
Biomedical Sciences

Alzheimer's Disease (AD) is categorized by the build-up of amyloid-beta (AB) plaques in neurons, leading to a decline in functionality and eventually cell death. Targeted pathways to slow disease progression reflect the Amyloid Cascade Hypothesis in which unfavorable enzymatic cleavage of amyloid precursor protein leads to a build-up of its cleaved products. Long-term exercise is an aid in

slowing the progression of AD via upregulation of proteins involved in the AB clearance pathway, including neprilysin, LDL receptor related protein 1, and insulin degrading enzyme. Physical exercise has been shown to upregulate proteins which aid in synaptic regeneration and health such as brain-derived neurotrophic factor and heat shock protein 70. Since data reflecting acute exercise are limited, we wanted to assess the influence of acute exercise in the production of proteins that play a role in slowing progression of AD. Mice were randomly assigned to sedentary, 1 day, and 7-day regimens using a treadmill. Brain tissue samples were collected and analyzed via qRT-PCR and ELISA. We expect to show acute exercise upregulates proteins involved in AB clearance and degradation, suggesting an acute exercise regime can slow AD disease progression.

32. Examination of Nonverbal IQ and the PEAK Relational Training System in Children With Autism

Paige Hemming, Mikayla Campbell, Matthew Coyle, Autumn McKeel, Dana Paliliunas, Jordan Belisle

Faculty Supervisor: Dana Paliliunas
Psychology

Studies have documented floor effects and low intelligence quotient (IQ) scores for autistic individuals (ASD; Baio et al., 2018; Dixon et al., 2014). Utilizing nonverbal IQ tests may reduce these recurrent findings. This study examines the relationship between measures of cognitive ability in autistic children. The Primary Test of Nonverbal Intelligence (PTONI; Ehrler & McGhee, 2008) was used as a measure of participants' cognitive ability, nonverbally, and the Promoting the Emergence of Advanced Knowledge (PEAK) Comprehensive Assessment (PCA; Dixon, 2019) was used as a standardized measure of cognitive and language ability as linked to the participants' curriculum. Participants were 3-16 years old, diagnosed with ASD, and receiving services at participating agencies. Participants were administered the PTONI and PCA data were obtained from agency records.

The results will discuss the future use of nonverbal IQ assessments as representing cognitive ability with this population. The investigators are unaware of studies examining the use of nonverbal IQ to measure cognitive ability as relating to PEAK. This study will contribute to literature investigating how psychometrics relate to cognitive ability for individuals with autism.

33. Measuring the Effect of a Brief Values Intervention on Values-Driven Relational Responding to Support Unhoused Persons

Logan Huckstep, Madelyn Brutton, Emily Hermann, Jaelyn Compton, Ryan Moser, Breanna Lee, Dana Paliliunas, Jordan Belisle

Faculty Supervisor: Jordan Belisle
Psychology

Houselessness remains a prominent issue throughout the United States. Those who are unhoused often face biases and microaggressions (Torino & Sisselman-Borgia, 2016), such as being subjected to labels such as lazy, dirty, addicted, and criminal, which may impact their access to social support (Ruff Institute of Global Homelessness, 2017). The present study sought to examine relations among a person's identified values and helping behaviors for unhoused individuals using a Relational Density Theory framework (Belisle & Dixon, 2020). Participants completed a task using a multidimensional scaling procedure to analyze the relationship among stimuli at pre- and post-test, including their reported values, behaviors that support these values, and helping behaviors that support those who are unhoused. Participants also completed a self-report measure of their willingness to help this population. Results are interpreted in terms of the strength of relations among values and helping behavior stimuli and reported willingness to engage in behaviors that support individuals who are unhoused. We discuss avenues for future research that could be useful to guide initiatives to improve support for individuals without housing.

34. Microvascular Endothelial Permeability Coefficient Regulated by Purinergic P2Y2 Receptor

Dana James, Jianjie Wang

Faculty Supervisor: Jianjie Wang
Biomedical Sciences

As a semi-permeable membrane, the endothelium mediates vascular exchange between the blood and target tissue. Prolonged inflammation is involved in processes of broad disorders and diseases such as diabetes, cancer, and vasculitis. Inflammatory mediators have a profound effect on increasing endothelial permeability. However, the direct mechanism of change in permeability to solutes is not fully understood. It has been shown in vivo that the activation of the P2Y2 receptor (P2Y2R) in microvascular endothelial cells (MEC) increases permeability. The goal of this research was to determine the molecular mechanism of P2Y2R-induced increase in permeability in MEC. Wild type (WT) and P2Y2R knock out (KO) primary murine MEC were used to measure permeability response to P2Y2R agonist, uridine triphosphate. Transwell supports, fluorescence labeled-dextran (70 kD), and spectrophotometer were used in permeability experiments. Preliminary data has been collected and is currently undergoing statistical analysis. Identifying the mechanistic involvement of MEC P2Y2R in permeability change will further the understanding of vascular permeability response during inflammation and will aid in the treatment of a broad group of disorders.

35. Measures of Heart Rate Variability: Reliability and Relation to BIS and BAS Motivation Systems

Arshpreet Kandola, D. Wayne Mitchell, Ph.D.,
Melissa D. Fallone, Ph.D.

Faculty Supervisor: D. Wayne Mitchell
Psychology

Heart rate variability (HRv) has been found to be positively correlated with cognitive functioning, emotional stability, and mental health resilience.

