

VIRTUAL MEETING



COLLEGE of ARTS & SCIENCES ROBYN RAFFERTY MATHIAS STUDENT RESEARCH CONFERENCE

30th
Annual

Saturday, April 18, 2020, 10:00 AM – 4:00 PM

The College of Arts & Sciences (CAS) is pleased to announce a virtual meeting for the 30th Anniversary of the Annual Robyn Rafferty Mathias Student Research Conference, a forum for CAS students to digitally present original scholarly and creative works before colleagues, faculty, and friends.

SUMMARY OF VIRTUAL EVENTS

Student Panel Presentations (10 AM – 4 PM)

Students who have prepared an oral/slide show presentation will be separated into panels by theme. Each panel will be moderated by an AU Faculty member. Students will present their work in turns with a maximum of 15mins per presentation.

- **Session I: 10 AM – 12 PM:**
Three (3) concurrent panel presentations
- **Session II: 12 PM – 2 PM:**
Two (2) concurrent panel presentations
- **Session III: 2 PM – 4 PM:**
Two (2) concurrent panel presentations

Student Poster Q&A Sessions (11:30 AM – 2:30 PM)

Students who have prepared a poster presentation will be separated into groups by theme. Each group will participate in an audience Q&A, moderated by an AU Faculty member. Judges and attendees will be given access to each of the posters and be invited to participate in the Q&A sessions with the student presenters. Q&A Moderators will facilitate an ongoing discussion of all poster's in their session and allow judges and attendees to pose questions to the students.

- **Q&A Session I: 11:30 AM - 12:30 PM**
- **Q&A Session II: 12:30 PM - 1:30 PM**
- **Q&A Session III: 1:30 PM - 2:30 PM**

PANEL/ORAL PRESENTATION SESSIONS | SUMMARY

SESSION ONE: 10:00 AM – 12:00 PM

Panel 1: Emerging Technologies and the Humans Who Use Them **1**

Featuring:

- Measuring Panic in Banking System | Dingqian Liu
- Computer-Delivered Therapy vs Traditional Therapy for Alcohol Use Disorder: A Cost-Benefit Evaluation | Corinne Kacmarek
- Machine Learning for Mapping Continental United States' Power Grid to Investigate Grid Vulnerabilities to Geomagnetically Induced Currents | Saaya Miyashiro

Panel 2: Connecting Research to Challenges in Health **2**

Featuring:

- The Opinion of the Court: Supreme Court Decisions and Their Impact on Public Health | Katherine Marx
- Western Diet Impairs Hippocampal-Dependent Inhibition of Appetitive Behavior by Satiety Cues | Rachel Wisniewski
- Mammography Adherence and Breast Health Awareness: A Randomized Control Study of Lower-Income Latina Immigrants | Shalini Ramachandra
- Evaluating Contextual Body Image, Eating, and Exercise Behaviors in College Athletic Samples | Katherine McManus
- The Silent Crisis: Substance Abuse During Pregnancy & Its Effects on Women, Infants, & Society | Samantha Frank
- Examining health risk factors of residents in rural Kirinyaga County, Kenya: A Community Health Diagnosis Survey | Rachel Bernardo, Sarah Corbishley, Emily Schreer

Panel 3: Conversations about Inequality **5**

Featuring:

- The Integration of Unaccompanied Immigrant Youth in the DC Area | Daniel Jenks
- Acceptable Brotherhood: Using A Public Health Lens To Address The Double Standard Between Street Gangs and Fraternities | Jaqueline Martinez
- Long-Term Care Insurance: Welfare Implications of Health Uncertainty and Risk Perceptions | Angie Ahmadi

- Mindfulness-based intervention strategies to improve health and well-being and HIV outcomes among female sex workers living with HIV in the Dominican Republic | Cristian Mendoza Gomez

SESSION TWO: 12:00 – 2:00 PM

Panel 1: Questioning and Reshaping Received Knowledge

7

Featuring:

- Reacting to the Big Man: An Analysis of Kenyan Literature | Alejandro Hirsch Saed
- Emergent Literary Narratives in the Partition of India | Emaan Khan
- The Fluidity of Sexuality: Bisexuality in Renaissance Plays | Grace Hasson
- Feminine Spaces: Women at the Heart of the Modern Metropolis | Shay Sullivan
- Confronting Racism: South Asian Anti-Racist Discourse | Riham Amin

Panel 2: Society, Institutions, Power and Resistance

9

Featuring:

- Male Melancholia in the Mid-Twentieth Century: Orwell and Salinger's Shared Societal Critiques Across Dissimilar Settings | Max Robins
- Becoming Jane Rochester: Charlotte Brontë's Victorian Poststructuralism | Magdeline Vasatka
- Cultural Loss in Small Beauty: Affective Intimacies & Regenerating Chineseness | Mae Zhang McCauley
- Sexual and Gender Minority Youth's Comprehension of a Daily Minority Stress Scale | Farshad Bazargani

SESSION THREE: 2:00 – 4:00 PM

Panel 1: Translational and Experimental Sciences

11

Featuring:

- The cerebellum modulates the acquisition of social information in autism | Laura Rice
- Function of Gesture as a Support for Spatial Thinking in Science | Jazelle Pilato

- Functional Analysis of the Mysterious Germline-Restricted Chromosome in Zebra Finch (*Taeniopygia guttata*) | Kathryn Asalone
- The Impact of a Western Diet on Approach Avoidance Decision Making | Kadidja Conde
- Microplastics: Investigating synthetic fiber pollution in an Anacostia River tributary | Kira Fontana

Panel 2: Cultural Politics: Art, Images, and Things

13

Featuring:

- “As Dangerous as Enemy Bullets”: Gendered Bodies and Republican Anti-venereal Campaigns during the Spanish Civil War, 1936-1939 | Dana Stevenson
- Sharknado Enough Said? Exploring the Eco-Critical Messages of the Trash Film Sharknado | Brady Tuttle
- Life is Not a Dream When There is No Freedom of Speech | Olivia Phillips
- Sofonisba Anguissola's "Bernardino Campi Painting Sofonisba Anguissola" and the Construction of the Cortigiana | Claire Sandberg
- Go-Go Music as an African Spiritual, Religious, Political Movement | Jubilee Garwin Witte
- Spatial Politics and Identity-Making in Transnational Communities: The Third International Conference of Deaf Muslims | Madison Mauro

POSTER Q&A SESSIONS | SUMMARY

Q&A SESSION ONE: 11:30 AM – 12:30 PM

Explorations into the Mind: Studies in Neuroscience and Psychology

16

Featuring:

- Neonatal imitation of caregivers at home: A feasibility pilot | Katherine Casey
- EEG responses to facial emotions in children 7-9 years old | Kira Ashton
- The Aversive Effects of Methylone | Anna Vlachos
- The Effects of Liraglutide on Diet-Induced Changes in Body Fat, Body Weight and GLUT-1 Expression | Carly Truong
- A Pilot Study Examining the Feasibility of A Mindfulness-Based Intervention for Obesity in an Adolescent Population | Jenny Fotang
- Modulation of the cerebellum regulates functional brain networks in autism | Hayli Spence

