CRF-1 Receptor Antagonist Antalarmin and Its Effects on Human and Animal Drinking Patterns in Regard to Alcohol Use Disorder Research

Student Author: Taylore L. Mahon
Faculty Mentor: Jennifer Wilhelm

Over the course of the last few decades, the understanding of alcohol use disorder (AUD) has advanced significantly due to major progress in genetics and neuroscience research. Holistically, we know that the risk for addiction is related to complex interactions between biological and environmental factors such as genetics, epigenetics, developmental attributes, neurocircuitry, social and cultural systems, stress, trauma, and exposure to alternative reinforcers. While our understanding of AUD continues to develop, there is still vast opportunity in the treatment realm of the disorder. The corticotropin-releasing factor/hormone (CRF-1) receptor has been a more novel focal point for researchers in regulating an organism’s stress response, which has been discovered to be heavily related to alcohol withdrawal and consequently, relapse. The research I've conducted has looked specifically at a specific CRF-1 receptor antagonist, Antalarmin. I wanted to know the progress being made in experimental procedures and studies using animal and human test subjects, and if it has the potential to be a future treatment option for both long-term and short-term sufferers of AUD, while also considering potential procedures that could take steps towards furthering our knowledge of the Antagonists effects on human drinking patterns.

Memory Binding in Early Childhood

Student Authors: Eliza A. Copjec*, Sophie M. Bella, Morgan McGahran, Maddie A. Redwine
Faculty Mentor: Gabrielle Principe

Binding is an essential part of the construction of episodic and autobiographical memory. In order to examine the development of successful binding in early childhood, a sample of 94 4-6-year-olds were asked to recall their memory of a scripted scavenger hunt involving finding and matching artifacts to statues at Ursinus College. One week after the staged event, children participated in a second session to evaluate their memory for this event. At the second session, a memory interview was conducted to test children’s recall of the event, and then their recognition of where they found each artifact was assessed. Dialogue from the memory interview was transcribed and coded for narrative structure and cohesion indicative of autobiographical remembering skills. Including, mother-child dialogue during the hunt to explore the relationship between parental verbal scaffolding of binding. Six-year-olds reported higher recall levels of statues and artifacts than four-year-olds. Children’s level of narrative structure and cohesion was associated with their ability to recall and to bind artifacts to statues. Mothers who elaborated during the event were associated with children's ability to recall and to match artifacts to statues. These findings indicate children's successful binding is related to children's autobiographical remembering skills, as well as a mother's ability to aid a child's memory at encoding.

Ultimatum Game In-group/Out-group Perceived Fairness: The Capitol Riots of January 6, 2021

Student Author: Emily L. Kurzweil
Faculty Mentor: Jennifer Wright

In behavioral economics, the Ultimatum Game measures people’s perceptions of fairness and their willingness to share resources with others, which is typically a 50/50 ratio- i.e., people tend to expect and are willing to share 50% of a particular resource with others. However, previous research shows that certain contextual features such as In-group/Out-group membership change what people perceive as a fair exchange and the amount of resources they are willing to share. The stronger the In-group/Out-group identities, the larger the effect on these outcomes. Since the 2016 presidential election, people’s political orientation has become an increasingly polarizing In-group/Out-group signifier in the US. Less is known, however, about the effects of other In-group/Out-group identities, such as race (especially after the killing of George Floyd) and level of support for the January 6, 2021 capitol riots. RESULTS TO BE DETERMINED.

Organizational Behavior Management: A Review of Behavioral Approaches

Student Author: Kathleen B. Trainor
Faculty Mentor: Adam Doughty

The present literature review examines the field of organizational behavior management (OBM), which applies behavior-analytic concepts and principles to individuals and groups in the workplace. OBM is becoming an increasingly popular area of research within applied behavior analysis and major topics of study include performance management, behavioral safety, and behavioral systems analysis. After reviewing empirical studies related to the aforementioned topic, four areas within behavior analysis that are especially relevant to OBM were explored in depth. These areas were rule-governed behavior, derived stimulus relations, Acceptance and Commitment Therapy, and intrinsic motivation. In addition to reviewing empirical studies, the review offers insights about the connections between these research areas and suggests specific issues that warrant future research. The field of behavior analysis has much to offer for the analysis and improvement of behavior in organizational settings.
The Effect of Lever Height on Response Rate in Male and Female Rats

Student Author: Ka'ala K. Bajo
Faculty Mentor: John Widholm

The specific factors affecting response rate differences between male and female rats is currently unexplored. One likely contributing factor for the sex differences in response rate is the mechanical advantage that male rats have when pressing response levers due to their larger size. To that end, male and female Long-Evans hooded rats were compared on a VI-30 schedule of reinforcement across three different lever heights to manipulate mechanical advantage and response rates were examined. It was hypothesized that (1) male rats would emit higher response rates across all lever heights and (2) the response rates of male rats would be less affected by increases in lever height than female rats. Data collected over the three weeks of testing confirmed the expectation of significantly higher response rates in male rats (hypothesis #1), but no significant interaction between lever height and response rate was detected (hypothesis #2). This research further supports the existence of sex differences in rats but highlights a need for further study into differences regarding lever height and response rates between sexes.

