

# Undergraduate Honors Projects – 2014-2015

## **Dagger Anderson**

Is There a Spatial Code in Abstract Sequences?

**Advisors:** Ulrich Mayr, PhD and Atsushi Kikumoto

Holding representations of a range of elements (i.e., numbers, dates, and arbitrary sequences) is known to produce response interference effects, where response execution is influenced by the spatial layout of these representations. One illustration of this is the ordinal position effect, where items at the beginning of a sequence held in working memory facilitate faster left-sided responses, whereas items towards the end of the sequence facilitate faster right-sided responses. The question of investigation is whether the ordinal position effect can be seen in hierarchically organized sequences. As their basic task, participants had to localize via a key press a given color target among three, horizontally arranged color stimuli. Sequences of color targets were organized in terms of two ordered chunks (e.g., red-green-blue—green-blue-red). We hypothesized that when the within-chunk position matched with the position of the color target, responses would be faster and more accurate than in the case of a mismatch. We also predicted that congruent responses would be faster and more accurate in the first chunk compared to the second. However, we obtained no evidence for a congruency effect between the sequential and spatial position even though subjects clearly used a hierarchically organized sequential representation. A possible explanation for this null-result is that different from previous research, our paradigm allowed participants to prepare for the upcoming serial position, before having to respond to the spatial stimulus. We speculate that this may have eliminated a critical condition for the expected congruency effect, namely the temporal overlap between the sequential representation and the stimulus-driven location representation.

## **Madison Bray**

Effects of Parent/Child Relationship Quality on Risky Decision Making

**Advisors:** Jennifer Pfeifer, PhD, Arian Mobasser, MS, Shannon Peake, MS, and Sarah Alberti, BS

The effects of the relationship between a parent and child is one of the biggest indicators of behavior in adolescence, though limited research has been done looking at behavior in undergraduate aged people in relation to parent/child relationship quality. This correlational study looks to examine the possible effects that parent/child relationship quality has on late adolescent aged people, specifically in regards to resiliency to risky decision making post social exclusion by peers. University of Oregon undergraduates (N=50) participated in a series of online tasks assessing risky decision making (the Stoplight task), both before and after an episode of social exclusion (assessed using Cyberball). Following the online games, subjects filled out various questionnaires assessing current and past perceived relationship quality with both parents, including EMBU and QRI. Additionally, they completed surveys such as RPI and CARE\_R assessing for past risky decision making and resiliency to peer influence. We hypothesized that the stronger perceived relationship quality with parents, the more resilient subjects would be to peer influence, and risky decision making post peer exclusion. This hypothesis was not supported by significant results. The inconclusive results provide insight on the affects that parent/child relationship has on age, and suggest that adolescents are more susceptible to parent relationship quality in regards to risky decision making.

## **Megan P. Bruun**

The Effects of Gender and Status When Talking About STEM

**Advisor:** Sara Hodges, PhD

Who talks more in conversations is influenced by gender and status. Within STEM (science, technology, engineering, and math) fields, the effects of gender and status may be exacerbated by women's underrepresentation. In this study, dyads ( $n = 77$ ) made up of undergraduate and graduate students in the same STEM discipline talked about the undergraduates' prospects for graduate school. It was predicted that females in mixed gender dyads would talk less because of their minority status in STEM fields. However, in same gender dyads, it was predicted that graduate students, because of their higher status, would talk more than undergraduates. Contrary to predictions, it was found that undergraduate males and females did not significantly differ in the amount of talking time. Status was found to have a main effect, such that graduate students talked significantly more than 50% of the time. The interaction of graduate gender and undergraduate gender also had a significant effect on talking time. Conversations between undergraduate males and graduate females had the closest to an even 50-50 exchange out of all of the dyad combinations.

