



22ND ANNUAL
PSYCHOLOGY UNDERGRADUATE
RESEARCH CONFERENCE

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LOUNGE



Department of
Psychological Sciences



Department of
Psychological Sciences

Welcome to the Twenty-Second Annual Psychology Undergraduate Research Conference. This event showcases independent research projects conducted over the last year by our undergraduate majors. The conference originated in concert with the department's Research-Focused Honors Program, within which students spend three semesters learning about all facets of the research process: developing testable hypotheses, reviewing background literature, implementing the project, collecting and analyzing data, presenting their findings at an open forum, and summarizing their work in a form suitable for publication. Participation in this yearly event has since been broadened to include other talented undergraduates who have conducted independent research with the guidance of a faculty mentor.

Congratulations to all of this year's participants. As you'll see, their presentations cover a wide variety of topics, reflecting the diverse research interests within psychological sciences. These students have worked long and hard on their projects and on preparing for today's presentation. They will be delighted to talk with you about their work - please engage them in discussion.

We thank them and their faculty sponsors for their efforts and for giving us the opportunity to showcase the accomplishments of these outstanding students. Thank you for joining us.

PRESENTATION SUMMARY

Poster No.	Presenter	Title
1.	Abdulrassaq Altararwa	Predictors of Substance Use Retention at 6-Months Follow-up: Initial Analyses from Project ASPIRE
2.	Abigael Click	The Role of Threat and Gender Essentialism in the Denial of Non-binary Identities
3.	Adeline Waltz, Anne Gilhooly	Measuring LoveLife program Impact Among South African Youth
4.	Alexandria Bedard	What Increases Risk for IPV Perpetration Among Women? Examining the Role of Trait Anger, Substance Use, & Impulsivity
5.	Angela Murillo	Mediating Role of Stress in the Relationship Between Alcohol Use and Socioeconomic Status
6.	Angela Pastrana, Shreya Vasant, Madelyn Ehrhardt, Marlee Wall	Communicating Distributional Uncertainty
7.	Aria Sturmer	The Role of Retrieval Practice in Peer Instruction
8.	Ashley Niebrugge	Effects of Early Life Social Isolation and Stress in Adulthood on Binge-like Alcohol Drinking and Pain Sensitivity in Male and Female High Alcohol Preferring Mice
9.	Britney Ramos	Examining the Impact of Parenting Style on Psychological Distress in Latinx Adolescents and Emerging Adults
10.	Cameron Howard	The Effects of Adolescent Binge-like Alcohol Consumption on Anxiety-like Behaviors in Adult Crossed High Alcohol-Preferring Mice

PRESENTATION SUMMARY

Poster No.	Presenter	Title
11.	Carlos Garcia	Do Girls with Attention-Deficit/Hyperactivity Disorder (ADHD) Present with More Sleep Problems?
12.	Conghao Gao	The Relationship Between Working Memory and AX-CPT: A Review and a Proposed New Study
13.	Corbin Adams	Determining the Rates of Mental Health and Suicide Risk Factors Among Indiana Farmers
14.	Destine Williams, Payton Robinson, Erisa Met Hoxha	The Effect of Normal Aging on Extinction Learning in the Retro-splenial Cortex
15.	Grace Gilbert	Examining Neurophysiological Responses to Emotionally Sa-lient Stimuli in Children with ADHD
16.	Grace Pavlik	The Association Between Depressive Symptoms, Substance Use, and Contraceptive Use among South African Adolescents
17.	Griffin Tresse	The Effects of Adolescent Binge-like Alcohol Consumption on Novel Object Recognition Memory in Adult Crossed High Alco-hol-Preferring Mice
18.	Hannah Carreon	The Association Between Self-Concept Clarity and Neuroticism & How They Differ by Biological Sex
19.	Hecun Liu	Effect of AI Benevolence on Humans' Trust and Use of an AI Assistant in a Video Game
20.	Isabella K. Peckinpaugh, Skye Napolitano	The effect of Cognitive-Affective Processes on Perfor-mance-Based Behavioral Outcomes

PRESENTATION SUMMARY

Poster No. Presenter	Title
21. Issac Fegelman	Effects of Adolescent Binge-Like Alcohol Drinking on the Development and Extinction of Fear-Related Behavior in Mice
22. Jack Weston, Killian Meaney, Natalie Naumoff	Competing Frames of Reference Across Tactile Feedback
23. Jasmine White	Understanding Clinical Diagnosis: Does Race Influence Diagnostic Impressions?
24. Juliann Rymarczyk	Influences of Parental Restrictive Language and Stress on Supported Joint Engagement During Parent-Child Interactions in Angelman Syndrome
25. Kaitlyn Greer	Initial Inhibitory Avoidance Training Produces Changes in Neural Activity in the Retrosplenial Cortex
26. Katelyn Wasson	Identity Shapes Depression: How Group Affiliation Impacts Symptom Patterns That Inform MDD Diagnosis
27. Katherine Allen	The Effect of Prior Exposure on Perceived Creativity
28. Kathleen Saczawa	Relationship Behavior
29. Kendall Conaway	Childhood Emotional Abuse and Sibling Relationships
30. Kylie Goodrich, Natalie Vaughan, Brendan Paquin	Comparing the Effects of Adult Western Diet Consumption to Normal Aging on Novel Object Recognition (NOR) Performance in Female Rats

PRESENTATION SUMMARY

Poster No. Presenter	Title
31. Lillian Millspaugh	Examining the Relationship Between Attention and Negative Affect in Infancy
32. Lily Bachar	Risk Tolerance Behavior and its Relation to Panic selling
33. Luiza Cabral Flores	Buffering the Effects of Negative Feedback on Creativity
34. Madelyn Owen	Disrupting the Binary in Laboratory Paradigms: Validation of a New Measure of Emotional Variation in Cognitive Control
35. Madyson Depoy	The Association Between Interpersonal Violence and Perceived Social Support and Relationship Strain
36. Noah Wilson, Minjae Kim	Qualitative Analyses of Organizational Goal Conflict
37. Olivia Lewis	Perceptions of Asexuality Among LGBTQ+ Individuals
38. Pari Mollabashy	The Effects of Repeated Retrieval on Memory for Temporal Context
39. Piper Reed	Perceived Discrimination and Physical Health: A Focus on the LGB Community in a Nationwide Sample
40. Qing Yin	Facilitating Constructive Dialogue: Wise Reasoning in Sociopolitical Conflict Communication

PRESENTATION SUMMARY

Poster No. Presenter	Title
41. Roma Kamat	Alcohol Exposure in Aged Mice: Effects on Recognition Memory and Compulsive-Like Behaviors
42. Sarah Eyles	Study of Large Language Models' Consistency and Depth of Response on the Effects of Drug Use on HIV Medications
43. Sarah Ramsey	ADHD Diagnosis Discrepancies and Face Processing Differences in Multiracial Children with ADHD
44. Simran Zaveri	The Impact of Emergency Department Based Interventions on Substance Use Disorder Outcomes
45. Sydney Godwin	Persona and Pints: The Personality Based Pattern of Drinking Locations