- The Reported Effects of Foods and Beverages on Cigarette Palatability: An Examination of Menthol Preferences and Racial Differences | Darian C. Weaver
- Fragment-Based Discovery of antibacterials: focus on Mycobacterium tuberculosis | Mari Cohen
- Smoking outcome expectancies differ among African American and White smokers | Lindsey Sparrock, Darian Weaver, Tommy Gunawan
- Effects of cerebellar tDCS on reading | Marissa Marko
- Testing new epigenetic drug candidates in colorectal carcinoma cells | Kyli McKee

Q&A SESSION TWO: 12:30 – 1:30 PM

Scientific and Global Trends

20

Featuring:

- Transient developmental exposure to tributyltin (TBT) alters short-term visually guided behaviors and morphology in larval zebrafish (*Danio rerio*) | Rachel Bernardo
- Learning to choose: dynamic processes underlie decision making strategy and optimization in rats | Samantha White
- Detection of Oxytocin on Fast Scan Cyclic Voltammetry using Carbon Fiber Microelectrodes | Joshuana Edmond, Arianna Lopez, Favian Liu
- Transient developmental exposure to bisphenol-A alters zebrafish optomotor response. | Angelo Barberio, Mikayla Crowley-Perry, Erica Winston, Jude Zieno
- LPL Agonists: A Fragment-based Approach | Shelbi Wuss
- The Impact of increase Glucose Exposure on Behavior in Zebrafish | Elizabeth McCarthy
- Interactive age specific effects of face gender and face race in infants' ERP face processing responses | Fabiola Fernandez
- Leveraging Cheminformatics to Bolster the Control of Chemical Warfare Agents and their Precursors | Charlotte Slavick

Q&A SESSION THREE: 1:30 – 2:30 PM

Social Trends and Human Innovation

24

Featuring:

- Deep in the Bottom: Dumpster Diving into America's Wealth | Loretta Dzanya
- Applying the Socioecological Model to Interventions and Protective Factors that Improve LGBT Youth's Mental Health | Marnina Hornstein
- Comparing perceptions of indirect bullying against different social minority groups: a mixed-methods study | David Kalwicz

- Is all experience the same? Effects of including LGBTQ work experience on a resume for a leadership position | David Kalwicz
- PostSec | Grace Lavelle
- Estimation of manufacturing-related workplace injury risk through a point-based risk score prediction model | Hannah Fuchs
- Dosso Dossi's "Jupiter, Mercury and Virtue": An Amalgamated Masterpiece | Benjamin Feder

Thank You for Growing with Us!



Emerging Technologies and the Humans Who Use Them

moderated by Cameron Bassiri, Professorial Lecturer, Philosophy & Religion

Featured Presentations:

Measuring Panic in Banking System

Dingqian Liu, PhD Candidate, Economics

Panic in banking system has the possibility to trigger economic recession. However, a solid argument requires a measurement of banking panic which is difficult for historical data. Using machine search on Commercial and Financial Chronicle, this paper generates an innovative weekly Banking System Panic Index (BSPI). It can not only serve as a relatively accurate way to identify the start of panic, but also is helpful to uncover the causal relationship between bank panic and economic contraction. Combined with business cycle data from NBER, the empirical result shows that the causality is a case by case issue, and both directions appeared in the period (1867.06.01-1948.12.31) investigated in this paper.

Computer-Delivered Therapy vs Traditional Therapy for Alcohol Use Disorder: A Cost-Benefit Evaluation

Corinne Kacmarek, PhD Candidate, Clinical Psychology

Computer-based delivery of cognitive behavioral therapy (CBT) may be a less costly approach to increase dissemination and implementation of evidence-based treatments for alcohol use disorder (AUD). However, comprehensive evaluations of costs and benefits of computer-delivered interventions from multiple perspectives are rare. This study used data from a completed randomized clinical trial evaluating a computer-based version of CBT (CBT4CBT) for AUD to evaluate cost-benefit from multiple perspectives. Sixty-eight participants were randomized to one of the following treatments at an outpatient treatment facility and attended at least one session: (1) treatment as usual (TAU), (2) CBT4CBT plus treatment as usual (CBT4CBT+TAU), or (3) CBT4CBT plus monitoring. Median total costs per participant were lowest for TAU and highest for CBT4CBT+TAU. Participants in CBT4CBT+TAU reported significantly greater increases in weekly percentage of days abstinent (PDA) compared to those in TAU during the treatment period, $t(496) = 2.38$, $p < .02$. Participants assigned to TAU reported significantly greater monthly PDA increases compared to CBT4CBT+monitoring participants from baseline through 6-month follow-up, $t(453) = 2.52$, $p = .01$, but not compared to those assigned to CBT4CBT+TAU. Benefits included changes in income, money spent on alcohol/illicit drugs, jail time, and healthcare use. Although total treatment costs were highest for CBT4CBT+TAU, its benefits significantly exceeded treatment costs from multiple perspectives at the 6-month follow-up and for CBT4CBT+monitoring at the 1-month follow-up. Despite lower total treatment costs, TAU benefits did not significantly exceed treatment costs from any perspective at any follow-up.

Machine Learning for Mapping Continental United States' Power Grid to Investigate Grid Vulnerabilities to Geomagnetically Induced Currents

Saaya Miyashiro, Senior, Physics and International Studies

Coronal Mass Ejections (CMEs) are solar events produced when the sun expels a large-scale bubble of magnetized plasma. Eruptions directed towards the Earth can disrupt the terrestrial magnetic field and produce geomagnetic storms. If a storm with the same magnitude of the 1859 Carrington Event or the 1989 March Event that collapsed the Quebec Power Grid were to hit Earth's

magnetosphere, the storm would introduce geomagnetically induced currents (GICs) into the Continental United States' power network, causing widespread damage and blackouts. As modern society becomes increasingly dependent on electricity, the economic and societal risks associated with a catastrophic, large national grid failure. In order to study the impact of GIC's on the electric grid through simulations, the geometry and characteristics of the power network need to be known. Using machine learning, binary image classification algorithms on Python, publicly available satellite images of baseball fields were used to train the network. The algorithm was evaluated with a contingency table. This code will later be adapted for use with satellite images of substations to extract their geographical coordinates and power line connections.

SESSION 1_PANEL 2 OF 3: 10:00 AM – 12:00 PM

Connecting Research to Challenges in Health

moderated by Elizabeth Brandley, Research Coordinator, GWI, Health Studies

Featured Presentations:

The Opinion of the Court: Supreme Court Decisions and Their Impact on Public Health

Katherine Marx, Senior, Public Health and Women's, Gender, and Sexuality Studies (Minor)

The Supreme Court is the highest court in the United States, with the ability to dramatically change legislation through the power of judicial review. These decisions can affect more than legislation, sometimes impacting the health of the 327.2 million people living in the United States. One of the most well-known Supreme Court decisions involving health care is *Roe v. Wade*, famously outlawing legislation that banned abortion services. Since *Roe v. Wade*, the Court has heard several cases about reproductive health care legislation. This project aims to understand how the Court's decisions surrounding reproductive health have changed since the precedent set in *Roe v. Wade* and how they may shape future judicial decisions. Through content analysis of key Supreme Court decisions and semi-structured key informant interviews with public health professionals, this project aims to provide an answer to the question of "how do Supreme Court decisions impact public health practice and how can we anticipate the direction of future decisions?"