### **Jason David**

Association between Early Life Adversity and Stress

**Advisors:** Jeffery Measelle, PhD and Jennifer Ablow, PhD

Early life adversity is associated with adult elevations of inflammatory markers like circulating levels of C-reactive protein (CRP). Few studies have examined whether exposure to adversity prenatally is associated with inflammation during childhood. Exposure to adversity before birth may engender disease vulnerability via alterations in inflammatory biomarkers (i.e. fetal programming of disease hypothesis). This study examines the association between exposure to prenatal vs. postnatal adversity and CRP concentrations when infants were 18 months old. We followed 105 low-SES infant-mother dyads across the perinatal transition. Our measures of psychosocial and contextual measured prenatally and at 5- and 18-months postnatally. When infants were 18 months old, resting state saliva samples were collected to assess CRP (mg/L) levels via enzyme immunoassay. Hierarchical regression analyses reveals a composite measure of prenatal maternal adversity, that uniquely predicts variability in infants' log transformed CRP levels,  $B = 1.15$  ( $SE = .05$ ),  $p < .05$ . Maternal adversity at 5 months is not predictive of infant CRP, but maternal adversity at 18 months is marginally associated. These results raise questions about timing of exposure to adverse events as well as the potentially lasting effects on inflammatory processes when such exposure occurs very early in development.

### **Benjamin Davies**

Court Appointed Experts, Procedural Justice and Legitimacy in the Anglo-American Legal System

**Advisors:** Robert Mauro, PhD and Robert Rocklin, JD, MS

Justice systems cannot operate unless participants in the system perceive them as legitimate. Legitimacy, in turn, depends on whether the system is seen as procedurally just, that is, whether the processes that are used to resolve disputes are believed to be fair. Some have suggested that any departure from the Anglo-American adversarial system would call the legitimacy of the system into question. The use of court-appointed experts – rather than the traditional method of having each party call their own experts – is one such departure. In this study, we examined whether using court-appointed experts would reduce perceptions of procedural justice. We also investigated the effect of perceived defendant power on perceptions of procedural justice.

Participants were presented with four vignette scenarios describing a civil negligence trial in which the plaintiff always lost. The subjective power of the defendant (individual, corporation, or government agency), and whether the third testifying expert was court-appointed or adversarial (that is, called by one of the parties) was varied. We had two predictions: (1) Across conditions, trials involving court-appointed experts would be perceived as less procedurally just than trials involving adversarial experts, and (2) There will be an interaction between whether the expert was court-appointed or called by a party and defendant power, such that if there is a high status plaintiff and a court-appointed expert, perceptions of procedural justice will be lowest. Despite our predictions, we found that the

subjective power of the defendant and the testimony of the third expert were the only significant predictors of procedural justice.

### **Macey Davis**

Future Planning in Relation to Impulsivity, Mindfulness, and Alcohol Use in Students

**Advisors:** Heidemarie Laurent, PhD and Christina Karns, PhD

Student success can potentially be predicted by the skill set an individual enters undergraduate study with. It is important to be able to plan a multiple year path through school, as well as have goals in mind motivating one's decisions and actions. Mindfulness has been connected to student self and emotional awareness, leading to more success in school, while impulsivity has been connected to risky behaviors and less success for students. This study aimed to examine the relations between four constructs important in student lives: Future Planning, Mindfulness, Impulsivity, and Alcohol Use. Main effect of trait variables on both Future Planning and Alcohol Use were found. Using survey questionnaires within a population of 231 undergraduate students, we found that aspects of Impulsivity (Lack of Premeditation, Lack of Perseverance, and Sensation Seeking), Mindfulness (Acting with Awareness, Non-Reactiveness of Inner Experience, Observing, Describing, and Non-Judgment of Inner Experience) predicted both Future Planning and Alcohol Use. This study aims to inform future studies and therapeutic techniques that could help increase student success and focus academic counseling for students who lack future orientation and/or have problematic drinking behaviors.