Abdulrassaq Altararwa

Mentors: Dr. Jenny Brown

Predictors of Substance Use Retention at 6-Months Follow-up: Initial Analyses from Project ASPIRE

Emergency departments (ED) present a unique opportunity to screen for substance use and connect patients with needed treatment services. Project ASPIRE was an ED-based intervention that screened, linked, and referred patients to substance use treatment, allowing us to examine possible predictors of treatment retention rates. Self-report data was obtained from Project ASPIRE through the Government Performance and Results Act (GPRA) survey. Race and biological sex will be examined as predictors of retention at the 6-month follow up. Results will be conducted in SPSS to characterize baseline participant characteristics and examine potential demographic differences in retention rates at 6-month follow-up. It is hypothesized that patients who identify as (1) white and (2) male will be more likely to be retained at the 6-month follow-up. Results from this study will help us understand the complexity of why individuals may not complete their treatment plan and identify those who require further attention.

Abigael Click

Mentors: Dr. Thekla Morgenroth

The role of threat and gender essentialism in the denial of nonbinary identities

A growing number of people openly identify as nonbinary, yet many deny these identities as real and legitimate. Understanding the forces driving this is important as it can have negative consequences for the wellbeing of nonbinary people. We argue that (1) identity denial is rooted in gender essentialism, the belief that gender is binary, biological, and immutable and (2) threat can increase this essentialism and, in turn, the denial of nonbinary identities because these processes can alleviate threat by reinforcing the gender status quo. Study 1 found support for the hypothesized link between essentialism and identity denial, but system threat did not increase essentialism. Exploratory analyses suggest that men tend to engage in identity denial more than women. In a follow-up study, we examine whether experimentally inducing other forms of threat increases essentialism and identity denial. Taken together, this project contributes to the understanding of nonbinary identity denial, an understudied and important topic.

Adeline Waltz, Anne Gilhooly

Mentors: Dr. Jennifer Brown, Stephen Beegle, Luis Gomez, Sofia Rubi

Measuring LoveLife program Impact Among South African Youth

South Africa has the highest population of individuals living with HIV, with a prevalence rate of 18.8%. The LoveLife program promotes strategies to prevent both STIs/HIV and unintended pregnancies (dual protection) among South African youth. The purpose of this review is to examine LoveLife's programs and their impact on sexual-risk behaviors among South African youth. We examined six non-randomized clinical trial studies that compared the sexual behaviors of youth who participated in LoveLife programs against those who did not. Articles in this review examined a) LoveLife's programs, b) participant's dual protection use and c) were published after 2010. Studies utilized self-report, cross-sectional designs. Participation in LoveLife programs was associated with increased HIV knowledge, treatment and contraceptive use. Participation in LoveLife programs was shown to reduce sexual-risk behaviors in students who were exposed to the programs. The program also increased understanding of sexual health and proactive methods to limit the spread of STIs/HIV.

Alexandria Bedard

Mentors: Dr. Christopher I Eckhardt

Grad Student Collaborators: Daniel W. Oesterle, Niamh J. Christie

What Increases Risk for IPV Perpetration Among Women? Examining the Role of Trait Anger, Substance Use, & Impulsivity

Intimate partner violence (IPV) is a prevalent public health problem within the United States, where nearly 12.5 million individuals within relationships are impacted annually. While individuals of any gender may both perpetrate and experience IPV, researchers have disproportionately focused on men as perpetrators and women as victims. As a result, far less is known about whether established risk factors for IPV among men also predict risk of women's perpetration. Therefore, the present study examines how alcohol use, drug use, trait anger, and negative urgency predict women's perpetration IPV. As part of a larger study examining the role of acute alcohol intoxication on IPV, participants included N = 342 women within the community that were within established romantic relationships with past-year IPV and past-month heavy-episodic drinking. Results indicated that the three of the overall models predicting women's IPV perpetration were significant: physical injury ($p < 0.005$); physical aggression ($p < 0.001$); psychological aggression ($p < 0.011$). Additionally, results indicated that the overall model predicting women's perpetration of sexual coercion ($p = 0.315$) was not significant. Results examining the role of specific risk factors in predicting perpetration across each of the four varying forms of IPV perpetration will be discussed. Broadly, our results suggest that specific risk factors for women's IPV perpetration vary significantly based on type of violence. Further, these results provide insight into future research examining the mechanisms that underlie each of these unique forms of violence perpetrated by women.

Angela Murillo

Mentors: Samantha Dashnieau, Dr. Susan South

Mediating Role of Stress in the Relationship Between Alcohol Use and Socioeconomic Status

Numerous studies have explored the association between socioeconomic status (SES) and alcohol drinking patterns, with a growing body of evidence indicating a significant, negative association. Research consistently demonstrates that individuals experiencing lower levels of SES are more likely to engage in problematic drinking behaviors. Research into the complex role of stress in the association between SES and alcohol use is limited. The aim of the current study is to determine if stress mediates the association between socioeconomic status and alcohol use. Analyses for the current study will utilize self-report data on perceived stress, alcohol use, and SES measures of income and education. It is hypothesized that lower levels of SES will be associated with higher occurrence of drinking. Furthermore, the study proposes that stress will mediate this relationship, acting as a mechanism through which stress influences alcohol use behaviors. A mediation analysis will be conducted to examine the associations among stress, socioeconomic status, and alcohol use. Understanding the role of stress in mediating the relationship between alcohol use and socioeconomic status is essential for developing targeted interventions that address the specific needs of individuals from different socioeconomic backgrounds, ultimately reducing disparities in alcohol-related harm and promoting health equity.

Anglea Pastrana, Shreya Vasant, Madelyn Ehrhardt, Marlee Wall

Mentors: Dr. Stephen Broomell

Communicating Distributional Uncertainty

Currently, little is known about the best way to summarize information about distributions to facilitate informed decision making. For example, long-term planning in the face of climate change requires understanding climate projections that are distributed across geographic areas. Climate projections are based on ensembles and take a distributional form. This study aims to see how best to communicate the information in a distribution using different approaches to summarize the information contained in a distribution and measure the effect on choices and confidence. We used a between subjects design ($N=246$) that presented participants with either a histogram depiction (condition 1), the 25th and 75th percentile (condition 2), or the median and interquartile range (condition 3). Our hypothesis is that participants would have the most accurate choices and confidence when viewing the full histogram. We found a significant difference between conditions in choice accuracy ($\chi^2(2) = 9.22, p = 0.01$) with the condition 2 percentile summary resulting in the highest choice accuracy. We found no differences between conditions in confidence accuracy ($\chi^2(2) = 2.31, p = 0.31$). Our results suggest that summarizing a distribution with the 25th and 75th percentile has the potential for improving understanding for making choices but has little effect on confidence in the choice. When communicating uncertain outcomes like climate projections, providing percentiles may improve decision making accuracy, but additional techniques are likely needed to align confidence appropriately. Overall, this highlights the importance of evaluating different approaches for conveying distributional uncertainty.