The Effects of COVID-Focused Expressive Writing on Symptoms of Anxiety in College Students: Randomized Controlled Trial

Student Author: Mari G. Murray*, Liz M. Auger*
Faculty Mentor: Sarah Robertson

In a meta-analysis of 43 studies that have been conducted since the beginning of the COVID-19 pandemic, the public has demonstrated increased levels of anxiety (Vindegaard & Benros, 2020). The current study aimed to assess (1) the effect of an expressive writing (EW) intervention on levels of anxiety in college students and (2) if having a relationship with someone diagnosed with COVID-19 affected anxiety scores. Participants were randomly assigned to one of two conditions: an EW condition or a control condition. Participants in the EW condition were given a writing prompt that required them to reflect on the ways that they have been impacted by COVID-19. Participants in the control condition received no writing prompt. A repeated-measures analysis of variance was conducted to assess the effects of study condition (EW vs. control) and relationship status on scores of anxiety. Results indicated a significant time X assignment interaction, such that anxiety decreased from the first survey to the one month follow-up survey for those in the EW group while scores did not change in the control group. The role of relationship status was not statistically significant. COVID-19 has put extra stress and anxiety on first year college students and has made it difficult for them to generate new social relationships and adapt to novel learning styles (Schiff, et al., 2020). This type of intervention can potentially provide relief to many students during the pandemic and ultimately help reduce their symptoms of anxiety.

Belief Perseverance and Autocorrelation on Human Judgment of Graphs

Student Author: Ethan C. Guthrie*, Craig D. Tanton
Faculty Mentor: Anthony Bishara

People's minds are hard to change. Even in the face of strong evidence to the contrary, people still cling to their beliefs. This phenomenon has a name--belief perseverance, but the question remains: why? The hypothesis that belief perseverance and autocorrelation lead to a significant decline in accuracy for visual analysis was tested on 108 undergraduate students. Two conditions of mean effect (effect present and effect absent) were crossed with 3 conditions for autocorrelation and 3 conditions of belief perseverance to determine how each of these factors affects participants' visual assessment of whether or not an imaginary drug raised cholesterol. Results indicated that high absolute autocorrelation reduces accuracy in visual analysis, and belief perseverance increases the rate of type-1 or type-2 errors for high belief perseverance and low belief perseverance, respectively, where high belief perseverance denotes when participants were led to believe the drug does raise cholesterol, and low belief perseverance denotes when participants were led to believe the drug does not raise cholesterol. Additionally, the 3 factors of interest interact in myriad ways, amplifying their individual effects. As such, visual analysis of treatment effects by physicians and/or mental health professionals may lead to less effective treatment decisions, and biased decisions made about the general effectiveness of certain treatments may similarly reduce the efficacy of treatment decisions.

Examination of the Relationship Between Synaptic Withdrawal after Peripheral Nerve Injury with Exercise and Estradiol

Student Author: Vershelle C. Peterson
Faculty Mentor: Jennifer Wilhelm

Each year, peripheral nerve injury impacts hundreds of thousands of individuals, with significant limitations in functional recovery (Gordon & English, 2015). Although the peripheral nervous system possesses the ability to recover after trauma, functional deficits often remain. Some of these deficits are due to central nervous system circuitry changes in which synaptic inputs recognize and withdraw their contacts from injured motoneurons. Previous studies have identified exercise as an effective therapy in enhancing synaptic inputs for improved functional recovery (Liu et al., 2014). However, most patients are unable to exercise early enough after injury to benefit from its therapeutic effects. Therefore, new treatments must be developed. Our lab previously found that estrogen signaling is part of the mechanism by which exercise exerts its effects on axon regeneration after peripheral nerve injury. We proposed to examine whether estrogen signaling has an effect on the synaptic plasticity that occurs around motoneurons after axonal injury. We hypothesized that estradiol treatment may restore and retain synaptic inputs following peripheral nerve injury. We predict that estradiol treated mice will show increased synaptic coverage onto injured motoneurons compared to untreated mice. We also predict that blocking estrogen signaling using an estrogen receptor antagonist will reduce synaptic coverage compared to untreated mice and estrogen treated mice. The results from the study could help improve our understanding of interactions among signaling pathways during regeneration and aid in the development of new treatments.
How the Introduction of Schema Affects Young Children’s Memory and Suggestibility