### **Kelsie Faraday**

Impacts of Early Adversity on Physiological and Performance Indices during a Social Stressor

**Advisors:** Philip Fisher, PhD and Leslie Roos, MS

Children who have experienced early life stress (ELS) experience later life deregulation of stress response systems and associated problems such as anxiety (Edge et al., 2009). The present study examined how early childhood adversity is related to multiple indices of young adults trait level and acute-induced anxiety. We hypothesized that elevated childhood adversity would be associated with reporting higher levels of trait and acute-induced distress. Subjects (N=64) completed a self-report Risky Families Questionnaire (RFQ; Taylor et al., 2004), State Trait Anxiety Inventory (STAI-T; Spielberger et al., 1983) and three in-lab visual analog scales (VAS). VAS measured stress, anxiety and insecurity prior, immediately after, and 20 minutes post social stressor. Heart rate was assessed as indices of arousal. To induce acute distress, subjects participated in the Trier Social Stress Test (TSST; Kirschbaum et al., 1993). A positive correlation was found between RFQ and trait anxiety ( $r(66) = .26, p < .05$ ). Although RFQ was not related to elevated levels of self-reported distress to a social stressor, ANOVA analyses showed a significant interaction between RFQ and active condition in relation to heart rate during the TSST ( $F(3,64) = 4.20, p < .05$ ). Higher RFQ predicted higher arousal when a social stressor was present.

### **Katey Gath**

Mind Wandering and the Neurotic

**Advisors:** Nash Unsworth, PhD and Matt Robison, MS

Utilizing the mind wandering probe technique and a battery of fluid intelligence, working memory capacity and attention control tasks, we looked to replicate that higher frequency of mind wandering relates to poor cognitive functioning. We sought to find if personality also relates to increased rates of mind wandering. We used the 44-item five-factor personality inventory (John, Donahue, & Kentle, 1991). Correlations indicated that those higher in neurotic traits mind wandered more frequently and exhibited lower working memory capacity. However, multiple regression analysis revealed that attention control fully mediated these relationships. Attention control maintained a

significant relationship with neuroticism holding constant mind wandering and working memory capacity. This suggests that neuroticism relates to higher rates of mind wandering under conditions where attention control needs to be maintained.

### **Yiding Han**

Association between Maternal Stress and Child Socio-Emotional Behaviors -- A Bio-Ecological Perspective

**Advisors:** Jeffrey R. Measelle, Ph.D. and Jennifer C. Ablow, Ph.D.

In the present study, guided by the bio-ecological perspective, we first examined how different levels of concurrent maternal stress associate with children's socio-emotional behaviors at five years of age. In addition, we examined the predictive role that prenatal maternal stress factors have on young children's behavior problems trajectory. A high-risk sample of 105 primiparous mothers, by virtue of their low socioeconomic status and history of depression, participated in the present investigation. Mothers' stress factors were measured regarding their: 1) maternal mental health; 2) maternal experiential stress; 3) socio-economic status; and 4) maternal relationship quality both during prenatal period (T1) and five-year postnatal (T4). Child internalizing and externalizing behavioral problem were measured using MacArthur Health and Behavior Questionnaire. Two sets of multivariate regressions suggested that for concurrent associations, there was a significant independent association between maternal mental health stress and children's internalizing behaviors at age of five controlling for the effect of child gender and negative affectivity, whereas there wasn't any significant concurrent associations between stress factors and externalizing behaviors. For investigation of prenatal stress factors, we detected a marginalized independent association of maternal experiential stress controlling for all stress factors at 5 years of age and our theoretical controls. Similarly, there weren't any significant associations between prenatal stress factors and externalizing behavior at the age of five. Our results provide a potential discussion of genetic connection between mother and her child's internalizing symptoms along with an intervention implication on programs that focus on reducing maternal experiential stress during prenatal period.