Aria Sturmer

Mentors: Dr. Jeff Karpicke

The Role of Retrieval Practice in Peer Instruction

Peer instruction is a pedagogical method popular in STEM classrooms in which students individually answer a challenging question, discuss their reasoning with a partner, then re-answer the question before the instructor provides an explanation of the correct answer. Compared to a traditional lecture-only class, peer instruction produces greater student achievement. However, past studies have not systematically investigated which aspects of the peer instruction procedure improve performance. We developed materials and procedures to replicate the peer instruction effect in a laboratory setting and investigate the role of retrieval practice in peer instruction. We compared peer instruction to a retrieval practice condition (i.e., no peer discussion) and a video-only control condition. On a delayed final assessment, both the peer instruction and retrieval practice groups outperformed the control; however, they did not differ from one another. We concluded that much of the peer instruction benefit is due to the retrieval practice component.

Ashley Niebrugge

Mentors: Dr. Julia Chester, Dr. Michelle Karth, Arbaaz Mukadam

Effects of Early Life Social Isolation and Stress in Adulthood on Binge-Like Alcohol Drinking and Pain Sensitivity in Male and Female High Alcohol Preferring Mice

Common genetic mechanisms influence co-morbidity between stress-, pain-, and alcohol-related disorders. In our prior work, social isolation stress during adolescence, and intermittent restraint stress during adulthood, increased alcohol consumption in male but not female mice genetically predisposed toward high alcohol preference. This study examined the combination of both adolescent social isolation and adult restraint stress on pain sensitivity and binge-like alcohol intake. Male and female high-alcohol-preferring mice were assigned to the following groups: Social Isolation + Restraint Stress, Group Housed + Restraint Stress, Social Isolation + No Restraint Stress, and Group Housed + No Restraint Stress. Following 21 days of social isolation, all groups were tested for baseline mechanical pain sensitivity. Three days later, mice in the restraint groups received restraint for 30 min each morning prior to each binge-like alcohol drinking session for 4 consecutive days. A second pain sensitivity test occurred the day following the last drinking session.

Britney Ramos

Mentors: Dr. David Rollock, & Adilene Osnaya

Examining the Impact of Parenting Style on Psychological Distress in Latinx Adolescents and Emerging Adults

Examining the influences of diverse parenting styles on Latinx adolescents and emerging adults is crucial for addressing their mental health needs, given the unique obstacles encountered by these populations, especially those involved in the criminal justice system. Previous research indicates that parental warmth and monitoring are associated with positive mental health outcomes, while parental hostility is associated with negative outcomes. This study was designed to examine whether these associations would replicate in a sample of Latinx adjudicated adolescents and emerging adults and whether the interactions of parental monitoring with warmth and/or hostility would impact self-reported distress levels. Using a hierarchical regression model predicting distress one year after the initial interview, we found that, contrary to our hypotheses, neither baseline parental monitoring, warmth, hostility, or their interaction significantly predicted subsequent distress ($p = ns$). Implications of findings for Latinx adolescents and emerging adults involved in the criminal justice system are discussed.

Cameron Howard

Mentors: Alisha Aroor, Dr. Julia A. Chester

The Effects of Adolescent Binge-like Alcohol Consumption on Anxiety-like Behaviors in Adult Crossed High Alcohol-Preferring Mice

Ninety percent of alcoholic drinks consumed by adolescents are consumed through binge drinking. Studies in rodents show adolescent binge drinking can increase anxiety-like behaviors displayed through motor behaviors measured in Open Field (OF) assay. Adolescent (34-36 days old) male and female cHAPs, bred for high alcohol preference and used to model binge drinking, were administered alcohol or water in a 4 week 4-day binge-drinking paradigm. Fifteen days later, OF was conducted for 10 minutes for 3 days. Preliminary results indicated females drank more alcohol during Week 3. There were no significant alcohol/water group or sex differences in distance traveled, rearing, and jumping in the OF; however, there was a trend toward the alcohol-exposed mice displaying more inner entries than the water group, indicating reduced anxiety-like behaviors. A replication of this study is underway.

Carlos Manuel Guzman Garcia

Mentors: Amy Janis, & Dr. A. J. Schwichtenberg

Do girls with Attention-Deficit/Hyperactivity Disorder (ADHD) Present with More Sleep Problems?

Background: Sleep problems are more common in children with Attention-Deficit/Hyperactivity Disorder (ADHD), and may impact their development (Fisher et al., 2017). Problems include difficulty falling asleep, night wakings, bedtime resistance, sleep anxiety, and daytime sleepiness. Like with most areas of ADHD research, our knowledge base for girls is less but some previous studies document higher rates of parent-reported sleep problems in girls (e.g., Becker et al, 2017). Following this work, we hypothesize parents of girls will report more sleep problems.

Objective: This study compared parent-reported sleep problems for boys and girls with ADHD.

Methods: A total of 160 males and 72 females with ADHD were assessed, with an average age of 9.51 years (1.54) and 9.47 (1.51), respectively. Participating parents reported child sleep problems via the Children's Sleep Habits Questionnaire (CSHQ). CSHQ total and subscale scores (bedtime resistance, sleep onset delay, duration, sleep anxiety, night wakings, parasomnias, sleep disordered breathing, and daytime sleepiness) were compared using ANOVA.

Results: Parents of boys and girls endorsed similar patterns of sleep problems, with two exceptions (Table 1). Parents of girls with ADHD reported more bedtime resistance, $F(1, 230) = 5.84, p = .02$ and general problems.

Discussion: Findings from this study highlight bedtime resistance as a potential target for gender-informed sleep interventions for girls with ADHD. Overall, both boys and girls had elevated rates of sleep problems across domains (when compared to previous samples of children without ADHD); therefore, sleep should remain a consistent area of assessment and intervention for children with ADHD.

Conghao Gao

Mentors: Dr. Thomas S. Redick

The Relationship between Working Memory and AX-CPT: A Review and a Proposed New Study

Working memory is usually defined as a task-relevant maintenance of cognitive information. Previous studies have focused on the potential relationship between working memory capacity and the AX version of continuous performance test (AX-CPT), a paradigm which has been used experimentally to test the dual mechanisms of cognitive control account. Fewer studies have included the AX-CPT distractor (interference) task, an alternative version of the baseline paradigm in which distractors are presented in-between each cue and probe. No previous studies have addressed the relationship between AX-CPT distractor and individuals' working memory capacity. The current literature review provides an overview of AX-CPT baseline performance in studies of working memory capacity. We also propose a new study to fill the gap by exploring the potential relationship between the performance on the AX-CPT distractor and the working memory capacity of healthy young adults.