The calculation of HRv varies across studies as well as the time period used to sample HRv (e.g., 60 minutes to 24 hours). The two primary measures of HRv used in research are SDNN (the standard deviation of the time between normal inter-beat-intervals in ms) and RMSSD (the root mean square of the difference between successive inter-beat-interval in ms). The purpose of this study was to examine the stability and reliability of the SDNN and RMSSD calculations assessed over two 60 second time periods and to assess the relationship between these calculation methods with motivation using the BIS and BAS reinforcement sensitivity scales. Fifty adults served as participants. Both SDNN and RMSSD were found to be stable from time one to time two, however, RMSSD was found to be reliable ($r = .76$) whereas SDNN was not ($r = .28$). RMSSD was found to be correlated in the hypothesized direction with BIS ($r = .36$) and BAS ($r = -.39$). The theoretical impetus of HRv as an indicator of motivation and suggested time-based sampling periods to determine HRv will be discussed.

36. Body Appreciation: A Qualitative Study Among University Students

Krishna Kansara, Ashleigh Clark, Sahith Baddam,
Andrew Falk, Keith McShan PhD

Faculty Supervisor: Keith McShan
Kinesiology

Body image is defined by Paul Schilder (1935) as a developed cognitive sketch of oneself. The aim of this study is to explore what influences body appreciation (e.g., holding favorable attitudes towards one's body) among a group of college students. Participants were college students ($n = 6$ males) aged 20 - 32, this group commonly experiences significant transitions and pressures related to body and lifestyle choices. Semi-structured interviews were conducted and recorded within three weeks using Otter.ai software, transcribed verbatim, and analyzed using Dedoose software. Results indicated mixed findings regarding participants attitudes towards their bodies. The themes that were identified were body positivity and

body dissatisfaction. There were three subthemes for body positivity (engaging in daily exercise, motivational factors, and some confidence). There were two subthemes of body dissatisfaction (external pressures and injury). In conclusion, students who have adopted a more positive view of their bodies have shown more positive outcomes related to their bodies, who has poor view it shown more negative outcomes toward their physical health.

37. Effect of P2Y2 Receptors on in Vivo Leukocyte Behavior Under Acute Inflammation in Transgenic Male Mice

Corynn Knight, Jianjie Wang

Faculty Supervisor: Jianjie Wang
Biomedical Sciences

P2Y2 receptors (P2Y2R), G-protein coupled receptors, play a role in various functions in the body including initiating inflammation and immune response. Previous research demonstrated P2Y2R prevention in leukocyte movement under non-inflamed conditions. This research aims to determine the importance of P2Y2R in leukocyte-endothelial interactions in vivo under acute inflammation. Intravital Microscopy (IVM) is used to observe hemodynamic activity in cremaster venules of male mice. Images are quantified to obtain baseline data of “normal” interactions between leukocytes and endothelial cells in sham group of experiment. Leukocyte-endothelial interactions were observed after inducing localized acute inflammation with lipopolysaccharide (LPS). We expected an increase in recruitment, rolling, and adhesion of leukocytes of LPS treated wild-type mice compared to baseline and LPS treated P2Y2R knockout mice. This could suggest P2Y2R regulates leukocyte responses during inflammation. We anticipate that an increased grasp on the P2Y2R role in inflammation will improve understanding of immune response initiation. Implications of these findings have the potential to be in clinical, therapeutic, and research applications.

38. Sowing Solutions: Combating Food Insecurity

Tai Le, Elizabeth Simcoe, Reagan Stange, Kailey Taylor, Amanda Brodeur, M.D., Ph.D.

Faculty Supervisor: Amanda Brodeur
Biomedical Sciences

Food insecurity, defined as lacking access to safe and nutritious food for growth, development, and a healthy life, is a major global health concern. Food insecurity's most devastating effect is malnutrition, which leads to the person being vulnerable to many diet related diseases. People who live in regions affected by conflicts are most impacted by food insecurity, with other major causes being climate change, inequality, and natural disasters. An estimated 783 million people worldwide are chronically hungry, and at least 44 million Americans faced food insecurity in 2022. Global agencies, such as the World Food Programme, are working together to end world hunger by 2030. Other organizations, such as Convoy of Hope and Springfield Food Pantries, are ensuring food security locally. Participating in such organizations, as well as donating to global agencies, are ways citizens can actively combat food insecurity. Research into GMOs and using AI to predict trends in food insecurity worldwide is currently happening, all with the hope to eliminate hunger.

39. Tissue and Sex-Dependent Effects of A-to-I Editing and Innate Immunity in Mice

Skyler Lee, Kelsey Kendrick, Claire Nichols, Christian Rivas, Randi Ulbricht

Faculty Supervisor: Randi Ulbricht
Biomedical Sciences

Innate immunity is the first line of defense during a viral infection. Adenosine-to-Inosine (A-to-I) RNA editing by ADAR1 (Adenosine Deaminase Acting on RNA 1) helps identify self from foreign RNA and prevent immune activation. Immune activation in females is greater than in males under similar acute inflammatory conditions. Our purpose is to determine if editing by ADAR1 in heart, brain, and skeletal muscle is sex specific. We activated the

immune system with LPS and sequenced individual RNAs to measure editing. We found that editing in the heart and brain was not sex-specific. However, in skeletal muscle RNA editing of FLNB was increased in males but had no significant effect in females. FLNA editing was unaffected by the treatment of LPS but showed a sex-dependent difference in editing. These results show that the effects of inflammation may selectively affect the function of FLNB in skeletal muscle. Our work suggests that the impact of sex on inflammatory factors may also indirectly affect the rate of RNA editing of select transcripts in select tissues. This research will further our knowledge on A-to-I RNA editing and its impact on the body's innate immune system and related inflammation and autoimmune diseases.

40. Characterizing the Role of RAD23 in UV Resistance in *Tetrahymena thermophila*

Emma J. Liimatta, Emily M. Schmoll, M.S., Archana Shrestha Ph.D., Ariel Carpenter M.D., and Joshua J Smith Ph.D.