Western Diet Impairs Hippocampal-Dependent Inhibition of Appetitive Behavior by Satiety Cues

Rachel Wisniewski, Senior, Psychology, Pre-Medicine

High-fat, high-sugar Western Diets (WD) promote weight gain, adiposity and impairs the function of the hippocampus, a brain structure that controls responding to cues associated with rewarding and nonrewarding outcomes. Because foods are typically associated with both outcomes, animals rely on their satiety cues to predict when the consequences of eating will be nonrewarding. We hypothesized that (2) satiety states will only suppress responding to food cues that have been embedded in both excitatory and inhibitory associations with reward; (2) that the effects of WD on the hippocampus would weaken this suppressive effect of satiety on those cues. Male and female rats that were trained to discriminate between their internal hunger and satiety stimuli learned a simple discrimination with different auditory stimuli signaling delivery of sucrose or no sucrose.

Discriminative contingencies were then reversed to embed previously reinforced cues in both an inhibitory and excitatory association with sucrose and to make the nonreinforced cue excitatory. Next, for 12 days half the rats were fed WD and half were fed Chow. The ability of food satiation to suppress responding was tested at the end of this period. For rats on Chow, satiety suppressed responding only to the cue that had both inhibitory and excitatory associations with sucrose. For rats fed WD, satiety failed to suppress responding to either type of cue. Satiety states inhibit responding only to cues that have both excitatory and inhibitory associations with food. Consuming WD abolishes that hippocampal-dependent inhibitory power of satiety.

Mammography Adherence and Breast Health Awareness: A Randomized Control Study of Lower-Income Latina Immigrants

Shalini Ramachandra, Sophomore, Statistics and Public Health

Breast cancer is the leading cause of cancer deaths among Hispanic women in the United States, these women being 30% more likely to be diagnosed with later stages of breast cancer than non-Hispanic white women (Coronado et al., 2016). In this study, various identity markers of lower-income Latina immigrants in the District of Columbia and surrounding states were collected, and the individuals participated in an educational intervention about breast health. Participants were randomly assigned to one of three groups that received culturally- and linguistically-tailored educational messages through phone, mail, or text. They also each completed a pre-intervention and post-intervention survey. To test if the intervention was successful in promoting screening, optional free mammograms for each individual were scheduled, with cost-free transportation to and from the site. A matched pairs t-test (post- minus pre-score) revealed evidence of a knowledge increase after the educational intervention ($t(199) = 3.996$, $p\text{-value} = 0.01$). A chi-square goodness-of-fit test showed insufficient information to suggest that the type of communication method impacted mammography adherence ($p\text{-value}$ of 0.518 with $\chi(2) = 1.317$). Resulting from a binary logistic regression, predictive factors for getting a mammography were found to be education and where breast cancer information was received. Predictive factors for pre-intervention awareness included education, knowledge under the Affordable Care Act, employment status, and rating of prior healthcare received, the results found using a regular regression. These findings can shape best practice models and interventions for addressing breast cancer knowledge and mammography adherence for lower-income Latina immigrants.

Evaluating Contextual Body Image, Eating, and Exercise Behaviors in College Athletic Samples

Katherine McManus, MS Candidate, Clinical Psychology

Due to the unique physical and mental demands of elite performance, paralleled by the mental health concerns in college students, the National Collegiate Athletic Association (NCAA) has committed to increase research and mental health support for student-athletes. Within the last few years mainstream media has featured two professional athletes and their struggles with eating disorders (EDs). Unique sport factors, athlete underreporting, and the overall culture of sport, may encourage and normalize EDs in athletic populations. Previous research regarding the prevalence of EDs in athletes is inconsistent. However, researchers suggests that athletes require tailored prevention, assessment, and treatment. Sport professionals often rely on anecdotal evidence for “best practices” when helping athletes who struggle with EDs. Increasing the amount of evidenced based research in athletic populations will provide enormous clinical utility. This study aims to evaluate the intersectionality of gender and athletic identity in relation to body image, disordered eating, and exercise behaviors in Division I college student-athletes and their non-athlete peers. The current researcher hypothesizes that a) higher athletic identity will increase the risk of disordered

eating, exercise, and body image, b) females will score higher than males on all body image and disordered eating assessments however, c) there will be no gender difference on disordered exercise within the athlete group compared to their non-athletic peers. Data will be collected throughout Spring 2020. Results will inform a future pilot program for NCAA athletic departments. The student proposes to present theoretical background, research design, rationale, and hypotheses.

The Silent Crisis: Substance Abuse During Pregnancy & Its Effects on Women, Infants, & Society

Samantha Frank, Senior, Public Health, Health Promotion (Minor) and Certification in Advanced Leadership Studies

Substance abuse and drug addiction are often viewed as taboo topics that only affect a small portion of the American populace. However, the overwhelming majority of recent scientific studies indicate that times have changed. Today's opioid crisis is not confined to any one geographic region of the country or any socioeconomic class. Rather, it is touching every corner and county in the nation and having a devastating effect on one of the most vulnerable of populations: young women. As of 2016, women comprise 40% of those with a lifetime drug use disorder. Women are also at the highest risk for developing a substance use disorder during their reproductive years (18–44), thus placing women who are pregnant or soon to be pregnant at an increased risk for substance abuse. The purpose of this research is to examine the implications of substance abuse during pregnancy and its effects on women, infants, and society at large. Utilizing findings from a literature review, a state-level legislative scan, and semi-structured key informant interviews, this research also discusses the various treatment options, social services, and governmental policies that help or hinder the access of women to effective treatment.

Examining health risk factors of residents in rural Kirinyaga County, Kenya: A Community Health Diagnosis Survey

Rachel Bernardo, Senior, Public health and Biology (Minor)

Sarah Corbishley, Senior, International Studies and Public Health

Emily Schreer, Senior, International Studies and Public Health (Minor)

This community health survey was conducted in Kirinyaga county over the course of three days with a survey population of 46 households. The primary purpose of this community health survey is to understand how environmental factors contribute to or alleviates physical health risk factors for Kirinyaga residents. Each resident self-reported on health, health seeking behavior, environmental health risk factors, and socioeconomic factors. Taking this data into consideration, health intervention recommendations for the community in Kirinyaga were compiled. Significant findings included education levels as they correlated with health outcomes. A vast majority of the community has not completed high school and this has been shown to correlate with poor health outcomes. Further research on specific risk factors for hypertension and type II diabetes could be done now that it has been seen as an issue in the community in order to address the specific risk factors within the community.

Conversations about Inequality

moderated by Angie Luvara, Professorial Lecturer, Sociology

Featured Presentations:

The Integration of Unaccompanied Immigrant Youth in the DC Area

Daniel Jenks, Senior, Sociology and Law and Society (Minor)

Immigration to the United States has been a hot topic under the current administration, yet the mainstream narratives distort or omit the stories of unaccompanied and separated children, especially Central American youth settled in the U.S. This study draws on a selection of 118 interviews with Central American Unaccompanied Alien Children (UACs), households hosting recently arrived UACs, service providers in the District of Columbia, Maryland, and Virginia carried out in 2016 for a project led by Dr. Ernesto Castañeda and American University's Center for Latin American & Latino Studies (CLALS), which includes narratives essential to understanding immigration today. This paper uses theories of immigrant integration, Bourdieu's concepts of habitus, capital, and field to understand embodied cultures, in conjunction with Charles Tilly's theories of democratization. The paper 1) provides narratives showing how UACs overcome structural barriers, find home and belonging in their new country, or not, and why the United States should strive to ensure that they do; 2) provides a framework to promote better integration for UACs around the country.