Corbin Adams

Mentors: Dr. Douglas Samuel

Determining the Rates of Mental Health and Suicide Risk Factors Among Indiana Farmers

Amid Reports of increased suicide among farmers, which have led some to conclude the incidence of farmer suicide has evolved into a humanitarian “crisis” (Fahy, 2018). Farmers appear to have an increased risk for suicide based on demographic and psychological factors, as well as increased access to lethal means. We surveyed farmers across the State of Indiana to determine the prevalence of known psychological risk factors. We found that 29.6% of farmers experience at least mild depression and about 19.9% experience at least mild anxiety. The survey included questions about suicidal thoughts and behaviors, revealing that 2.5% of the farmers reported a history of suicidal ideation. These data suggest methods to identify those farmers who have increased risk and guide interventions at the individual or community level. Future studies should focus on how to best reach and offer access to mental health interventions for farmers and their families.

Destine Williams

Mentors: Payton K. Robinson, Erisa Met Hoxha, Dr. Sydney Trask

The effect of Normal Aging on Extinction Learning in the Retrosplenial Cortex

Healthy aging often coincides with cognitive deficits, including impairments in cognitive flexibility. Cognitive flexibility can be assessed through extinction learning, in which a previously reinforced conditional stimulus is presented without an aversive outcome. Further, dysfunction in memory-related regions like the hippocampus and retrosplenial cortex has been implicated in age-related memory impairments. However, how aging impacts extinction learning has not been studied. To address this gap, we extinguished a delay fear memory in young (3-month) and aged rats (20-month). We found that while both age groups readily acquired a delay fear memory, only young rats showed successful extinction. Aged rats were also showed a marked increase in levels of zif286 protein accumulation throughout several brain regions, including the hippocampus and the retrosplenial cortex. These results suggest that age-related degeneration in memory-related regions correspond with reduced cognitive flexibility in aged rats.

Grace Gilbert

Mentors: Dr. Sarah L. Karalunas

Examining Neurophysiological Responses to Emotionally Salient Stimuli in Children with ADHD

Attention-deficit/hyperactivity disorder (ADHD) involves weaknesses in attention, but how attention and emotion interact in children with ADHD is poorly understood. This study examines the electroencephalogram (EEG) responses of 244 (nADHD=236) children from 7-11 years old when attending to emotional stimuli taken from the International Affective Picture System. The Late Positive Potential (LPP), which is an EEG measure of emotional response and regulation, had a larger amplitude when children viewed positive and negative stimuli when compared to neutral stimuli. Additional analyses will examine how the LPP relates to participant self-report of emotional arousal and valence when viewing the stimuli and how effects differ between ADHD and non-ADHD groups. Results can provide insight into differences in emotional processing and response in children with ADHD.

Grace Pavlik

Mentors: Dr. Jennifer L. Brown

The Association between Depressive Symptoms, Substance Use, and Contraceptive Use among South African Adolescents

Introduction: Studies have found a positive association between substance and lower self-efficacy for condom use and elevated depressive symptoms among adolescents. This secondary data analysis study's purpose was to explore these links among South African adolescents (N=2325). Methods: The participants included 2325 South African adolescents that were given a questionnaire measuring depressive symptoms, substance use, and condom use. Results: Those reporting substance use had higher depressive symptoms ($t(2323)=-6.7, p<0.05$). Condom use was less likely among those using substances ($\chi^2=5.894, p<0.05$). There was no association between condom use and depressive symptoms ($t(804)=-1.6, p>0.05$). Discussion: Consistent with the literature, substance use was associated with higher depressive symptoms and lower frequency of condom use. Further research should explore this relationship by studying the condom use or substance use behaviors of clinically depressed adolescents.

Griffin Francis Tresse

Mentors: Alisha Aroor, Dr. Julia Chester

The effects of Adolescent Binge-Like Alcohol Consumption on Novel Object Recognition Memory in Adult Crossed High Alcohol-Preferring Mice

Research shows that ninety-percent of alcoholic drinks consumed by adolescents are consumed through binge drinking and that it can impair memory during adulthood. We investigated the effects of adolescent binge drinking on novel object recognition (NOR) memory in adult crossed high alcohol-preferring (cHAP) mice, a model for binge drinking.. Adolescent male and female cHAPs were exposed to ethanol or water in a 4 week 4-day binge drinking paradigm and tested for NOR 15 days later. NOR was assessed by a discrimination index (DI) $(\text{[novel object} - \text{the familiar object exploration time)]} / \text{total exploration time}$). Preliminary results showed females consumed more ethanol than males during Week 3. One sample t-tests revealed ethanol female, water female, and water male groups had a DI significantly different from 0, indicating object discrimination. However, the DI in ethanol-treated males was not significantly different from 0, indicating no object recognition. A replication of this study is currently underway.

Hannah Carreon

Mentors: Luis Gomez, Sofia Rubi, Stephen Beegle, Dr. Jennifer Brown

The Association Between Self-Concept Clarity and Neuroticism & How They Differ by Biological Sex

Within clinical personality research, self-concept clarity (SCC) has been negatively associated with neuroticism levels. SCC is defined as consistency and confidence in one's beliefs about themselves, while neuroticism pertains to emotional stability and the likelihood to experience negative emotions. Participants were 778 undergraduate students with a mean age of 20 from a large Southwestern university who completed an online battery of self-report assessments in the College Student Health Study. Secondary analyses from this study will (a) examine the association between SCC and neuroticism levels via a correlation and (b) analyze the association between SCC, neuroticism levels, and biological sex utilizing t-tests. Analyses will be run through SPSS, with results to follow. We hypothesize (a) a negative association between SCC and neuroticism, and (b) for biological sex to indicate higher SCC and lower neuroticism in males. We anticipate results will further elucidate the differences between SCC and neuroticism by biological sex.

Hecun Liu

Mentors: Dr. Robert W. Proctor & Dr. Thomas S. Redick

Effect of AI Benevolence on Humans' Trust and Use of an AI Assistant in a Video Game

Recent studies stress trust's importance in artificial intelligence (AI) adoption. While current research focuses on AI reliability, human-centric factors like integrity and benevolence are overlooked. The current research investigated AI benevolence's role in trust and willingness to use an AI assistant. Participants (N=88) interacted with either a benevolent or non-benevolent AI in a simulation game. After the game, they rated willingness to cooperate again and assessed perceived benevolence, trust, and willingness to use on 1-7 Likert scales. The results showed significantly higher cooperation willingness with the benevolent AI versus the non-benevolent AI. Ratings for perceived benevolence, trust, and willingness to use were all higher for the benevolent condition. The elevated ratings for perceived benevolence and trust imply a more positive perception of the benevolent AI. Participants' choice to continue cooperating and their willingness to use the benevolent AI underscore the significance of perceived AI benevolence in shaping trust and usage.