Faculty Supervisor: Joshua Smith
Biomedical Sciences

When Nucleotide Excision Repair (NER) is nonfunctional, such as in the genetic disease Xeroderma Pigmentosum (XP), the risk of skin and eye cancer increases >1000 fold because DNA damage caused by UV radiation is unable to be repaired. The goal of this study is to determine the role of rad23 in UV resistance in *Tetrahymena thermophila*. This is the first time rad23 has been studied in *T. thermophila* and previous rad23 knockdowns in other organisms have shown UV sensitivity rather than resistance. In this study, rad23 knockdown was confirmed by qRT-PCR, and UV resistance was confirmed by UV survivability assays. Southern blot immunodetection techniques assessed levels of DNA damage in UV treated rad23 knockdown cells and showed decreased repair. Advancing knowledge of NER, XP and RAD23 will eventually lead to the development of treatments for Xeroderma Pigmentosum disease.

41. Language in Therapy: Examining Affect and Willingness Across Common Terms in Acceptance and Commitment Therapy (ACT), Cognitive Behavioral Therapy (CBT), and Applied Behavior Analysis (ABA)

Joshua Luna, Madelyn Brutton, Logan Huckstep, Vinnie Orlando, Caroline Stuckey, Zoie Horton, Blayne Stemple, Ryan Moser, Jordan Belisle, Dana Paliliunas

Faculty Supervisor: Jordan Belisle
Psychology

Previous research has found that some behavior analytic terms evoke negative emotional responses in laypersons (Critchfield et al., 2017). Gaining a further understanding of the affective experience that individuals may experience when encountering jargon is important as it may negatively impact an individual's willingness to engage in related therapeutic services. The following study utilized the Affect and Willingness Scale to capture an individual's affective experience and their willingness to engage with key terms related to ACT, CBT, and ABA. A generative artificial intelligence tool created the initial list of terms. Subsequently, a highly qualified clinical expert from each area reviewed and selected a set of 10 terms based on their relevance and applicability. All participants in the study were college students attending a mid-western university. Each participant was presented with a series of terms related to the above fields and asked to rate how each term made them feel (positive or negative) and how willing they were to engage with each term. Results showed high positive and willingness to engage in ACT consistent concepts and less willingness to engage in second and third-wave behavior therapy concepts.

42. The Effects of Therapeutic Cupping on the Amount of Skin Deformation of the Quadriceps

Marissa Luney, Makenzie Maples, Micaela Piacentino, Ashlyn Towery

Faculty Supervisor: W. David Carr
Public Health and Sports Medicine

The amount of skin deformation that occurs during myofascial decompression inside a cup has yet to be studied. Therefore, the objective of our study was to examine how the amount of skin deformation changes from person to person with a standardized pressure during myofascial decompression. Our two questions were: (1) Is there a difference from person to person in how much skin deformation occurs in myofascial decompression under a standardized pressure? and (2) What factors affect skin deformation? Our methods included collecting data from live subjects. We examined if certain demographics change the amount of skin deformation under the cup in each individual (i.e., height, weight, age, gender, BMI, body fat percentage, skin temperature, skinfold measurement). Measurements were taken through self-reporting, bioelectrical impedance scale, infrared thermometer, and skin calipers. Then, we began our series of cupping for 6 minutes, with pictures taken every two minutes. The cups maintained a constant pressure of 260 millimeters mercury throughout. A measuring tape was attached to the cup to allow an accurate measurement of skin deformation within the cup. Results are currently pending and conclusions will be made based on results.

43. Dual-Task Activities in Concussion Management

Brandon MacTrinder, Bethany Davis

Faculty Supervisor: W. David Carr
Public Health and Sports Medicine

Introduction: Standard concussion assessments measure single-task activities such as balance or cognitive function. Single-task activities do not fully capture the challenges of sports alone. Dual-task

strategies is performing two single-task activities together. Dual-task strategies are used post head trauma and recovery. No previous studies have explored how athletic trainers (ATs) use dual-task strategies. It was our objective to gain information on the use of these strategies by ATs in the collegiate setting. Methods: A survey was developed through Qualtrics, reviewed by experts on the subject and randomly sent out to 2,000 collegiate ATs through the National Athletic Trainers' Association website. The survey asked questions assessing dual-task strategy use, knowledge, education, and comfort when managing concussions. Results: Fifty-two subjects met the criteria. No statistically significant differences were found; however, when we compared genders on comfort scores, males rated themselves slightly higher in each category.

Discussion: Many stated they felt moderately to very comfortable using dual-task strategies while others reported less comfort. We believe the difference in comfort may be related to gender differences in confidence with males often reporting higher levels than females. Further research must be conducted on the subject.

44. Investigating the Effects of UTP-Induced P2Y2 Receptor Activation and Inflammation on Insulin Resistance in Mice

Jamila Makhoulfi, Noah Adcock, Madeline Merrill, Eric Battelle, Tai Le, Randi J. Ulbricht Ph.D., Jianjie Wang Ph.D.

Faculty Supervisor: Randi Ulbricht
Biomedical Sciences

Insulin resistance is the impaired ability to use insulin to take up blood glucose and is associated with many clinical conditions including type 2 diabetes and obesity. While the cause of insulin resistance is unknown, it is linked to inflammation. Activation of the P2Y2 receptor potentiates an inflammatory response under obesity and obstructs glucose metabolism, resulting in insulin resistance. This research investigates the effects of P2Y2R on the signaling of the insulin receptor (INSR) and glucose uptake during acute inflammation.