Acceptable Brotherhood: Using A Public Health Lens To Address The Double Standard Between Street Gangs and Fraternities

Jaqueline Martinez, Sophomore, Public Health and Public Administration and Policy (Minor)

The first fraternal organization was established in 1776 by a Greek student who had been refused admission into a William and Mary University organization. Today, there are 6,100 active chapters located across 800 campuses with about 380,000 members and 4.2 million alumni. Many people think of gangs as the antithesis of fraternities. Post-American Revolution in 1783, individuals began to seek out power in numbers for their survival, thus forming gangs. There are now about 1.4 million gang members in the United States. However, despite popular belief that both are disparate forms of brotherhood, my analysis will reveal that they are more homogenous than not, on the basis of violence perpetuated, purpose, and power. I will focus on gangs in Chicago and California to unfold the evident differences in societal perceptions and policies in place that tend to criminalize gang members at higher rates, while fraternity members are mildly reprimanded at a university level. Efforts to recognize how this double standard is problematic as it is deeply rooted in racism, sexism, and elitism, will address the impact it has on communities of color and women. Using a public health approach to understand attitudes towards gang violence, similarly to how institutions humanize fraternities, can help leaders and stakeholders understand the root causes of gang violence in order to address the social causes of crime and create equitable policies. More research and literature is needed to better understand the relationship between gangs and fraternities, and how the United States polices each party in conflicting ways.

Long-Term Care Insurance: Welfare Implications of Health Uncertainty and Risk Perceptions

Angie Ahmadi, Senior, Economics

Long-term care (LTC) refers to a broad range of services and supports that a person may need to meet daily needs such as eating, bathing, dressing, etc. Both nursing home stays and home care fall under LTC services and are very costly. In the US, staying at a nursing home costs over \$92,000 a year on average and potential LTC expenses are more than triple the income of average seniors. Despite such risks, less than 13% of elderly Americans own private LTC insurance (LTCI) to protect them from this massive financial loss, and more than 37% of aggregate LTC expenses are paid out of pocket. The decision to buy LTCI is heavily influenced by uncertainty and requires intertemporal calculations. Consumers' (mis)perceptions of stochastic realization of future health states can be instrumental in their valuation of LTCI contracts. Individuals may in fact have a hard time perfectly forecasting their future health outcomes and evaluating expected utility gains from insurance for their needs in the distanced future. In a theoretical model, I decompose the role of health shocks and risk perceptions in the decision to buy LTCI and examine the link between underestimation of health risks and the likelihood of LTCI purchase. I test the hypothesis that misperception of health risks lowers demand for LTCI. I exploit direct measures of risk perceptions elicited from the Health and Retirement Study's questions on expectations. I will use this model as the basis for a complex structural model to examine counterfactual scenarios for policy recommendations.

Mindfulness-based intervention strategies to improve health and well-being and HIV outcomes among female sex workers living with HIV in the Dominican Republic

Cristian Mendoza Gomez, Freshman, Public Health and Sociology

Female sex workers (FSW) are at heightened risk for HIV and have poorer HIV outcomes than other adult women. To address these inequities, the "Abriendo Puertas" (Opening Doors) program was established in the Dominican Republic (DR) in 2012. Since then, a cohort of 200 FSW living with HIV has been followed to evaluate HIV outcomes using biological, survey and qualitative data. Select mindfulness-based intervention elements were incorporated into the program based on survey findings demonstrating that mindfulness was associated with better mental health and HIV outcomes. In-depth interviews were conducted at two distinct points in time with a total of 42 FSW living with HIV from the DR to gain insight into their perceptions of mindfulness-based strategies to reduce stress and improve their health and well-being including their adherence to antiretroviral therapy (ART). Analytic summaries were developed for each interview extracting key themes related to mindfulness and its influence on participant's health and well-being and HIV related care and outcomes. Qualitative findings revealed that participants appreciated being exposed to the mindfulness-based intervention strategies offered within the Abriendo Puertas program to date including mindful breathing, relaxation and meditation techniques, to reduce their ongoing stressors and to maintain their focus on and awareness of their mental and physical health, including adherence to ART. In-depth interview findings complement survey data suggesting the importance of further adapting and evaluating mindfulness-based intervention strategies to improve the mental health and HIV outcomes of FSW living with HIV.

Questioning and Reshaping Received Knowledge

moderated by Ellen Feder, Professor and Department Chair, Philosophy and Religion

Featured Presentations:

Reacting to the Big Man: An Analysis of Kenyan Literature

Alejandro Hirsch Saed, Senior, Literature (Transcultural Studies Track) and SIS

Kenyan literature constantly deals with the Big Man, which is defined as “male, corrupt, violent, rich, chief without regard for the rule of law” (Nyangulu, 103). While the Big Man has been studied by political economists such as Larry Diamond and anthropologist Achille Mbembe, the reaction of the Kenyan population has been ignored. In Kenyan literature the Big Man plays the role of mediator, connecting the village with the globalized world, which makes him morally ambiguous. Literature showcases the local reactions, resistance, and the complex role of the Big Man at the local level, bringing those reactions into the global conversation. Kenyan literature highlights the reaction of the population to the Big Man, therefore I argue that by analyzing how the people react to the Big Man in Kenyan literature, we can understand how sovereignty is performed and how people react and resist this morally ambiguous, yet necessary sovereign figure. My argument is based on Martha C. Nussbaum premise that “literature expresses a way of life incompatible with the vision of the world embodied in texts of political economy” (Nussbaum, 1). By looking at literature, the goal is to create a more nuanced perspective for political economists and public servants regarding informal practices of sovereignty in Kenya and the reaction of the population to those practices.

Emergent Literary Narratives in the Partition of India

Emaan Khan, Senior, Literature, Political Science, and Physics (Minor)

At the stroke of midnight on August 14th, 1947, two newly-named countries suffered a geographical, ideological, and collective loss. The partition of India fractured a nation, separating the lands into India and Pakistan. The delineation of a new nation inspired tensions of nationhood, individual identity, and political ideology; a once long-lasting amity had fallen. Partition actuated the content of my final literary thesis. I will apply Bapsi Sidhwa’s 1998 novel, *Ice Candy Man* to this fragmentary historical trauma, to display the convergence of history, nationhood, and fiction. I suggest that the fictionalizing of a traumatic event at a historical distance pursues an emergent way of addressing the trauma itself. It allows for a reclamation of a once interpellated narrative. Literature acts as a transformative tool, one that unravels the event’s marginal stories; namely, women and children. Sidhwa elevates the voices of these women and children, which disrupts a primarily Indian, androcentric narrative. My senior thesis demonstrates the importance of studying the overlap of literature and history.

The Fluidity of Sexuality: Bisexuality in Renaissance Plays

Grace Hasson, Sophomore, Literature and Music (Minor)

Theater is an art that breaks social norms and has been doing so for far longer than people realize. Some Renaissance plays break through heteronormativity and the strict moral code people faced and still face today. Sexuality being inflexible is an old-fashioned concept, but it is one that still

impacts queer people in the twenty-first century. However, several Renaissance plays are revolutionary because of the ways they break through this concept and even showcase queerness and bisexuality as unapologetic. Some of the plays that capture the fluidity of sexuality are *Il Marescalco* by Pietro Aretino from 1533, *Epicene* by Ben Jonson from 1616, and *The Venetian Comedy*, a play written by an anonymous person that may have been a woman in 1536. Bisexuality is viewed casually in these plays, and the presence of queer characters along with queer marriages makes them surprising to even modern readers. Furthermore, these plays' openness to queer identities fights bisexual-erasure and biphobia, which are issues still prevalent today. These plays are unusual because of this, but the fact that they were performed suggests that bisexuality was more accepted at the time than usually assumed. Overall, these plays reflect the fluidity of sexuality through the existence of bisexuality, showing that it is not a new concept and not something to be dismissed.