Isabella Peckinpugh

Mentors: Dr. Dan Foti, Skye Napolitano

The effect of Cognitive-Affective Processes on Performance-Based Behavioral Outcomes

Previous research suggests that across experimental tasks, individuals with major depressive disorder (MDD) are more likely to commit errors directly following an error (i.e., double error rate, DER). This tendency is thought to reflect affective processing deficits unique to MDD, but it remains unclear what drives this response in MDD. This study sought to address this gap by testing whether performance deficits could be driven by negative affect (NA) and rumination. Undergraduate participants completed measures of depression, trait rumination, repeated state NA measures, and three runs of an arrow Flanker task. DER was calculated for each run of the task by dividing the number of occurrences of consecutive errors by total trials. OLS regression tested whether rumination and NA predict run-wise DER and whether these effects amplified throughout the protocol; depression symptoms were included as a covariate within models.

Issac Fegelman

Mentors: Dr. Julia Chester

Effects of Adolescent Binge-like Alcohol Drinking on the Development and Extinction of Fear-Related Behavior in Mice

The adolescent brain is uniquely vulnerable to the neurobehavioral effects of both alcohol and traumatic stimuli which may contribute to the high incidence of comorbidity between alcohol-use disorders and post-traumatic stress disorder. Evidence in rodents suggests that adolescent alcohol exposure alters fear-related behaviors in adulthood. We determined whether fear extinction parameters shown to be effective in producing fear extinction in a context fear conditioning procedure would also be effective in reducing fear-related behavior using a discrete cue fear conditioning procedure [fear-potentiated startle (FPS)]. Mice received 2 extinction sessions per day for 3 days in between two tests of FPS. Data suggest that the extinction parameters produced extinction of FPS, but this effect was driven by females. We plan to use these fear-conditioning and extinction parameters to investigate the effects of repeated cycles of binge-like alcohol drinking during adolescence on the acquisition and extinction of FPS in male and female mice.

Jack Weston, Killian Meaney, Natalie Naumoff

Mentors: Ashley Warren, Dr. Stephen Broomell

Competing Frames of Reference Across Tactile Feedback

Recent studies have provided evidence that cognitive processing of vibrotactile stimuli occurs in an internal frame of reference rather than an external frame, which has been demonstrated with visual and auditory stimuli. Our studies will determine if tactile is dominant in an internal frame. For the current studies, we tested this hypothesis using a Stimulus-Response Compatibility (SRC) task. Experiment 1 showed that reaction time for a compatible mapping was significantly faster, verifying the SRC effect. Experiment 2 resulted in a significant SRC effect, influenced by crossed and uncrossed hands. Experiment 1 established that the SRC effect was present to validate the apparatus task. Experiment 2 used a SRC used this task to determine which frame of reference is automatically coded for mapping a stimulus to a response. These results support the notion that tactile attention is coded from an internal reference, along with attenuation of an external frame.

Jasmine White

Mentor: Dr. Douglas B. Samuel

Understanding Clinical Diagnosis: Does Race Influence Diagnostic Impressions?

Within real-world clinical settings black men are often diagnosed with schizophrenia at 2-3x higher rates than white men. One possible explanation for this difference is that it reflects diagnostic bias on the part of the clinicians who assign the diagnoses.

We examined this possibility using a case vignette methodology. Specifically, we selected a case vignette presenting a client with clear negative symptoms of schizophrenia, but ambiguity for positive symptoms, and randomized the vignette to be either white or black. We hypothesized that if bias were present, the white vignette ratings would be higher for depression and the black vignette would be higher for schizophrenia. 185 clinicians across North America read the vignette and provided diagnostic ratings for common mental disorders.

Contrary to our hypotheses, the ratings did not differ by the vignette's race. These results suggest that clinician bias does not account for observed racial discrepancies in psychotic disorder diagnoses.

Julian Rymarczyk, Aubrey McGuire, Daria Tsoneva

Mentor: Wei Siong Neo, Dr. Bridgette Kelleher

Influences of Parental Restrictive Language and Stress on Supported Joint Engagement During Parent-Child Interactions in Angelman Syndrome

Parents routinely scaffold play actions during parent-child interactions, resulting in supported joint engagement (SJE). Different parental factors may moderate SJE in families with Angelman syndrome (AS) and typically developing (TD) children. We investigated whether restrictive language and stress decrease SJE in 37 (17 AS; 20 TD) parent-child dyads. We determined percentage of time that children exhibited SJE and parental verbalizations that were restrictive. Parental stress (normal; elevated) was categorized using DASS-21 scores. Restrictive language was negatively correlated with SJE in TD ($r = -.39^*$) but not AS ($r = .20$). SJE was greater when parents had normal stress than elevated stress in AS ($t = 2.52^*$) but not TD ($t = 1.20$). Overall, SJE is affected by different parental factors in AS and TD children, with greater sensitivity to stress and restrictive language, respectively. Future research should identify ways to alleviate parental stress in AS families to improve parent-child interactions.

Kaitlyn Greer

Mentors: Dr. Sydney Trask, Erisa Met Hoxha

Initial Inhibitory avoidance training produces changes in neural activity in the Retrosplenial Cortex

In inhibitory avoidance, one side of a two-compartment chamber is paired with a shock. As a consequence of this training, rats learn to avoid the side associated with the shock. Since the retrosplenial cortex (RSC) plays a crucial role in associative learning and memory, we aimed to analyze how inhibitory avoidance learning can change neural activity in the RSC. We trained male and female Long-Evans rats in inhibitory avoidance using two-compartment avoidance chambers. One side of the chamber was black and the other was white. The compartments were separated by a guillotine door. Rats were placed in the white side of the chamber, and a brief (2-s) foot-shock (1.5 mA) was delivered after the rat crossed from the white side of the chamber to the dark side. 60 minutes following training, rats were sacrificed and brain tissue was collected. Using immunofluorescence, we assessed expression of the immediate early gene *zif268* in the RSC and basolateral amygdala (BLA) as a proxy for neural activity. In a separate set of tissue, we stained for perineuronal nets (PNNs), part of the extracellular matrix thought to be involved in synaptic plasticity, using *Wisteria floribunda* Agglutinin (WFA). Images were analyzed using ImageJ (*zif268*) or hand-counted (PNNs). We found elevated *zif268* activity in the aRSC, pRSC, and BLA compared to homecage controls. Additionally, there was a decrease in PNNs in the aRSC and the BLA, suggesting increased synaptic plasticity in those regions. These findings suggest that inhibitory avoidance training increases neural activity in both retrosplenial subregions and the BLA. Further, reductions in PNNs in the aRSC and BLA suggest increased synaptic plasticity within these regions, typically associated with memory formation.