Inflammation was induced in male and female mice that were also treated with UTP to activate the P2Y2 receptor. We performed glucose tolerance testing (GTT) to measure response to glucose. We measured the expression of the insulin receptor and glucose transporter (GLUT4) in skeletal muscle and adipose tissue. Glucose tolerance of female mice is not affected by P2Y2R, while LPS-treated male WT mice have reduced glucose tolerance. We expect GLUT4 and INSR expression to increase in female mice tissues compared to male mice. This research investigates the mechanism of insulin resistance development and provides important insights into potential sex-specific targets of type 2 diabetes therapy.

45. Evaluating the Influence of an Introductory Online Intuitive Eating Program on Measures of Body Acceptance

Megan Martin, Jaime Gnau, MS, RDN, LD, CHES

Faculty Supervisor: Jaime Gnau
Public Health and Sports Medicine

A larger goal of Intuitive Eating (IE) is body acceptance (Bryne, 2021). Research shows a link between intuitive eating and body image concepts involving body acceptance, dissatisfaction, and preoccupation (Keirns & Hawkins, 2019). Dieting disrupts the body's natural hunger signals that indicate fullness and satisfaction and increases the incidence of disordered eating patterns, food cravings, body dissatisfaction, and reduced self-esteem (Bacon & Aphramor, 2011; Pearl 2018; Tylka et al, 2014). This research aims to assess how introduction to IE practices via an online, module-based program affects body acceptance in participants.

The two-part program consisted of an online community of 17 participants. Each series consisted of five weekly modules containing videos, discussion prompts, activities, and IE counselor interviews.

Data is assessed using pre and post program surveys using validated BI-AAQ and IE Scale-2 tools. Data obtained may aid in assessing body acceptance and how it can be an integrative part of intuitive eating

practice. Data from this research is vital to provide evidence-based information on the efficacy of web-based programming and the influence of introductory IE practices on body acceptance measures.

46. Examination of the Relationship Between Socioeconomic Status (Measured by Income, Education, and Occupation) and the Prevalence, Management, and Outcomes of Cardiovascular Hypertension in American Populations

Madeline Merrill, Dr. Amanda Brodeur

Faculty Supervisor: Amanda Brodeur
Biomedical Sciences

There is an intricate relationship between socioeconomic status (SES), measured by income, education, and occupation, and cardiovascular hypertension in American populations. Black and Hispanic individuals exhibit higher prevalence rates of hypertension, with notable burdens of diagnosed cardiovascular disease (CVD). These disparities are exacerbated by socioeconomic factors, as poverty amplifies diagnosed CVD morbidity among Hispanic populations and non-Hispanic Black groups. Education also plays a critical role in mediating the SES-CVD association, with interventions targeting modifiable risk factors such as hypertension, body mass index (BMI), and diabetes potentially mitigating CVD inequalities. Additionally, occupational physical activity (OPA) is linked to increased CVD risk, particularly among older workers, highlighting the importance of considering workplace factors in CVD prevention strategies. Addressing these multifaceted challenges is essential for reducing health inequities and improving cardiovascular outcomes across diverse American populations.

47. Evaluating Shifts in Worldview for Students Engaged With Science of the Noosphere Master Class Through Relational Density Theory

Amanda Middleton, Lauren Hutchison, Sage Gibbons, David Sloan Wilson, Beth Hawkins, Ellen Rigsby, Jordan Belisle, and Dana Paliliunas

Faculty Supervisor: Jordan Belisle
Psychology

Relational density theory provides a basis for assessing the relational mass and volume between networks (Belisle & Dixon, 2020). This can be applied to several topics, including worldviews surrounding the science of the Noosphere, to show relatedness and change in stimulus relations (Vidal, 2020). The present study sought to assess shifts in worldview of participants in a master class on the Science of the Noosphere. Specifically, the relatedness of different worldviews were mapped by using a multidimensional scaling procedure. To achieve this, relational density was determined through a stimulus-stimulus pairing procedure, in which each of the worldview stimuli presented to the participants was paired with each other stimulus. During the procedure, participants rated the relatedness of each set of stimuli. Data from the procedure were used in a multidimensional scaling procedure creating a geospatial representation to demonstrate the relatedness of the stimuli. The procedure was completed twice; at the beginning of the course and at the conclusion of the course. Findings appear to indicate that over the course of participation in the Science of the Noosphere course, perceptions of worldviews did indeed change in relation to each other.

48. Global DNA Methylation in a CRISPR Cas9 Mediated Knockout of EBP1

Summer Moore, Christopher Lupfer, Ph.D., Randi J. Ulbricht, Ph.D.

Faculty Supervisor: Randi Ulbricht
Biomedical Sciences

ErbB3-binding protein 1 (EBP1) helps regulate gene expression through various epigenetic modifications and is extremely crucial for embryonic development.

EBP1 dysfunction is a known cause of recurrent miscarriages and other developmental diseases. In this study, we first conducted a complete knock-out of EBP1 via CRISPR/Cas9 in Human Embryonic Kidney (HEK-293) cells. After a successful knockout is complete, we will isolate and measured the genomic DNA methylation levels. It is hypothesized that a knockout of EBP1 will cause an increase in global DNA methylation levels due to its interactions with DNMT1, a DNA methyltransferase. This is the first study to conduct an EBP1 knockout in a human model and see the effects on global DNA methylation. In the future, EBP1 will be knocked out in stem cells in order to view the effect of EBP1 on regulation of DNA methylation during differentiation. We anticipate this study to illuminate the molecular mechanism that EBP1 plays in embryonic development and developmental diseases.