### **Alexandra Henry**

Responding to Disclosure of Mistreatment: The Long-Term Impact of Listening Skills Education

**Advisors:** Jennifer Freyd, PhD and Kristen Reinhardt, MS

Negative reactions to a disclosure of mistreatment can be more emotionally detrimental to the discloser than not disclosing the event at all, while positive reactions to disclosures can yield significant benefits, such as desensitization towards negative feelings and thoughts (Radcliffe, Lumley, Kendall, Stevenson, & Beltran, 2010). Previous research from Foynes and Freyd (2011) has shown that providing educational material on supportive listening significantly lowered the unsupportive behavior of listeners. This present study extends the work of Foynes and Freyd (2011) by examining the impact that a supportive listening skills tip-sheet has on a sample of 64 participants after the disclosure of a mistreatment and at a 6-month follow-up time period. We hypothesized that the listening tips would have a long term, positive impact on the listeners' and disclosers' self-rated ability to listen to disclosures of mistreatment, improve both participants' satisfaction in the relationship, and enhance participants' self-reported listening skills through the listening tips learned during the study. Results indicate that participants who receive the listening tips have lower ratings of unsupportive behaviors after the intervention in comparison to the control group who did not receive the listening tips at this time point.

### **Lauren Hval**

The Effects of Loss on Children's Perceptions of their own Internalizing and Externalizing Symptomatology

**Advisors:** Jeffrey Measelle, PhD, Jennifer Ablow, PhD, and Ariel Carter-Rodriguez

Experiencing loss, due to figurative and/or literal death, during early development may increase children's likelihood for developing certain negative health outcomes later in life. Currently, there is limited research on the extent to which loss impacts the physical and psychological health of children within the field of psychology. The present study explored childhood loss and the influence this might have on youth's development. We hypothesized that loss as reported on the Life Events Questionnaire (LEQ) would predict child's self reported symptomatology (internalizing and externalizing) on the Berkeley Puppet Interview (BPI) and mothers' reports of child behavior problems on the Child Behavior Checklist (CBC). We also hypothesized that children's BPI reports would be associated with mother reports (CBC).

### **Katherine Hyslop**

The Relationship between Emotional Eating and Heart Rate Following Acute Stress

**Advisors:** Philip Fisher, PhD and Leslie Roos, MS

The United States is at the forefront of an obesity epidemic with two-thirds of the population classified as overweight or obese (Flegal, 2010). Activity within the autonomic nervous system indicative of a biological stress response may be present in individuals that report emotional eating behaviors (Dallman, 2010). Prior research supports that heart rate analysis accurately evaluates activity within the autonomic nervous system (Pomeranz et al., 1985). However, there is a gap in understanding if increased heart rate induced by acute stress exposure may leave an individual more susceptible to emotional eating behaviors. Using the Three-Factoring Eating Questionnaire (TFEQ; Stunkard, 1985), The Trier Social Stress Test (TSST; Kirschbaum, 1993), a RS800CX training computer and polar wearlink+ transmitter heart rate sensor, we measured the relationship between emotional eating, acute stress and heart rate in (N=75) undergraduates. Results indicated that after controlling for BMI and overall perceived stress for the duration of the experiment, emotional eating was associated with a significant increase in heart rate from baseline during the acute stressor ( $F(1, 36) = 2.829, p < .05$ ). These results suggest that interventions that target stressful psychosocial experiences may buffer an individual's stress response and the associated emotional eating behaviors that lead to weight gain and obesity.