Feminine Spaces: Women at the Heart of the Modern Metropolis

Shay Sullivan, Senior, Literature, German Studies, and Anthropology (Minor)

At the turn of the twentieth century, authors of literary Modernism, with their focus on subjective, lived experience, began to explore how the space of the city related to and defined the modern experience. Female writers, specifically Virginia Woolf (England) and Irmgard Keun (Germany), considered how the city related to aspects of female identity. In both Woolf's *Mrs. Dalloway* (1925) and Keun's *The Artificial Silk Girl* (1932), the authors present the inner lives of their female characters as well as how these inner lives are affected by their urban environments. In style and content, these authors developed Modernist literary techniques to create feminine spaces for their characters within both the realm of Modernist literature and the physical landscapes of the cities, spaces largely considered to be controlled by men. Through exploring feminist theories of space, phenomenology, and flânerie, I explore how these authors allow their female protagonists to declare the urban spaces of the cities as their own, placing women, and femininity, at the center of Modernist literature and of modern life itself. In so doing, Woolf and Keun use their respective novels *Mrs. Dalloway* and *The Artificial Silk Girl* to serve their feminist ends of allowing women to occupy spaces in which they have historically, and even currently, been denied. These authors create a new kind of feminist Modernism, in which women assert their places within the larger discourses of Modernism and the space of the city.

Confronting Racism: South Asian Anti-Racist Discourse

Riham Amin, Senior, Sociology and International Service (Minor)

The South Asian postcolonial diaspora has produced multiple new encounters with racism for South Asian immigrants. The structural forces that restrained non-western traditional thought and knowledge under colonialism persist today and are evident in implicit biases and systemic hierarchical race relations. Erasures of South Asian culture are continually advanced through an imperial legacy expressed as racism, colorism, and islamophobia. For South Asian youth in particular, cultural identity is entangled with an internalized racial hierarchy that celebrates whiteness and denigrates others. In this paper I conduct a textual analysis of antiracist discourses in Browngirl Magazine (BGM), an online forum created by and for South Asian womxn and dedicated to South Asian expression around the globe. Brown Girl is a multimedia company that advertises itself as curating content directed at community engagement, empowerment, and dialogue that challenges stigma, stereotypes and taboos. My overarching goal is to understand how anti-racist and decolonial discourses in Browngirl Magazine challenge hegemonic racism and structural inequalities affecting South Asians. Using grounded theory I cultivate a systematic examination of articles and images that concern matters of race and ethnicity, religion, appearance

and stigmatization. The textual analysis draws from poststructural discourse analysis and semiotics to examine articles and images published in 2019. The analyses are situated within a historical context of colonial violence that continues to manifest as epistemic violence and ontological insecurity of non-white populations in the West. I am particularly interested in the discursive and representational strategies deployed by BGM to conceptualize antiracist thought and practice.

SESSION 2_PANEL 2 OF 2: 12:00 – 2:00 PM

Society, Institutions, Power and Resistance

moderated by Marianne Noble, Professor, Literature

Featured Presentations:

Male Melancholia in the Mid-Twentieth Century: Orwell and Salinger's Shared Societal Critiques Across Dissimilar Settings

Max Robins, Sophomore, Political Science, Data Science, and Literature (Minor)

Freud's theory of melancholia (1917) is a shared plot device across the principle characters of Orwell's Winston Smith (*Nineteen Eighty-Four*) and Salinger's Seymour Glass ("Raise High the Roof Beam, Carpenters," "Seymour: An Introduction," and "A Perfect Day for Bananafish"). Despite apparent surface level dissimilarities between Orwell's dystopian future and Salinger's societal sardonicism, a deeper analysis of their work reveals shared character qualities, symbolism, and thematic tendencies. Does the permeation of this plot device throughout the authors' works indicate that Orwell and Salinger offer a common, overarching critique of mid-twentieth century western society? In this paper, I explore how the selected character's ailments align with Freud's theorization. Juxtaposed with Gilligan and Snider's patriarchal analysis (2018), the characters' disturbed dispositions carry vast implications in light of their inherent race, gender, age, and socioeconomic advantages. Looking at the minimal social discomfort these characters' privilege should afford them, I conduct a close reading of their relationships to others, self, and society. Further considering the lack of socio-psychological lens usage in existing scholarly analyses of these characters, I explore their melancholic dispositions as a vessel by which Orwell and Salinger convey their criticism and discontentment with the surrounding worlds they write from within. Using the characters' unfortunate outcomes as evidence, I contend that the authors view contemporary society's patriarchal state as a force too great to overcome.

Becoming Jane Rochester: Charlotte Brontë's Victorian Poststructuralism

Magdeline Vasatka, Senior, Literature (Literary Studies) and Justice Law and Criminology

This paper redefines *Jane Eyre* through a poststructuralist lens that confronts gender as an oppressive social construction that inhibits the autonomy of the individual self. Some feminist scholars laud Jane's unrelenting rage towards society and individuals that attempt to impede her will; meanwhile, other critics maintain that the novel fails to intentionally and unequivocally defy patriarchal society. We could seek to ameliorate *Jane Eyre's* tenuous relationship with liberal feminism by examining the works of Charlotte Brontë's philosophical contemporaries, Mary Wollstonecraft and John Stuart Mill. However, forcing *Jane Eyre* to fit within the tenets of liberal feminism constitutes social control in and of itself, by faulting Jane for not precisely adhering to an

essentialized female ideal. Instead, Brontë resists gender as a socially-constructed facet of identity that reflects the oppressive structure of society and inhibits individuality, inviting comparisons to poststructuralism as practiced by Michel Foucault and Judith Butler. The novel's omnipresent first-person "I" narrator involves the reader in the countless—and often conflicting—elements of identity that Jane incorporates into coherent selfhood. Gender constitutes one such element of individual identity, one which Charlotte Brontë constantly complicates through Jane's abnormal subjectivity and numerous scenes that blur the lines of normative gender expression. By using poststructuralism to reclassify *Jane Eyre*, I will expose how Brontë disregards a traditional, ubiquitous gender binary to instead point out how undue attention to prescribed gender norms infects how society recognizes—or fails to recognize—an individual as human.

Cultural Loss in *Small Beauty*: Affective Intimacies & Regenerating Chineseness *Mae Zhang McCauley, Senior, Literature, Transcultural Studies Track, and Chinese Language & Asian Studies (Minor)*

This paper analyzes cultural loss in the novel *Small Beauty*, written by Jia Qing Wilson-Yang. The novel is about a second-generation mixed-Chinese Canadian transwoman, Mei, living in Canada with her immigrant family. When Mei's entire Chinese family dies or leaves, she has to confront larger losses of cultural attachments. While many scholars describe cultural loss in relation to a change in environment, such as migration, *Small Beauty* moves beyond a migrant framework. It explores the cultural loss experienced by a biracial second-generation Asian-North-American subject—a loss that is not tied to an origin or nation-state, but rather, to local families and communities. *Small Beauty* does not treat this loss as a simple negative. While many people associate cultural loss with a negative regression from an origin—an extraction that results in loss and equates to "lacking" from an original "whole"—Wilson-Yang does not. Instead, she finds value in the intimacies generated in the face of loss and as a result of loss. Wilson-Yang evokes Chineseness through memory and ghosts to prove Mei's current loss. I argue that this regenerates an alternate form of Chineseness that reframes the narrative away from what cultural loss leaves one with, and towards what loss can create. Wilson-Yang reconciles cultural loss by executing writing as an alternate form of labor that builds fictive worlds in *Small Beauty*. This deconstructs the linearity of cultural loss for multiracial Asian-North-Americans—regenerating a form of multiracial Chineseness that cannot be extracted as cultural capital in a multicultural era.