49. Relational Density and Willingness to Engage With International Students in a United States Sample

Ryan Moser, Jordan Belisle, Dana Paliliunas

Faculty Supervisor: Jordan Belisle
Psychology

Universities in America are some of the most diverse areas in the country, offering ample opportunities for intercultural interaction. Positive cross-cultural interaction provides students with invaluable skill development and being culturally literate that will benefit them in school and their future career, but also benefit the building of a more inclusive society (Fozdar 2016). Relational Density Theory (RDT; Belisle & Dixon, 2020) may allow for modeling of relational perspectives of US college students towards international students from countries that frequently send students to study in the US. In the present study, participants completed a multidimensional scaling procedure relating individuals from those countries with positive and negative approachability characteristics. Participants then completed a willingness scale, rating their willingness to engage in interaction with individuals from each of the countries. Results showed strong

preference to engage with other domestic students rather than with international students and suggest higher density towards countries geographically located in North America, and higher density among countries located outside of North America. These findings show a good baseline for future research.

50. Effect of Hypochlorous Acid on Staphylococcus Aureus: In the Context of Treating Compound Fractures

Emily Nelson, Andy Burns, Caleb Dodd, Tate Reed, Kaden Wilson, Madison Gregory, Ryan Moon, Patrick Brooks, Joshua Smith, and Amanda Brodeur

Faculty Supervisor: Amanda Brodeur
Biomedical Sciences

Compound fractures are susceptible to bacterial infection due to environmental exposure. Irrigation of the fracture is a common method to prevent infection. There are not yet clinical practice guidelines in terms of the type of irrigation solution to be used. The goal of this work is to explore if hypochlorous acid irrigation solution is effective at killing bacteria, while being non-toxic to human osteoblasts, and to determine the therapeutic window for use of hypochlorous acid in irrigation of compound fractures. Hypochlorous acid is commonly used in cleaning solutions, wound treatment, and is naturally produced by the human body as part of a natural immune response. Some sources in the literature suggest that hypochlorous acid may cause cellular damage and change the way in which the cell functions. This investigation seeks to determine the most effective concentration of hypochlorous acid at inhibiting growth of Staphylococcus Aureus, one of the most common bacterial infections following compound fracture repair.

51. Effect of Hypochlorous Acid on Escherichia Coli: In the Context of Treating Compound Fractures

Emily Nelson, Cristina Flaquer Fuste, Alyssa Fonseca, Katie Helm, Maya Horn, Chris Wells, Madison Gregory, Ryan Moon, Patrick Brooks, Joshua Smith, and Amanda Brodeur

Faculty Supervisor: Amanda Brodeur
Biomedical Sciences

Bone infection, or osteomyelitis, is a devastating possible outcome of compound bone fractures. A new possible surgical antiseptic is starting to peak surgeon's interest: hypochlorous acid. The goal of this work is to explore if hypochlorous acid irrigation solution is effective at killing bacteria, while being non-toxic to human osteoblasts and osteoclasts, and to determine the therapeutic window for use of hypochlorous acid in irrigation of compound fractures. Hypochlorous acid is naturally produced as part of a natural immune response and is an excellent antiseptic on surfaces and FDA approved for use in periorcular skin treatment and dental spray application. Some sources in the literature suggest that hypochlorous acid may cause cellular damage and change the way in which the cell functions. This investigation seeks to determine the most effective concentration of hypochlorous acid at inhibiting growth of Escherichia Coli, a model organism for pathogenic gram-negative bacteria.

52. Sensory and Cognitive Experiences After Covid-19 Infection: A Pilot Study

Gracelin Nelson, Monique Arroyo, Lyric Arvizu, Carly A. Yadon

Faculty Supervisor: Carly Yadon
Psychology

Covid-19 infection has been associated with a wide variety of acute and sometimes lingering effects, even in young and healthy individuals (Rubel et al., 2020). The longer-term effects of Covid-19 on sensory function, cognitive function, and sleep in a

college student sample are not well understood. This pilot study aims to further the literature in this area. One hundred sixty-three participants met inclusion criteria for the study. Participants completed a Qualtrics survey that contained detailed questions about any history of Covid-19 infection(s), demographic questions, and five questionnaires that addressed stress, sensory gating, cognition, sleep quality, and sensory inquiries. There were significant weak correlations between overall Covid severity and scores on the SQS, indicating that as Covid severity increased, sleep quality decreased, and cognitive failures increased. Questionnaire responses also suggested differences between participants in sensory processing, perceived stress, sleep quality, and cognitive failures. Covid-19 has the potential for long-term consequences, even in a college student sample (Rubel et al., 2020). The physiological, sensory, and cognitive effects of Covid-19 must be investigated further on larger sample sizes.

53. Aging Bias Among SLP Graduate Students

Jacob Ogle, Taya Doten

Faculty Supervisor: Bonnie Slavych
Communication Sciences & Disorders

Implicit biases, or the unconscious prejudices we hold against certain groups, are pervasive across professional domains. In the field of speech language pathology (SLP), understanding and acknowledging such biases are paramount to ensuring equitable care for all patients. As healthcare professionals, patients will depend upon SLPs for assistance with making informed decisions about their care. Given that these biases form during the early stages of our lives and are shaped by education, media, and other influences, investigating the presence and extent of such biases among students is essential. This project surveyed SLP graduate students using a sociodemographic questionnaire, the Knowledge of Aging Quiz Combined, and Harvard's Age IAT (Implicit Association Test). Based on SLP's connection to adult and geriatric populations, it is important to identify any underlying biases to provide education

prior to entering the workforce in order to implement effective treatment to those of all backgrounds. Awareness of aging bias is the first step in counteracting and correcting it to provide equal and effective care to all populations.