### **Emily Jacobs**

Self-Evaluations and Divergent Graduate-Level Participation in STEM"

**Advisor:** Sara Hodges, PhD

This study serves as an attempt to pinpoint factors contributing to women's underrepresentation in STEM (Science, Technology, Engineering, and Mathematics) fields. In particular, this study examines factors that may increase this underrepresentation as students transition from the undergraduate to graduate level. Previous research suggests it may be important to study female undergraduates' self-assessments of their STEM abilities, assessments that may be formed in part after receiving feedback from graduate students. In the current study, undergraduate and graduate students in the same STEM field were paired into 73 dyads to discuss the undergraduate's preparation for graduate school. We hypothesized that female undergraduates' STEM self-assessments via their inferences of graduate students' will be more negative than 1) male undergraduates' STEM self-assessments and 2) the graduate students' assessments of the undergraduates. Neither hypothesis was supported by significant results, although both univariate ANOVAs showed trends towards more negative self-assessments made by females. We discuss how these results may affect undergraduate women's decisions about continuing to graduate school in a STEM field.

### **Camille Moniz**

Impacts of Depression and Trauma on Predictors of Future Infant-Caregiver Attachment

**Advisors:** Heidemarie K. Laurent, PhD and Rosemary E. Bernstein, MS

Mother-infant attachment has been linked to important social-emotional outcomes later in life. Disorganized attachment, a style where the caregiver is a source of fear, is particularly detrimental. The current study attempts to determine whether or not depression, trauma or the interaction of the two are predictive of two scales that in turn predict future attachment. We hypothesized that mothers who have experienced trauma and/or depression would identify more angry faces and fewer sad faces in the IFEEL picture task (IFP) and would also score higher on maternal helplessness and fear on the Caregiver Helplessness Questionnaire (CHQ). A sample of 44 new mothers was tested when their infants were 12 and 24 weeks as a part of a longitudinal study. Linear regression analyses revealed that the interaction of postnatal depression and physical abuse was predictive of the number of angry faces seen. Mothers with higher postnatal depression and experiences of physical abuse saw more angry faces while mothers low in postnatal depression and high on experiences of physical abuse saw fewer. All other analyses were nonsignificant. Implications for early identification and prevention of attachment disorganization are discussed.

### **Alia Mowery**

Examining Motherhood as a Force for Cognitive Plasticity

**Advisor:** Dare Baldwin, PhD

New mothers face significant learning requirements and must develop skills necessary for their infant's survival. Perhaps the hormonal changes that presage birth, and are maintained by breastfeeding, enhance mothers' cognitive preparation to cope with the learning challenges of motherhood. We propose a study with several aims: to examine the extent to which motherhood facilitates women's ability to learn across a variety of tasks; to investigate whether breastfeeding might extend a potential period of heightened cognitive plasticity in new mothers; and to see if greater learning ability predicts better acquisition of skills central to motherhood, such as breastfeeding. We anticipate that mothers will outperform non-mothers on learning tasks, that breastfeeding mothers will show a slower decline in learning performance after giving birth than non-breastfeeding mothers, and that those showing strong learning performance will display higher levels of breastfeeding success. Should our findings confirm these predictions, this information will broaden perceptions about what motherhood potentiates and may provide a frame to study learning enhancement in adults.

### **Vivian Nila**

Disclosure of Substance Addiction during Pregnancy: A First Step in Accessing Services

**Advisors:** Phil Fisher, PhD and Amanda Van Scoyoc, MS

Maternal addiction is predictive of negative child outcomes. Children whose mothers struggle with addiction during pregnancy are more likely to have poor perinatal outcomes, developmental delays, and mental health struggles later in childhood. Beyond the impact of prenatal exposure, maternal substance addiction is a contributing factor to child abuse and neglect. Pregnancy is the optimal time for women to access treatment services. Early access to services decreases prenatal exposure and enables women to begin parenting unimpeded by substance use. Semi-structured interviews were conducted with 15 women (Mean age 27.3) who accessed substance abuse treatment services either during pregnancy or immediately following the birth of their child. Interviews elicited information about women's decisions to disclose or not disclose their addiction to healthcare professionals as well as women's overall pathways to accessing treatment. All interviews were transcribed and then iteratively coded to identify themes in women's beliefs regarding disclosure of substance use. Findings identify the importance of women's beliefs about child welfare involvement due to addiction to pregnancy. These beliefs can both act as a barrier to accessing care and a motivator to becoming clean. Pregnancy is a pivotal moment in women's lives that provides a crucial opportunity for them to get help, not just for themselves, but also for their children. Our research suggests that treatments and interventions that allow women to access care and disclose their use without fear of consequence are necessary for women to have a healthy and drug-free pregnancy.