Katelyn Wasson

Mentors: Dr. Sean Lane, Dr. Erin Hennes

Identity Shapes Depression: How Group Affiliation Impacts Symptom Patterns That Inform MDD Diagnosis

Despite its prevalence, major depressive disorder (MDD) is not comprehensively understood. Various theories attempt to explain the mechanisms responsible for its diverse symptom manifestations, and most explanations for the underlying causes (i.e., factor structure) of MDD remain primarily split between one- to two-dimensional models. While epidemiological samples often favor one-dimensional structures, groups at heightened risk for depression, like those with military combat experience or exposure to natural disasters, often exhibit symptoms that bifurcate into somatic (e.g., weight/appetite changes, fatigue) and non-somatic (e.g., feeling worthless, suicidality) factors. We analyzed symptom manifestations in 42,123 participants from Wave 1 of the National Epidemiological Survey on Alcoholism and Related Conditions (NESARC). Utilizing item response theory, we fit both one- and two-factor solutions to the entire dataset and high-risk military/disaster sub-samples. Population-based results showed little distinction between one- and two-factor structures, but the two-factor solution provided insight into specific symptoms in the at-risk groups. Understanding these between-group differences may enhance diagnostic accuracy and guide treatment from prototypical to symptom-based approaches, thereby advancing efforts addressing the MDD epidemic.

Katherine Allen

Mentors: Dr. Nadia Brashier, Dr. Nathan Cheek

The Effect of Prior Exposure on Perceived Creativity

People often resist innovation. In fact, scientists dismissed evidence of prions and adult neurogenesis for years because these ideas contradicted prevailing dogma. One reason why people may stick to the status quo involves fluency, or subjective ease of processing. Content that feels easy to understand seems true, inspires confidence, and is likable. In this experiment, we investigated whether repeated ideas could feel fluent and ironically seem more creative than new ones. Participants were first exposed to uncommon uses for everyday objects (e.g., rolling out dough with a wine bottle). Later, they judged the creativity of these ideas, as well as uses they did not see at exposure. This research may explain what we call the 'novelty penalty.' In science, for example, new ideas are less likely to be funded and cited, and key decision makers (e.g., peer reviewers) who are aware of their cognitive biases could trigger change.

Kathleen Saczawa

Mentors: Dr. Ximena Arriaga

Relationship Behavior

Not everyone who experiences aggression by a partner will seek support or help. Previous studies have focused on demographic characteristics that predict help-seeking behavior. This study provides a novel direction by focusing on psychological features, namely how feeling strongly identified with a relationship predicts whether one seeks help or support following a partner's aggression. The survey study with Purdue students sheds light on relational variables that predict help-seeking behavior.

Kendal Conaway

Mentors: Dr. Susan South, Samantha Dashineau

Childhood Emotional Abuse and Sibling Relationships

Abuse of children is a chronic, pervasive problem with approximately five children dying everyday (National Child Maltreatment Statistics). Abuse is detrimental in a variety of ways, but can particularly impact future relationships with close others, such as parents or romantic partners (Child Welfare Information Gateway, 2019). This study investigates whether childhood abuse impacts sibling relationships, particularly frequency in contact and feeling understood in twin relationships. To investigate this question, the Midlife in the United States (MIDUS 1) data from 1995-1996 will be utilized. MIDUS is a longitudinal study investigating a variety of mental and physical health outcomes in midlife adults. Participants were administered a host of batteries querying about mental and physical health processes. This study will focus on a subset of items collected: items which ask about maternal and paternal emotional abuse, twin frequency of contact (weekly), and questions regarding whether one feels understood by their twin. Data will be analyzed using a linear regression, regressing paternal and maternal emotional abuse upon a) frequency of weekly contact and b) feeling understood in twin sibling relationships. This study hypothesizes that more emotional abuse from the mother and father will significantly predict feeling understood by one's twin sibling. The second hypothesis is that more emotional abuse from the mother and father will significantly predict less frequency in weekly contact between twin siblings. The results of this study could lead to a new area of focus when it comes to treating abuse victims.

Kylie Goodrich, Natalie Vaughan, Brendan Paquin

Mentors: Dr. Susie Swithers

Comparing the Effects of Adult Western Diet Consumption to Normal Aging on Novel Object Recognition (NOR) performance in Female Rats.

Consumption of a Western diet (WD), high in saturated fats and refined sugars, can result in cognitive dysfunction similar to that induced by aging. Previous studies have demonstrated that both adult WD consumption and aging negatively impact performance on hippocampal-dependent memory tasks such as the Novel Object Recognition (NOR). However, these studies fail to compare the effects of WD consumption in adulthood to that of normal aging on retention in NOR. Furthermore, most of the studies were done in male rats exclusively. Therefore, we aimed to investigate the impact of WD consumption in adulthood on NOR performance and how it compares to performance in aged female rats. We examined NOR performance following a 4 minute and 24 hour delay to investigate the impact of diet and aging on memory function. We hypothesize that the adult females on a WD will show intact short-term memory but a deficit at 24 hours as a result of memory consolidation impairment.

Lillian Millspaugh

Mentors: Dr. Sarah Karalunas, Madelyn Blake Heise

Examining the Relationship Between Attention and Negative Affect in Infancy

Attention-deficit/hyperactivity (ADHD) is one of the most common neurodevelopmental disorders diagnosed in childhood (Scandurra et al., 2019). It emerges very early development but cannot be reliably diagnosed until early school-age. For early intervention to be effective, early detection is critical (Sonuga-Barke, 2011). Differences in temperament, which includes processes related to emotional reactivity and regulation, are some of the earliest emerging risk factors for ADHD. The study will utilize the Infant Behavior Questionnaire, a well-validated measure of infant temperament, in a sample of N=300 infants who were rated by their mothers as part of a larger study. A cross-lag model in MPLUS will be used to analyze causal relationships between early attention, negative, and positive emotion over the first year of life. The project aims to gain insight into early temperament development and support development of early intervention tools based on preliminary signs of ADHD.

Lily Bachar

Mentors: Corey Nack and Dr. Yu-Chin Chiu

Risk Tolerance Behavior and its Relation to Panic selling

Panic selling often happens when a large, fear inducing event happens in the world. For some, they may recall the beginning of COVID in 2020 as one of those events. As the world spiraled from this disease, the markets crashed rapidly due to panic selling. In the present study, we hypothesized that cognitive control would be a key factor in predicting panic selling behavior. We chose the Nitrogen Risk Number, BART Balloon Pumps and a Multiple Price List to measure risk tolerance. While the correlations were small, risk tolerance measures were among the best available predictors of panic selling. The Nitrogen Risk Number correlated most with panic selling behavior, while the BART Balloon Pumps correlated most with Subjective Pain during a market crash. We also revealed that panic selling behavior also decreases with age. Due to our subject pool being mostly college students under the age of 22, future work is needed to investigate whether experience with the stock market would change our outcomes: Working with younger people who may not have yet had the chance to invest may have driven some of our results we found. Nonetheless, although we failed to support our hypothesis and reveal an impact of cognitive control failures in panic selling, we have provided pioneering evidence that underscores the efficacy of utilizing risk tolerance measures as reliable predictors of market behavior. For the first time we have supporting evidence for the widespread use of risk tolerance measures to predict market behavior.