54. Is the 5xSTS or the FSST a Better Predictor of Performance on the Functional Gait Assessment?

Alex Orr, Haley Schroeder, Wyatt Tindall, Megan Amos, Emily McDaniel, Brittany DeMoney

Faculty Supervisor: Barbara Robinson
Physical Therapy

This is a comparative study between the Four-Square Step Test and the Five Time Sit to Stand Test to determine which assessment more accurately predicts scores on the Functional Gait Assessment. It is known that fall prevention is critical in maintaining the health and independence of older adults. One way to prevent falls is to improve efficiency with testing measures, allowing for swift implementation of an individualized rehabilitation program. Being able to rely on a small number of tests, as opposed to a battery of tests, will also eliminate extraneous variables such as testing fatigue which can alter results. Accurately predicting outcomes with a select few tests may reduce unnecessary spending by insurance companies; this in turn improves healthcare accessibility for all patients. Since both tests have predictive value and have a short administration time, it may be beneficial to complete both tests to gain insight on fall risk in older adults.

55. Enhancing Instruction of Phonetic Transcription: IPA Dice Game

Alexa Pappas, Hannah Crane, Kaitlyn Coffman

Faculty Supervisor: Sarah Lockenvitz
Communication Sciences & Disorders

This study will investigate the thoughts and experiences of participants using a game to enhance learning of International Phonetic Alphabet (IPA) transcription. Research activities will include

surveying and/or a focus group and observation of Missouri State University students within the Communication Sciences and Disorders (CSD) and/or speech-language-pathology (SLP) program. The participants will participate in/play the IPA Dice Game for a set time. The participants will then share their thoughts and learning experiences upon game completion. Completion of data collection and analysis is forthcoming.

56. The Impact of Social Anxiety on Help-Seeking Behavior Among Victimized Adolescents

Ishva Patel, Nicolas Loke, Callie Cochran, Leslie Echols

Faculty Supervisor: Leslie Echols
Psychology

Adolescents who have social anxiety frequently refrain from seeking assistance when bullied because they are afraid of being judged negatively (McDonagh et al., 2022). There is a pervasive pattern of avoidance and reluctance among socially anxious adolescents to seek help due to fears of judgment and social scrutiny (Alves et al., 2022). Previous research suggests that victims of bullying have heightened levels of embarrassment which prevents them from seeking support from peers, parents, or school authorities (Radez et al., 2020). The purpose of this study is to explore how social anxiety affects help-seeking behaviors in victimized adolescents. To examine this relationship, middle school students participating in a larger study on peer relationships from two Midwest schools completed a questionnaire that identified symptoms of social anxiety, bullying victimization, and help-seeking behaviors.

57. Studying Localization of Spectrin B non-erythrocyte 1 and Actin in CHME3 Cells to Better Understand HIV Replication

Rachel Pecka, Amy Hulme

Faculty Supervisor: Amy Hulme
Biomedical Sciences

Human immunodeficiency virus (HIV) attacks the immune system by infecting and replicating in CD4

cells. One of the components HIV is known to utilize for replication is the actin cytoskeleton but the way HIV hijacks actin for replication post-viral fusion isn't fully understood. A 2013 study conducted by Dai et al., found that lowering expression of cellular protein Spectrin β non-erythrocyte 1 (SPTBN1) in macrophages led to HIV-resistant cells along with partial depolymerization of the actin cytoskeleton. The goal of our study is to investigate the role of SPTBN1 in the early stages of HIV replication and localization within CHME3 microglial cells. Through fluorescent microscopy, we were able to visualize SPTBN1 and actin structure on CHME3 cells. Results indicated that there is colocalization between SPTBN1 and actin with 90% of SPTBN1 overlapping with actin. We also found that knockdown of SPTBN1 causes disruption of the actin cytoskeleton. In the future, we will use these techniques to determine if HIV colocalizes with SPTBN1 and actin during early replication steps and the effect of SPTBN1 knockdown on HIV localization. These results will help to better understand the role host cell proteins have in HIV replication.

58. I Feel You: Perceived Popularity, Empathy, and Emotional Intelligence

Weston Phipps, Victoria West-Staples, Amber Massey-Abernathy

Faculty Supervisor: Amber Massey-Abernathy
Psychology

The intersection of cognitive empathy, emotional intelligence, and resource control is a nuanced area that merits exploration. This study seeks to elucidate the interplay between these constructs, aiming to contribute valuable insights into the factors that underpin individuals' perceived popularity which is represented via an individual's level of resource control. The findings of this study reveal noteworthy associations between emotional intelligence with a significant Pearson correlation coefficient of 0.194 concerning resource control ($p < 0.001$) and 0.337 concerning cognitive empathy levels ($p < 0.001$). Moreover, resource control exhibits a significant correlation with cognitive empathy, as indicated by

a coefficient of 0.182 ($p < 0.001$). A mediation analysis further unveils a statistically significant mediation relationship between these three variables. The relationship between emotional intelligence and perception of popularity and relationship is noted to be partially mediated by cognitive empathy. These findings not only enhance our understanding of the dynamics of social interactions but also have implications for interventions aimed at promoting positive social outcomes.

59. Diagnose Me, Maybe? Self Versus Official Diagnosis Relating to Personality and Parenting

Weston Phipps, Kayla Kaminski, Patricia Martin, Amber Massey-Abernathy

Faculty Supervisor: Amber Massey-Abernathy
Psychology

The expansion of the mental health movement has generated a large amount of awareness and attention to the field of psychology and the diagnoses that follow. While this increase in the perception has led to many more conversations regarding mental health and disorders, is this beneficial, or could it encourage self-diagnosis? How does an individual's personality and relationship with their parents affect this increased exposure to mental health topics? The current data displayed that 69% of participants had self-diagnosed themselves with at least one disorder, while only 35% had diagnoses from practitioners. Independent samples t-tests revealed that students that were lower in agreeableness and higher in neuroticism were more likely to self-diagnose while individuals that were higher in neuroticism, openness, and lower in agreeableness were more likely to have clinician diagnoses. When considering the parental relationship across both groups, it was found that on average if the father's attachment style was rejecting or chaotic, the participant was more likely to self-diagnose, whereas if the mother's attachment type was rejecting, chaotic, or structured, the participant was on average more likely to have clinician diagnoses.