Student Author: Shira C. Bezalel*, Catarina M. Casey, Sarah A. Cavallaro, Madison R. Patterson
Faculty Mentor: Gabrielle Principe

When experiences are not well understood, individuals have difficulty interpreting and remembering what happened. Such findings are particularly relevant to children as witnesses because many of the situations about which they testify involve events that are not well understood. This point is particularly relevant for the testimony of very young witnesses, especially in sexual abuse cases. When child abuse victims are young enough to have almost no sexual knowledge, they may be unable to interpret and accurately remember what has occurred. For example, a child who experiences “milder” forms of abuse (e.g., “accidental” genital touching) may not even be aware of the inappropriateness of genital fondling versus everyday hygiene and, as a result, construct a very different memory than an older child who knows the impropriety of certain behaviors. On the other hand, a non-abused child with sparse knowledge of sexuality may be more prone to acquiesce to abuse related suggestions than an older child who may more easily dismiss such suggestions as absurd. To begin to explore factors that can affect children’s remembering and vulnerability to false suggestions when an event is not well understood, we have carried out a study with prose material that is difficult to understand without knowledge of the semantic context (i.e., topic) and have manipulated children’s knowledge at encoding. We will discuss the development of our coding scheme and our preliminary results.

Impact of Affectional and Gender Minority Status on Therapeutic Relationship

Student Author: Patrick T. Meyer
Faculty Mentor: Jennifer Wilhelm

LGBTQIA+ therapists might face unique challenges in trying to form a therapeutic relationship with their client. A strong therapeutic relationship has been well-documented as one of the most significant factors of effective psychotherapy, but the field has varying and often conflicting theories relating to therapist self-disclosure. Disclosing queer identities has the potential to foster an environment of acceptance, affirmation, and significantly improve the therapeutic relationship. However, due to internalized heterosexism or cissexism, clinicians might worry that revealing aspects of their identity will result in discrimination and therefore negatively affect the relationship. This semester, we reviewed the growing literature on the experiences of queer individuals in therapy and the required competencies of mental health professionals when interacting with this population. LGBTQIA+ therapists disclosing their gender identity and/or sexual orientation provide a lot of comfort to queer clients whose identities have historically been pathologized by psychiatry and applied psychology. Additionally, self-disclosure by gay male therapists has been shown to be helpful when interacting with female clients who have trauma due to being the victim of sexual assault or harassment by men.

Executive Functioning Skills: Fathers’ Stimulation of Toddlers’ Cognitive Development Matters

Student Author: Caitlin H. Dean
Faculty Mentor: Amy Kolak

This multi-method study examined how mothers’ and fathers’ cognitive stimulation during parent-child interactions works with children’s moral regulation to predict their executive functioning skills in early childhood. Forty children (23 girls and 17 boys) participated in this two time point study. Children’s moral regulation was assessed via parent reports when children were 2 1/2 years old. Parent-child interactions were also observed and coded at this time point. Children’s executive function skills were assessed, when they were 5 years of age, using the Flexible Item Selection Task (FIST) and the Head-Toes-Knees-Shoulders (HTKS) task. Results showed that children’s moral regulation and parents’ cognitive stimulation predicted performance on the FIST and the HTKS task. The findings for children’s performance on the HTKS task support the notion that some children may be more vulnerable to the caregiving environment. In this case, children with lower moral regulation were more greatly influenced by their parents parenting than children high in moral regulation.

The Effects of Abstract Language and Positional Status on Perceptions of Power, Competence, and Warmth of a Group Member and its Group

Student Author: Allison M. Moore
Faculty Mentor: Jennifer Wright

A mixed-study design investigated the effects of abstract language as a priming cue for power across various levels of positional status within an organization: CEO, Board of Executives. We hypothesized that the presence of abstract language would increase perceptions of power, resulting in an increase in perceived competence, warmth, decisiveness, and power of the person(s) in possession of power. Participants received an excerpt using either abstract or concrete language about the release of an allergy drug, then were asked to complete a survey. Afterwards, participants were shown a second excerpt updating the public on the success or failure of the drug. Participants re-assessed the speaker using the initial survey, then were exposed to two subsequent trials in which they repeated procedures with different speakers, in order to compare levels of positional status. A MANOVA indicated a significant increase in positive judgments made when valency of the drug outcome was positive. Within subjects, only the undistinguished employee was perceived more harshly after the negative drug outcome. Further, the CEO was viewed most highly in both the abstract and concrete language prime.
Emerging Adults' Use of Religious and Non-Religious Coping