Luiza Cabral Flores

Mentors: Dr. Melissa Robertson

Buffering the Effects of Negative Feedback on Creativity

Scientific research requires creative problem-solving, yet this creativity may be hindered by negative feedback—a common aspect of the scientific process. The current study examines whether attachment security with one’s mentor buffers the effect of negative feedback on creativity through a 2 (negative versus neutral feedback) x 2 (attachment security versus control) experimental design. Graduate students were asked to generate a creative research idea, and given bogus feedback (negative or neutral) from a supposed AI tool. Participants were randomly assigned to either an attachment priming or control task, then asked to revise their research idea. I hypothesized that negative feedback decreases creativity relative to neutral feedback, and that mentor attachment security priming increases creativity relative to acquaintance priming. In addition, I hypothesized that mentor attachment security mitigates the effects of negative feedback on creativity, thus underscoring the importance of secure mentoring relationships for fostering creativity in the face of challenges.

Madelyn Owen

Mentors: McKenzie Figuracion, Dr. Sarah Karalunas

Disrupting the Binary in Laboratory Paradigms: Validation of a New Measure of Emotional Variation in Cognitive Control

Background: Cognitive control supports goal-directed behavior. The ability to engage cognitive control varies across emotional contexts and variation predicts multiple types of psychopathology. In standard, well-validated emotional go/no-go (GNG) paradigms participants discriminate between emotional and neutral faces. These tasks include a neutral task condition that requires participants to discriminate male/female faces using assumptions based on binary gender. This opposes a fluid understanding of gender and risks alienating gender diverse research participants. Here, we seek to validate an alternative task requiring an age discrimination (young/old).

Method: N=30 children and N=30 college students will complete two counterbalanced GNG paradigms: the established gender and alternative age versions. Participants will also complete questionnaires, standardized assessments of executive functioning and intelligence, and a qualitative interview evaluating their experience in psychological research.

Results: Analyses will focus on validating the alternative GNG task and establishing improved research practices with gender diverse participants.

Madyson Depoy

Mentors: Jessica Dupree & Dr. Susan South

The association between Interpersonal Violence and Perceived Social Support and Relationship Strain

Intimate partner violence is highly prevalent and has negative personal and societal impacts. Social support can mitigate these issues by acting as a protective factor for individuals at risk for IPV and as a buffer from chronic stress. This study aims to investigate the associations between IPV, self-perceived social support, and relationship stressors. In a sample of 100 married couples, we examine the effects of differing severity of psychological intimate partner violence on social support and relationship strain. We predict that IPV severity will be negatively associated with perceived social support and positively associated with relationship strain. To account for the nested nature of the data, we will be using an actor-partner interdependence model (APIM) to determine the effects on one's own outcomes and one's spouse's outcomes.

Noah Wilson, Minjae Kim

Mentors: Dr. Franki Kung

Qualitative Analyses of Organizational Goal Conflict

For decades, enhancing employees' work performance was considered as the most important goal in organizations. However, as the workforce became increasingly diverse, many organizations started to pursue the goal of recruiting and maintaining a diverse group of employees. To help organizations make decisions related to these two goals, existing research has focused on the "diversity-performance tradeoff" in personnel selection. However, little work has examined how lay people think about the relation between these two goals, which can have important implications for employees' support toward organizational diversity efforts. Drawing on the goal conflict literature in motivation science, we proposed that people can perceive the nature of the conflict between diversity and performance goals differently: holding resource conflict or inherent conflict beliefs. In an online survey ($n = 157$), we examined if people differ on their beliefs and whether the beliefs are related to support for organizational diversity policies. We also asked an open-ended question about what people think organizations can do with regard to managing diversity and performance goals. Results showed that resource and inherent conflict beliefs were two separate dimensions. Those with higher inherent, but not resource, conflict belief supported less integrating strategy in managing performance and diversity goals. Moreover, inherent, compared to resource, conflict belief predicted more negative attitudes toward diversity policies in organizations, while behavioral intention didn't yield any significant findings. In addition, we reported results from our thematic analysis of the open-ended question responses, and implications on how they relate to people's beliefs of the conflict and attitudes. In conclusion, inherent conflict belief uniquely predicts negative outcomes toward organizational diversity efforts over and above resource conflict belief. Organizations should consider employees' perception of diversity and performance goal conflicts to potentially increase support for diversity policies in organizational processes like selection/ recruitment, training, and other contexts.

Olivia Lewis

Mentors: Dr. Thekla Morgenroth

Perceptions of Asexuality among LGBTQ+ Individuals

Asexuality is often not seen as a legitimate sexual identity, but research on how the LGBTQ+ community perceives asexuality has been largely unexplored. We examined to what extent members of the LGBTQ+ community believed that asexuality was a legitimate sexual identity, and that asexual people belong within the community. Participants (N = 173) read four profiles about an asexual, heterosexual, gay, and bisexual individual respectively and rated each on how much they belong in the LGBTQ+ community and how legitimate their sexual identity is. We found that asexual people were rated as belonging less within the LGBTQ+ community and as a less legitimate identity in comparison to other LGBTQ+ groups. Distinguishing further between straight and gay asexual people, we found that straight asexual people were rated as belonging less than gay asexual people. No such pattern emerged for legitimacy. These findings demonstrate that anti-asexual bias exists within the LGBTQ+ community.

Pari Mollabashy

Mentors: Dr. Jeffrey D. Karpicke

The Effects of Repeated Retrieval on Memory for Temporal Context

Relative to restudying, the act of attempting to retrieve information from memory improves performance on free and cued recall tests. However, the effects of retrieval practice on memory for temporal occurrences (i.e. when information occurred) has been less thoroughly investigated. Using a foreign-language learning paradigm, we investigated the effects of repeated retrieval practice, and ability to speak one language versus multiple languages, on memory for temporal information. Subjects were presented with three lists of Lithuanian-English word pairs, and after each list, they either restudied or recalled the list three times. On a final list discrimination test, participants who had practiced retrieving the translation had better memory for which list ideas had occurred on than participants who restudied the translations. There was no difference in list discrimination performance between multilingual and monolingual individuals. In short, repeated retrieval practice improved memory for temporal information regardless of participants' lingualism.

Piper Reed

Mentors: Dr. Susan South

Perceived Discrimination and Physical Health: A Focus on the LGB Community in a Nationwide Sample

Discrimination is consistently related to poor physical health outcomes in the general public. However, no studies have researched this relationship within the lesbian, gay, and bisexual (LGB) population. As LGB individuals uniquely experience heightened discrimination from stigma and biases related to their sexuality, it is important to ask if this community is at greater risk for poor physical health outcomes compared to the general public. Hence, this study seeks to compare the physical health impacts from discrimination of the LGB community and the heterosexual community. The sample is drawn from the 1995-1996 Midlife in the United States (MIDUS) data set; 5958 participants identified as heterosexual and 168 participants identified as LGB. Via self-administered questionnaires and phone interviews, participants answered questions about daily discrimination, self-evaluated physical health, and number of chronic conditions. It was hypothesized that an interaction between discrimination and LGB sexuality would be associated with physical health, such that the association between discrimination and poor health would be stronger among LGB individuals than heterosexuals.