60. A PERMA-Framework Informed Measure of Academic Well-Being

Evan Reichard, Adena Young-Jones

Faculty Supervisor: Adena Young-Jones
Psychology

Definitions and conceptualizations/operationalizations of academic well-being differ substantially (Kinnunen et al., 2016). Thus, researchers have failed to identify factors that promote academic well-being and student success (Tuominen-Soini et al., 2012). Prior efforts to address this limitation demonstrate promise for the use of a PERMA-framework (Seligman, 2018) informed model of academic well-being (Kern et al., 2015); however, a five-factor solution failed to arise and items were largely unspecific to education. The present study seeks to improve upon this effort and develop/evaluate a PERMA-informed measure of academic well-being (A-PERMA). Data collection is underway. However, planned analyses include EFA and CFA to examine item loadings and factor structure of the A-PERMA. Additionally, A-PERMA will be regressed on student GPA and student burnout to examine predictive validity. Finally, the correlation between A-PERMA and an extant measure of well-being will be used to investigate convergent/discriminant validity. By developing a theoretically and empirically sound measure of academic well-being, the present study intends to aid future researchers in identifying factors that promote an optimal learning environment.

61. Structural Differential Model for Language

Mystie Robinson

Faculty Supervisor: Bonnie Slavych
Communication Sciences & Disorders

This presentation will look at the theory of the Structural Differential Model for Language developed by Alfred Korzybski. The structural differential is a tool used to better understand the relationship between language and our perception of reality. Overall, the model highlights how words and phrases with no strictly set definition can create a

false distinction of challenges and realities in the field that can create implications of abstraction, implication of superiority, temporal distortions, and dichotomous thinking. These implications can lead to misunderstandings and miscommunications amongst students and other professionals.

62. Evaluating Eyewitness Postdictor Variables Using Expected Information Gain

Jennifer Sample, Shea Joyce, Samantha Campbell, David Zimmerman

Faculty Supervisor: David Zimmerman
Psychology

Two thousand nine undergraduates viewed one of three simulated crimes and attempted to make an identification from either a culprit-present (CP) or culprit-absent (CA) lineup. We assessed variables that have been proposed to postdict (i.e. retro-actively reflect) identification accuracy, including confidence, response latency, retrospective reports, and self-reported decision processes. Preliminary analysis shows guilty suspect IDs (.416) and correct rejections (.323) exceeded mistaken suspect IDs (.396) and incorrect rejections (.316); filler IDs were more common in CA (.371) than CP lineups (.268), all p 's < .05. All postdictor variables (z-score, log-transformed) significantly predicted decision accuracy, p 's < .05. Self-reported variables will be reduced via principal components analysis to a smaller number of postdictor variables. We will then run a series of logistic regression models to create exhaustive combinations of the postdictor variables. Using equations provided by Starns et al. (2023), we can then calculate the expected information gain (EIG) for every combination, allowing us to identify the most informative postdictors to select for classifying suspects as guilty or innocent.

63. Understanding Perceptions of Romantic and Platonic Relationships and Sexuality

Sophia Sampson, Makenna Besett, Kendra Damron, Chloe Harris, Bryanna Pargo, Ryan Moser, Blayne Stemple, Jordan Belisle, Dana Paliliunas
Faculty Supervisor: Jordan Belisle
Psychology

Discrimination against nonheteronormative couples is a well-documented phenomenon within social and professional experiences of LGBTQ+ individuals. Many situations and social encounters engage with specific stereotypes or if relationships are platonic or romantic leading to judgements made when those stereotypes are broken by LGBTQ+ couples. The present study is an extension of Sickman et al (2023) to explore the perspectives of LGBTQ+ relationships in terms of romantic and platonic situations within a Relational Density Theory (RDT) framework. First using a multidimensional scaling procedure (MDS), we modeled romantic and platonic relational frames with hetero and homosexual relationships. In a second phase, participants were given both romantic and platonic scenarios with differently gendered individuals to determine the extent to which different couples come across as romantic or platonic. Results have implications to show patterns of relational framing based on heterosexual norms, and evidence to show differences in perceptions of hetero versus homosexual couples. Discussion explores limitations and potential future research opportunities.

64. Effects of Myofascial Decompression on the Extensibility of the Superficial Back Line

Catherine Scruggs, Grace Keltner, Maddie Broderick, Zoe Mason

Faculty Supervisor: McCall Christian
Public Health and Sports Medicine

Recent research has highlighted the interconnectedness of muscles through myofascial lines, which can impact tissue extensibility. These extensibility issues within myofascial pathways may disrupt the active range of motion for physically active individuals during daily activities. A common

manual therapy technique used in rehabilitation is myofascial decompression, often referred to as cupping. Previous studies have demonstrated that myofascial decompression can alleviate pain and enhance tissue extensibility, leading to improved range of motion. However, our investigation identified a gap in the literature regarding the optimal placement of the cup in relation to areas of decreased range of motion within a fascial line. To address this, we conducted a study involving physically active participants with hip flexion restrictions. These individuals were randomly assigned to two groups: (1) myofascial decompression in the cervical spine and hamstrings and (2) myofascial decompression in the hamstrings. Pre- and post-treatment measurements were taken of passive hip flexion on all participants. Results are pending but further research is warranted to comprehend the relationship between tissue extensibility and myofascial decompression.