Sexual and Gender Minority Youth's Comprehension of a Daily Minority Stress Scale

Farshad Bazargani, Junior, Public Health, Pre-medicine

Sexual and gender minority youths (SGMY) experience unique stressors (i.e., minority stressors) related to the daily stigma they experience because of their marginalized sexuality or gender identity (i.e., heterosexism, transphobia). As claimed by the minority stress model, minority stressors poorly affect the mental health outcomes of SGMY and may contribute to disparities in health. However, limited work has been conducted to appropriately measure minority stress and to properly examine SGMY's comprehension of minority stress measures. Therefore, the purpose of this study was to investigate SGMY's comprehension of the nine items of a newly developed measure for daily diary studies, the Everyday Minority Stress Scale (EMSS). Participants (N=80) with the age range of 12-18 years were recruited from the DC area's LGBT+ community. After completing a daily diary study, participants completed an exit survey that measured their understanding and comprehension of the items of the EMSS. Using cognitive interview techniques, the qualitative data from exit surveys were gathered and analyzed, then each question's data were categorized into different themes based on the participants' understanding of each question. The

results showed that most questions of the EMSS were clearly understood by the participants “very well,” with the exception of some outliers that did not have the same comprehension as the majority.

SESSION 3_PANEL 1 OF 2: 2:00 – 4:00 PM

Translational and Experimental Sciences

moderated by Laurie Stepanek, Senior Professorial Lecturer, Biology

Featured Presentations:

The cerebellum modulates the acquisition of social information in autism

Laura Rice, PhD Candidate, Behavior, Cognition, and Neuroscience

Atypical social communication is a core feature of autism, but its neural bases remain unclear. One candidate neural substrate underpinning social communication is the right lateral cerebellum. This brain region shows structural and functional differences in autism, it is engaged during social tasks, and inhibition yields atypical social behaviors in mouse models. The cerebellum is a critical structure supporting learning in the brain, and so we hypothesized that cerebellar dysfunction in autism may disrupt the acquisition of social information. We combined neuroimaging (functional MRI) and neuromodulation (transcranial direct current stimulation [tDCS]) to investigate how modulating cerebellar activity impacts behavioral performance and neural activation patterns during social learning. Neurotypical adults (NT; $n=16$, 21.9 ± 2.5 yrs) and adults with autism ($n=10$, 24.9 ± 9.0 yrs) completed a social ball toss game, during which participants implicitly learn patterns of social reciprocity. Prior to the game, participants received either excitatory, inhibitory, or sham tDCS (20 min, 1.5 mA) targeting the right lateral cerebellum (lobule VII), during three separate sessions. Without neuromodulation, participants with autism showed less social learning and had reduced cerebellar activation in bilateral lobule VII relative to the NT group. Excitatory cerebellar tDCS disrupted social learning in both groups, supporting a role for the cerebellum in the acquisition of social information. Inhibitory tDCS did not change performance in NT adults, but it improved social learning and increased bilateral lobule VII engagement in adults with autism. Cerebellar neuromodulation may impact social behaviors in autism through increasing activation in cerebellar regions that support successful task performance.

Function of Gesture as a Support for Spatial Thinking in Science

Jazelle Pilato, PhD Candidate, Behavior, Cognition, and Neuroscience

There is consistent evidence that spatial thinking is important for academic achievement, particularly in STEM domains. Chemistry is one domain in which spatial thinking is foundational to problem solving. Additionally, there is considerable evidence that spatial thinking is malleable and can be improved with short-term training. Gesturing has been shown to be related to spatial problem solving and hypothesized to reduce working memory load. Given the high failure and withdrawal rates in organic chemistry, and its role as a prerequisite course to many STEM majors and careers, organic chemistry represents a critical juncture where supporting spatial thinking has the potential to influence long-term student outcomes in STEM. The current study examines the effects of gesturing on accuracy when solving organic chemistry problems and if the changes in accuracy are sustained when gesture is no longer available. A within subjects treatment design with random assignment was implemented to assess the effect of a gesturing on question accuracy, accuracy sustainability and cognitive processing. Participants completed three sets of isomer

comparison problems with a training implemented after the first set (pre-test, gesturing/control, gesturing prohibited/control). Eye tracking was employed during this experiment to gain insight into cognitive processing. Early stages of data collection show the gesture group had a higher average accuracy than the control group, post-training. Improvement is also seen when gesture is prohibited compared to pre-training scores, but decreased compared to during gesturing scores. Future analysis will investigate the cognitive processes used during problem solving in gesturing and control conditions.

Functional Analysis of the Mysterious Germline-Restricted Chromosome in Zebra Finch (*Taeniopygia guttata*)

Kathryn Asalone, PhD Candidate, Behavior, Cognition, and Neuroscience

Developmentally programmed genome rearrangements are rare in vertebrates but have been reported in scattered lineages including the zebra finch (*Taeniopygia guttata*). In the finch, a well-studied animal model for neuroendocrinology and vocal learning, genome rearrangement involves a Germline-Restricted Chromosome, or GRC, which is found in germlines of both sexes but eliminated from mature sperm. Transmitted only through the oocyte, it displays uniparental female-driven inheritance, and early in embryonic development it is apparently eliminated from all somatic tissue in both sexes. The GRC comprises the longest finch chromosome at over 120 million basepairs. In 2018, we report the first protein-coding gene from the GRC using computational methods such as subtractive transcriptomics. Recent publications have indicated that there are over 115 coding genes. Here we introduce an in vitro model for examining the mechanisms of GRC elimination. We are able to differentiate the zebra finch primordial germ cells into mature sperm to examine how the GRC is expelled. This also gives us a way to begin to examine the function of the germline restricted chromosome, which is hypothesized to be involved in reproduction, development, and sex determination. Finally, this model can also be used to study the mechanism of genome rearrangements which is relevant to somatic disease like cancer.

The Impact of a Western Diet on Approach Avoidance Decision Making

Kadidja Conde, Junior, Psychology and Data Science (Minor)

The Western Diet (WD) is linked to cognitive impairments; with disruptions in ventral hippocampal-dependent learning and memory apparent in rats that are maintained on WD. Other studies have also found that the ventral hippocampus mediates the decision-making process involved when opposing incentive motivations are experienced simultaneously, also called approach-avoidance decision making. Combined, these findings suggest that WD may impair approach-avoidance decision making, as it does other cognitive functions. The present study assessed this possibility by presenting an approach-avoidance conflict in conjunction with WD exposure. We expected consuming WD would alter approach-avoidance decision making compared to consuming standard chow. After completing a pilot study to establish the optimal parameters for the current work, we exposed male and female rats to two sweet sucrose solutions, one flavored with cherry and one flavored with lime. One of these flavors was then poisoned to produce a mild aversion. Then, following a 12-day exposure to WD or a chow diet (currently underway) the rats will be given poisoned and non-poisoned flavors mixed in a single solution, thereby presenting the rats with an approach-avoidance conflict with respect to that solution. Consumption of that solution serves to index the impact of WD on the decision to approach (consume) or avoid (reject) the solution. If rats fed WD show greater intake of the flavor compound to chow-fed rats, this would indicate that WD reduces the ability to inhibit responding in approach-avoidance conflicts. This outcome would agree with our hypothesis that approach-avoidance decision-making depends on the hippocampus.