Student Author: Jasmin R. Scardino
Faculty Mentor: Amy Kolak

The objective of this research was to examine the contributions of stress and religious and non-religious coping mechanisms on emerging adults' mental wellness and substance use. Participants (37 males and 161 females) ranging from 18 to 24, were gathered from the PSYC 103 subject pool to complete a survey. A series of regression analyses, controlling for social desirability, were conducted to examine the links between stress and different types of coping and their effects on mental wellness and substance use. Emerging adults' substance use was only significantly related to gender, with male participants drinking significantly more than their female counterparts. When examining the associations among stress, coping mechanisms, and mental wellness, it was found that stress and coping worked in an interactive fashion with respect to mental wellness, such that coping strategies were found to moderate the association between stress and mental wellness. For example, significant negative associations were found when positive religious and non-religious coping behaviors were low, whereas no associations were found when emerging adults used high levels of positive coping strategies. Negative religious and non-religious coping also moderated the link between stress and mental wellness, however the interpretation of these results is less obvious. Even so, the findings from this study are important because they suggest that positive coping strategies may provide a buffer from the negative effects of stress on mental health during emerging adulthood, therefore, this could inform intervention efforts aimed at bolstering emerging adults' use of positive coping mechanisms depending on their religiosity.

To Tell or Not to Tell: The Benefits and Drawbacks of Disclosing an Autism Diagnosis

Student Author: Mariana C. Glenn-Toland*, Christopher E. Whelpley
Faculty Mentor: Cynthia May

In the span of 15 years, the prevalence of autism spectrum disorder (ASD) has increased from 1 in 166 to 1 in 54 individuals in the United States (Centers for Disease Control and Prevention, 2014). Despite this dramatic increase in the number of individuals diagnosed with ASD, individuals with ASD continue to show high rates of unemployment and underemployment (Bureau of Labor Statistics, 2015). Previous research suggests that one significant barrier to employment for people with ASD is the job interview, as candidates with autism are rated unfavorably in traditional face-to-face job interviews relative to neurotypical (NT) candidates (Whelpley & May, 2021). However, in that study, all evaluators were naïve to candidates' ASD diagnosis, and there is some suggestion in the literature that disclosure of the diagnosis improves favorability ratings (Morrison et al., 2019). We explored whether disclosure of an ASD diagnosis improves or impairs job interview outcomes for people with ASD. In our study, college students with and without an ASD diagnosis engaged in mock job interviews. The interviews were videotaped and transcribed. Raters then either watched the videotapes or read the transcripts, and were told whether each candidate did (or did not) have ASD. Raters evaluated each candidate on nine of social dimensions. Raters also indicated whether each candidate was qualified for the job, and how likely they were to hire each candidate. Our findings indicate that the impact of diagnosis disclosure depends on whether evaluators can see and hear the candidates, or simply read the interview transcript.

Suggestibility on Young Children's Memory Given an Ambiguous Narrative: Impacts of Prior Knowledge

Student Author: Kelly R. McGorry*, Marion C. Carilli, Lauren E. Collins, Anne W. Payne
Faculty Mentor: Gabrielle Principe

When experiences are not well understood, individuals have difficulty interpreting and remembering what happened. Such findings are particularly relevant to children as witnesses because many of the situations about which they testify involve events that are unfamiliar to them. This point is relevant for the testimony of very young witnesses, especially in sexual abuse cases. When child abuse victims are young enough to have almost no sexual knowledge, they may be unable to interpret and accurately recall what has occurred. For example, a child who experiences "milder" forms of abuse may not be aware of the inappropriateness of genital fondling versus everyday hygiene. In turn, this can create a very different memory than that of an older child who has more knowledge about the impropriety of specific behaviors. To begin to explore factors that can affect children's remembering and vulnerability to false suggestions when an event is not fully understood, we have carried out a study with prose material that is difficult to understand without knowledge of the semantic context (i.e. topic) and have manipulated children's knowledge at encoding. We will discuss the development of our coding scheme and our preliminary results.

Thank you for attending and supporting our students! Congratulations to all of our student awardees and presenters, and a special congrats to our graduating seniors!