Qing Yin, Brianna Woltz, Raechel Johnson, Vineeth Narra, Iris Yao, Minjae Kim

Mentors: Dr. Franki Kung

Facilitating Constructive Dialogue: Wise Reasoning in Sociopolitical Conflict Communication

Heated sociopolitical debates often escalate into unresolved conflicts, potentially diminishing one's satisfaction with both their relationship with the conversation partner and the dialogue itself (i.e., subjective values). In this study, our goal is to determine whether wise reasoning—characterized by humility, contextual understanding, perspective-taking, and dialectical thinking—is an effective way to facilitate constructive conversations around complex social issues. The study is designed to test whether one's level of wise reasoning is positively correlated with their subjective values in conflict communication. College students engaged in conversations about immigration with a standardized opposing message (i.e., support or against) and rated their levels of wise reasoning and subjective values in the conversation. In addition to self-reports, a team of researchers manually coded the same responses. We predict that self-reported and researcher-rated scores of wise reasoning of a participant are positively correlated with their subjective values in the conversation.

Roma Kamat

Mentors: Tori Burke, Parker Davis, Soyol Enkh-Angalan, Dr. Julia Chester

Alcohol Exposure in Aged Mice: Effects on Recognition Memory and Compulsive-Like Behaviors.

Alcohol consumption in older-aged populations may worsen memory and anxiety. We examined whether alcohol consumption in aged mice affects memory and anxiety-related compulsive behaviors. Mice selectively bred for low alcohol preference (LAP) (14-15-months-old, 1 OM, 8F) underwent a three-week Drinking-in-the-Dark (DID) procedure receiving either tap water or a 20% alcohol solution four days/week. After DID, anxiety-related compulsive behavior was tested with marble-burying tasks. Then, LAPs underwent an Object Recognition Memory task where familiar over novel object recognition was assessed. LAPs displayed low but physiologically relevant alcohol intake across the 3 weeks. Alcohol exposure did not affect marble burying. LAPs displayed low levels of object exploration, hindering reliable memory assessment. Interestingly, alcohol-exposed females took longer to explore objects compared to control females, while LAP males did not show this effect. This suggests aged LAPs have reduced motivation for exploration, and alcohol may increase anxiety or neophobia toward objects in LAP females.

Sarah Eyles, Claire Keirn, Iris Yao

Mentors: Luis Gomez, Sofia Rubi, Stephen Beegle, and Dr. Jennifer Brown

Study of Large Language Models' Consistency and Depth of Response on the Effects of Drug Use on HIV Medications

Large language models (LLM) are learning algorithms that have become increasingly popular for generating information in various settings, including healthcare. With HIV and illicit drug use being prevalent public health issues, distributing consistent and reliable information on medications is important. The purpose of this study was to verify and compare the consistency and depth of response from LLMs about the effects of drug use on HIV medications. Across four consecutive weeks, we queried four LLMs (ChatGPT Free, ChatGPT Paid, Google Bard, and HIVGOV) about how drug use affects HIV medications. We utilized qualitative coding methodology and assigned standard codes to the LLM answers to collate the information across the different platforms. The qualitative coding methodology revealed differences in response type, length, and depth of information, showing inconsistencies across LLMs. Further research is needed to determine what way LLMs should be improved to be used as a tool in healthcare.

Sarah Ramsey, Madelyn Heise, Sydney Aller, McKenzie Figuracion

Mentors: Dr. Sarah Karalunas

ADHD Diagnosis Discrepancies and Face Processing Differences in Multiracial Children with ADHD

ADHD, a prevalent neurodevelopmental disorder in children (CDC, 2023), faces diagnostic disparities due to implicit bias and stereotyping, particularly affecting minority groups (Morgan et al., 2013). Despite the rapid growth of the Multiracial population (U.S. Census, 2022), research on ADHD diagnosis rates in Multiracial children remains scarce. Moreover, neurocognitive processes like face processing in ADHD, differ between Multiracial and Monoracial children (Gaither et al., 2012). Investigating diagnostic rates and face processing discrepancies in Multiracial children with ADHD is essential. Using a large cohort (n=1483), we employ a chi-square test to compare diagnostic differences between community and onsite clinicians for Monoracial and Multiracial individuals. Preliminary findings show lower neural response to faces in ADHD children ($p=.003$). We aim to examine this difference between Monoracial and Multiracial children. Addressing these research gaps could inform more inclusive diagnostic practices and enhance understanding of ADHD-related face processing differences in Multiracial children.

Simran Zaveri, Grayson McCard, Ramsey Miller, Alexandra Wildridge

Mentors: Luis Gomez, Sofia Rubi, Stephen Beegle, Dr. Jennifer Brown

The Impact of Emergency Department Based Interventions on Substance Use Disorder Outcomes

Individuals with substance use disorders (SUD) present to emergency departments (ED) due to increased risk factors. The ED functions as a center for providing treatment and connections to resources for individuals with SUDs. We examined studies regarding the efficacy of implementation of three ED interventions in individuals with co-occurring SUDs. Inclusion criteria for this review: (a) ED-based intervention programs, (b) the effect of interventions on patients with SUD in the context of negative outcomes, and (c) articles published between 2001 and 2022. Across 13 articles, results indicate brief motivational interviewing interventions were positively correlated with reduced negative alcohol-related consequences. Text-message interventions were positively correlated with fewer binge drinking days. Computer program interventions were positively correlated with decreased drug use. Findings suggest these interventions have a positive impact on SUD related negative outcomes. Future research should assess the efficacy of these interventions on participation in follow-up treatment.

Sydney Godwin

Mentors: Dr. Susan South, Samantha Dashineau

Persona and Pints: The Personality Based Pattern of Drinking Locations

Drinking behavior often intersects with individual personality traits and environmental factors such as location. Understanding these connections can offer predictive insights into drinking patterns. Extraversion is correlated with higher amounts of binge drinking and instances of drinking while conscientiousness is correlated with drinking less. Drinking in a bars is associated with heavier drinking and intoxication while home drinking is related to greater drinking moderation. The current study investigates the association between personality traits and drinking location in the context of drinking behavior. The sample was drawn from DISTRESS, a daily diary study of drinking patterns. Personality was evaluated using the IPIP-NEO-60 questionnaire at the beginning of the study. Data were analyzed via Latent Profile Analysis to identify groups according to drinking pattern, followed by an ANOVA to identify mean differences across the groups. This research aims to elucidate the intricate interplay between personality, location, and drinking behavior.

STUDENT RESEARCH OPPORTUNITIES

Student research opportunities within the Psychology Department

[https://hhs.purdue.edu/
undergraduate-students/
honors-program/psychological-
sciences/](https://hhs.purdue.edu/undergraduate-students/honors-program/psychological-sciences/)

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University-related research opportunities:

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DEPARTMENT OF PSYCHOLOGICAL
SCIENCES
703 Third Street
West Lafayette, IN 47907-2004