Microplastics: Investigating synthetic fiber pollution in an Anacostia River tributary

Kira Fontana, Sophomore, Biology, Environmental Science (Minor), and German Language (Minor)

Microplastics are small (<5mm) plastic particles resulting from anthropogenic activity that pollutes freshwater and marine environments, thereby causing harm to these ecosystems and the economies which rely on them. It is important, therefore, to quantify and categorize the microplastics present in bodies of water in order to better understand the sources of these pollutants and the factors affecting their concentration. In this study, we analyze the microplastic content of water and sediment samples collected biannually in 8 transects of Nash Run, a tributary of the Anacostia River. Using water filtration and sediment sieving coupled with microscopy, we investigate the density of microplastics along the transects by counting and classifying the pieces in each sample according to NOAA Marine Debris methods. Our preliminary analysis of the water samples suggests that there are significant differences in the concentration of microplastic fibers in each transect ranging from 26 to 100 fibers/L. Furthermore, there appear to be significant differences between microplastic concentrations in the fall and the spring, for which we are continuing to analyze the data. We plan to collect additional water and sediment samples in Spring 2020 and run chemical analyses to identify the types of microplastics present. We will also analyze the data considering the effect of trash traps downstream of transects 1 and 7 on microplastic concentration.

SESSION 3_PANEL 2 OF 2: 2:00 – 4:00 PM

Cultural Politics: Art, Images, and Things

moderated by Nika Elder, Assistant Professor, Department of Art

Featured Presentations:

“As Dangerous as Enemy Bullets”: Gendered Bodies and Republican Anti-venereal Campaigns during the Spanish Civil War, 1936-1939

Dana Stevenson, Senior, History and Secondary Education

In times of conflict, the politics of the body turn increasingly complex as humans become pawns in ideological battles. During the Spanish Civil War in the 1930s, the Spanish Republic faced an insidious threat to its military forces: venereal disease. In response, military and public health organizations in the Republican zone sought to increase the surveillance and control of sexual behavior by distributing public health propaganda. This paper investigates Republican anti-venereal campaigns to examine how notions of sex, social hygiene, and the discipline of the male body developed during the Spanish Civil War. Through an analysis of public health posters, postcards, and newspaper articles published by loyalist organizations, I explore the relationship between the gendered body and the state in the context of political and military crisis. Scholars of gender and medical history have argued that despite the egalitarian rhetoric of Spanish loyalists and left-wing organizations, public health propaganda reinforced existing constructions of gender by asserting that prostitutes and sexually promiscuous women were the source of infection. I extend this research, using Foucauldian theories of discipline and the docile body to inform a close reading of propaganda materials that reveals Republican efforts to prescribe a patriotic masculinity

centered on discipline, duty, and sexual prudence. Given that issues of sexually transmitted disease and social hygiene have arisen in a number of modern conflicts, this paper probes the connection between sex, public health, and the state, in the hopes of inspiring comparative studies in the age of nationalism and conflict.

Sharknado Enough Said? Exploring the Eco-Critical Messages of the Trash Film *Sharknado*

Brady Tuttle, Senior, Psychology and Literature: Cinema Studies

Sharknado (2013) is a made-for-TV, exploitation film that simultaneously revels in the trash aesthetics of irony and excess, whilst still making important contributions to dialogues on climate change. While the role of mainstream, blockbuster eco-films has been extensively analyzed, the effect that low-budget trash and exploitation films have had has been severely overlooked. Furthermore, while there is a growing trend in analyzing trash films for their cultural merit, the role they can have in creating and influencing accessible dialogues of climate change has also been severely overlooked. I argue that *Sharknado* employs conventions of exploitation films, such as poor production values and irony to stake the claim that we should respond to climate change. Despite the importance of this message, I use Heise's Sense of Place and Sense of Planet: The Environmental Imagination of the Global, to critique *Sharknado*'s privileging and emphasis of the needs of capitalist America, as signified by the white male family, over the needs a global society, as signified by the deaths of everyone outside the nuclear family. As such, I suggest that America needs to pivot towards diplomatic, intersectional responses to the issue of climate change that seek to equalize the wants of America with the wants of the rest of the world.

Life is Not a Dream When There is No Freedom of Speech

Olivia Phillips, Junior, Literature and Political Science (Minor)

My piece entitled, "Life is Not a Dream When There is No Freedom of Speech" is a performance analysis on Pedro Calderón de la Barca's famous 1636 Spanish Renaissance play, *Life is a Dream*, whose recent production was put on in DC at the Gala Theater in which I write about why it was staged in DC of all places. I look freedom at speech. Within the play, one can see King Basil and his confidant, Clotaldo limiting the speech of both Segismund and Clarion. This is significant because this play was being performed in the nation's capital at a time when our current President and his administration are working overtime to limit not only the media's freedom of speech, but more significantly women and minorities. I bring in modern day examples to complement the argument that *Life is a Dream* ages well, especially in this time. Included in this paper, I bring in specific modern examples of how Trump has tried to limit freedom of speech in terms of the media coverage he has faced dealing with his lack of transparency and problematic comments. I also explore why *Life is a Dream* was put on at a Spanish theater in DC. Given Trump's egregious comments about Hispanics, specifically people from Mexico, it is telling that such a powerful play is being performed in a Spanish theater and in Spanish.

Sofonisba Anguissola's "Bernardino Campi Painting Sofonisba Anguissola" and the Construction of the Cortigiana

Claire Sandberg, MA Candidate, Art History

Italian Renaissance artist Sofonisba Anguissola is well-known for the array of self-portraits she painted during her early career. Among the first professional female artists, her self-portraits influenced many later artists such as Lavinia Fontana and Anthony van Dyck. Through her self-portraits created between 1548 and 1559, Anguissola constructed her identity as a virtuous young

noblewoman and skilled artist. The key to Anguissola's portraiture was her adaptation of the ideas prescribed by humanist Baldassar Castiglione in his famous text *The Courtier* in order to depict herself as the ideal female courtier. Anguissola's self-fashioning reached its pinnacle with her 1559 self-portrait "Bernardino Campi Painting Sofonisba Anguissola," which was among the last works Anguissola completed before she was invited to join the Spanish court of Philip II as a lady-in-waiting-cum-painter. My research examines the means by which Anguissola strategically shaped her identity for a court position in her 1559 portrait. I argue she utilized accepted principles for 16th century noble portraiture and costuming, the secondary figure of her former painting teacher, and courtly wit as described by Castiglione, to portray herself as the ideal noblewoman and to firmly secure her position as the first professional female "noble artist" at court.