### **Dylan Seitz**

## The Role of Rhythmic Brain Activity in Long Term Memory Retrieval

**Advisor:** Ed Awh, PhD

This study aims to elucidate the relationship between Working Memory (WM) and Long Term Memory (LTM) on a neurological basis. In WM tasks, it has been well documented that the alpha frequency signal (8-12 Hz) occurs at the onset of the stimulus. This study seeks to answer whether or not a similar neural pattern exists during a LTM task when the subject retrieves spatial information and holds it in mind.

Additionally, when does this signal occur? I predicted that the alpha signal would reoccur upon retrieval of the spatial stimuli thus revealing a re-representation into working memory. To get at these hypotheses, participants (N=27) participated in a LTM task over the course of two days. Day 1 involved the studying of various objects' spatial location on a circular array. On day 2, participants were tested on the items and their brain activity recorded. Results revealed that the alpha signal (8-12 hz) indeed did occur upon retrieval of the spatial representation from LTM. The signal occurred at approximately 600 ms and was sustained through the remainder of the trial. These findings suggest that Spatial Working Memory and holding spatial info in mind retrieved from Long Term Memory rely on the same neural mechanism.

## Sami Tayeh

Mindfulness and Behavior: Examining Effects of Mindfulness on the Behavior of Romantic Couples Engaged in a Conflict Discussion

**Advisors:** Heidemarie Laurent, PhD, and Robin Hertz, MS

Previous research has suggested that mindfulness is associated with higher relationship satisfaction and suggests several possible mechanisms that explain this association. The present study investigated potential connections between mindfulness (trait mindfulness and a brief mindfulness induction) and conflict behavior in romantic couples. We hypothesized that greater levels of trait mindfulness and participation in a brief mindfulness induction would predict fewer occurrences of negative communication behaviors and increased occurrences of positive communication behaviors during a conflict discussion. Romantic couples (n=114 dyads) completed a self-report trait mindfulness questionnaire and a week later participated in a lab session that involved the couple in a conflict discussion. Research assistants coded conflict discussion videos for positive and negative communication behaviors. There were no significant associations between self-reported trait mindfulness and conflict behavior. Similarly, the mindfulness group, which participated in a brief mindfulness induction, did not differ significantly in conflict behavior compared to the other groups. Future research could examine this topic using a prolonged mindfulness intervention.

## Naomi Wright

Experience of a Lifetime: Study Abroad, Trauma, and Institutional Betrayal

**Advisors:** Jennifer Freyd, PhD and Carly Smith, MS

Although the number of U.S. undergraduates studying abroad during college continues to increase, emerging research suggests these students are at risk for experiencing trauma (Kimble, Flack, & Burbridge, 2013; Flack et. al., 2014). The current study is the first to expand the investigation of study abroad risks to include a range of possible traumas and to examine the unique effects of institutional betrayal (i.e., an institution's failure to adequately prevent trauma or support victims) in the study-abroad setting. In a sample of university students who had studied abroad, many respondents (45.44%,  $n = 79$ ) reported personally experiencing or witnessing at least one traumatic experience while abroad. Of these students, more than a third (35.44%,  $n = 28$ ) also reported experiencing at least one form of related institutional betrayal. When controlling for trauma history, the experience of institutional betrayal uniquely predicted posttraumatic outcomes for witnessing and experiencing several types of study abroad trauma. This study revealed that students experience a broader range of traumatic events during study abroad than previous research has

documented. Additionally, this study extends prior research by underscoring the importance of understanding institutional impact before, during, and after a student studies abroad.