65. Review of Artificial Intelligence in Speech-Language Pathology Education

Quinlyn Thompson

Faculty Supervisor: Bonnie Slavych
Communication Sciences & Disorders

This presentation outlines current and potential applications of artificial intelligence, or AI, in the field of speech-language pathology, and how it can enhance learning outcomes and clinical proficiency. Advancements in AI are rapidly changing many domains, including healthcare and education. Within the field of speech-language pathology, AI's growing role in education is allowing for new methods of educating graduate clinicians and improving clinical proficiency. This presentation aims to illustrate the potential use of AI in speech-language pathology education, preparing future professionals for clinical practice in a digitally evolving landscape.

66. Dry Needling the Lateral Pterygoid is the Most Effective in Alleviating Pain and Dysfunction of the Temporomandibular Joint: A Systematic Review

Don Tufarelli, Katie Glaze, Andrew Ward, PT, ScD, COMT, Kimberly Ennis, PT, DPT, ScD, OCS, COMT, FAAOMPT, Jeanne Cook, PT, Ph.D., and Scott Wallentine, PT, DPT, TPS

Faculty Supervisor: Andy Ward
Physical Therapy

Objective: The purpose of this systematic review is to evaluate the efficacy of dry needling (DN) for temporomandibular joint disorders and determine which muscle has the greatest effect in reducing pain and dysfunction. **Literature Search:** An electronic search of over 200 databases was completed to obtain articles for this review. **Study Selection Criteria:** Inclusion criteria included randomized control trials, human subjects, academic journals, studies conducted from 2012 to the present, greater than 30 participants, participants 18 years of age and older, have pain related to the temporomandibular joint (TMJ), diagnosed with TMJ dysfunction, used Visual Analog Scale (VAS) and DN used independently as the intervention. **Results:** A total of five articles met the inclusion criteria which included 236 participants and were used in this review. **Data Synthesis:** The research indicates that DN the lateral pterygoid muscle resulted in a VAS score that decreased on average by 4 points on a 0/10 scale which was greater than the masseter and temporalis. **Conclusion:** The articles included in this review suggest that DN of the lateral pterygoid muscle has the greatest effect on TMJ pain rating and overall joint function.

67. Impact of Virtual Journal Clubs on Dietetic Preceptor Self-Efficacy and Perceived Support

Stephanie Mitchell Urich, Hillary Roberts, Sarah Murray, Jaime Gnau

Faculty Supervisor: Hillary Roberts
Public Health and Sports Medicine

Preceptors play a vital role in developing the expertise of future healthcare professionals. In dietetics, demonstrated barriers to precepting include decreased self-efficacy and perceived lack of support. Evidence shows that journal clubs are successful in strengthening the mentor/preceptor role in occupational therapy, pharmacy, and other disciplines in the healthcare space. The purpose of this study was to explore if a virtual journal club impacted feelings of self-efficacy and perceived support for a dietetics preceptor. Registered dietitians and preceptors in the Midwest were invited to join a four-week virtual journal club series exploring topics related to inclusive excellence, reflective practice, authentic leadership, and methods for giving constructive feedback. Sessions were hosted by Missouri State University faculty and a graduate student. Participants completed pre- and post-surveys measuring self-efficacy, perceived support, and intent to precept along with demographic information. Data obtained from this study may help inform best practices for supporting, retaining, and recruiting preceptors for dietetics graduate programs.

68. Where is my Social Support? Subthreshold Autism Traits and Personality Related to Perceived Social Support

Victoria West Staples, Weston Phipps, Amber Massey-Abernathy

Faculty Supervisor: Amber Massey-Abernathy
Psychology

Autism Spectrum Disorder (ASD) impacts an individual's ability to communicate and develop social support systems with their neurotypical peers. These difficulties with communication and social support may be compounded with pre-existing

factors, such as personality traits. The current study examines the Big Five personality traits of conscientiousness, neuroticism, and their relationship with reported social support by individuals with subthreshold ASD traits. Previous research has shown that individuals with higher levels of conscientiousness are likely to have higher levels of social support. Similarly, individuals with higher levels of neuroticism are likely to have lower levels of social support. The current study found the relationship between subthreshold autism traits and perceived social support is partially mediated by neuroticism and conscientiousness. The relationship between personality and ASD is of interest when evaluating social support for individuals with ASD. While many ASD traits and behaviors have been shown to be resistant to change, prior research studies have shown that the personality traits of neuroticism and conscientiousness may be changed over time with treatment.

69. Stepping Into Their Shoes: Deepening Empathy Through Old Age Simulation

Melanie Wolf, Mercedes Allen, Payton Curley, Parker Matteson, Edyn Tarkany, Morgan Goodridge, Neema Shabazz

Faculty Supervisor: Marcia Himes
Physical Therapy

Purpose: To expose and increase empathy in first-year Doctor of Physical Therapy students to the challenges faced by older adults through participation in a geriatric simulation activity. Methods: The UCLA Geriatrics Attitudes Scale (UCLAGA) was completed before and after simulation activities. A timed mobility activity was completed sans impairments, then participants donned a geriatric simulation suit and completed the same timed mobility course. Results: 2(Group; males vs females) X 2(Test; pre vs post) X 2(Time; pre vs post) ANOVA revealed change between pretest and post-test; pre-time and post-time scores ($F(1,86) = 122.44, p < .001; \eta^2 = .051$). There was a significant increase from pre-test to post-test (Mean: males 52.55-55.82; females 52.75-54.18); pre-time to post-time (Mean: males 221.09-346.32s;

Abstracts

females 215.91-337.97s). Conclusion: The simulation led to higher post scores on the UCLAGA, showing a more positive attitude toward aging. Extended simulation time also correlated with increased scores. This activity could enhance professionals' interaction with older adults, shift student attitudes toward working with seniors, and foster greater empathy among clinicians.