Go-Go Music as an African Spiritual, Religious, Political Movement

Jubilee Garwin Witte, Senior, African American and African Diaspora Studies, Mathematics (Minor), and Economics (Minor)

This project analyzes Go-go music, the DC-based music genre, as not only a politically engaged musical movement, but also a religious experience based on the influences of West African and Afro-Jamaican influences. By comparing cultural artifacts including instruments, rhythms, lyrics, and other performance analytics, and also through interviews with performers and participants, I seek to demonstrate that Go-go performances and its music constitute a religious experience for DC people of African descent.

Spatial Politics and Identity-Making in Transnational Communities: The Third International Conference of Deaf Muslims

Madison Mauro, Senior, Economics (BSc), International Studies, and Arab Studies (Minor)

Many scholars consider d/Deaf communities to be transnational, as they disrupt traditional linguistic anchors of sovereign identity and can transcend national boundaries. Because of this, international conferences serve as a social nexus for d/Deaf communities, where notions of Deaf culture and identity are created, reinforced, and contested. Using data collected during an ethnography of the Third International Conference of Deaf Muslims (ICDM) in Jakarta, Indonesia, this research examines how constructions of power and identity are asserted—or contested—in spatially contextual cultures. This project asks several important questions: How are cultural practices and conventions transmitted in temporary spaces constructed by transnational communities? In spatially contextual communities, who is allowed to manage the space and why? Finally, how are individual social realities and identities created during conferences such as the ICDM? Through participant observation and semi-structured interviews, this research reveals how the management of physical space as a vehicle of control contributes to shared notions of a singular Deaf identity and patriarchal power hierarchies. Findings suggest that temporary social realities were manually created and reproduced through the transmission of sign languages, contributing to a heightened sense of transnationalism at the ICDM. This research prompts critical analysis of prevailing ethnographic orthodoxies and other theoretical assumptions, such as those underpinning discussions of "identity" and "culture." While certainly creating more questions than it answers, this project endeavors to contribute to an area of Deaf studies yet to be comprehensively addressed.

Explorations into the Mind: Studies in Neuroscience and Psychology

moderated by Laurie Bayet, Assistant Professor, Psychology

Featured Posters:

Neonatal imitation of caregivers at home: A feasibility pilot

Katherine Casey, Graduate Student: Masters, Psychology

Imitation is thought to be one of the earliest cognitive skills humans develop that supports social learning. However, the practical relevance of neonatal imitation for social development has remained largely unaddressed as most studies have been conducted in highly controlled, laboratory conditions. Utilizing the Lookit online infant experiment platform, we aim to demonstrate the feasibility of measuring neonatal imitation of caregivers in the home environment. We are focusing on tongue protrusion and mouth opening as they are the two most commonly studied neonatal gestures. Caregivers and their newborn will be videotaped through their own webcam as caregivers model either gesture to their newborn. Our between-subjects design, adapted from Meltzoff and Moore (1983), has the parents alternate between the presentation of either tongue protrusion or mouth opening and a passive face, alternating every 20 seconds during a 180 seconds trial. Video coders, who are blind to the condition, will record newborns' gesture frequencies, frame by frame, of both tongue protrusion and mouth opening using standard coding criteria. To analyze these data, we ultimately plan to specify a Bayesian hierarchical log-linear model testing whether the frequency of each neonatal gesture increased when caregivers modeled that specific gesture. The groups will be defined by the presence or absence of parental cues and covariates for age and sex. Pilot data collection and behavioral coding are currently underway and will focus on inter-rater reliability, attrition, and recruitment rates of online data collection for neonatal imitation.

EEG responses to facial emotions in children 7-9 years old

Kira Ashton, PhD Candidate, Behavior Cognition and Neuroscience

Over the first 10 years of life, visual face processing capabilities rapidly increase to reach adult sensitivity to expression and emotion (Kadosh & Johnson, 2007). We used electroencephalography (EEG) to record steady state visually evoked potentials (SSVEP) examining children's cortical reactivity to different facial emotions (Happy, Fearful, Disgusted, Angry). Children viewed rapidly changing face images of varying identities, presented at a base rate of 6 Hz. These faces displayed a neutral expression, except for 1 out of 5 faces which displayed an emotional expression, i.e., an expression presentation rate of 1.2 Hz. Each child saw 5 SSVEP sequences in each of the four emotional conditions, for a total of 20 33-sec trials. EEG signals were analyzed to extract frequency-specific SSVEP responses at the base (i.e., response to visual faces) and expression rate (i.e., response to the emotional expression), summing across non-overlapping harmonics to reveal the topography and intensity of cortical responses to each expression across electrodes. While data collection is still underway, two pilot participants, both 8 year old males, show clear patterns of activation. As expected, the base rate response is concentrated in the medial occipital region for all conditions, while the summed harmonics at the rate of emotion visuals show an occipito-temporal spread, with a somewhat stronger response in the right hemisphere. We will next utilize this paradigm to compare brain reactivity to facial emotion in children ages 7-9 with and without social anxiety.

The Aversive Effects of Methylone

Anna Vlachos, Senior, Neuroscience and Statistics (Minor)

Synthetic cathinones (“bath salts”) are beta-ketone analogs of amphetamine-like compounds that come from the Khat plant-derived stimulant, cathinone. Methylone, a first-generation bath salt, is similar in structure and pharmacology to MDMA (ecstasy), and its rewarding effects have been well characterized. However, little is known about its aversive effects, a property reported to modulate the intake of most abused drugs. In this context, the present study investigated the aversive effects of methylone (vehicle, 5.6, 10 or 18 mg/kg, IP) using conditioned taste avoidance, hyperthermia and hyperactivity. Relative to controls, methylone induced significant dose-dependent conditioned taste avoidance and dose- and time-dependent hyperthermia (all p 's < 0.05). Methylone also induced significant ambulation in comparison to vehicle (all p 's < 0.05), although the onset and duration of this hyperactivity was dose dependent. Finally, methylone induced significant stereotypies at all three doses compared to controls (all p 's < 0.05). Similar to work with other synthetic cathinones, methylone has aversive effects as indexed by taste avoidance and hyperthermia and hyperactivity (two characteristics of “excited delirium” toxicity in humans). These findings with methylone parallel prior work with related bath salts, e.g., MDPV and -PVP, although the specific mechanisms of action for these compounds differ, e.g., reuptake inhibition (MDPV and -PVP) vs. substrate releaser (methylone) of the brain amines. Given that drug intake appears to be a function of the balance of its rewarding and aversive effects, understanding both of these effects of methylone and the factors impacting them may provide insight into predicting its abuse potential.

The Effects of Liraglutide on Diet-Induced Changes in Body Fat, Body Weight and GLUT-1 Expression

Carly Truong, Senior, Biology

Western diet (WD) induces both obesity and impairs the function of the hippocampus—an important brain substrate for learning and memory. Recent studies reported that liraglutide, a GLP-1 agonist, can suppress food intake and reduce body weight and body fat gain. Using a rat model, this study investigates the conditions under which liraglutide administration is most effective at reducing body weight gain and body adiposity. Previous results also indicated that liraglutide protected the hippocampus from the harmful effects of WD on GLUT-1 expression, a major glucose transporter from blood to the brain. In this study, rats were exposed to ad libitum WD for 12 days and received either zero, one (on the first day of WD), six (on the last six days of the diet), or 12 daily injections of liraglutide. Expression of GLUT-1 in the ventral hippocampus were then analyzed using qPCR. Results showed that liraglutide reduced body weight and body fat gain in all three treatment groups, especially in rats that gained the most body fat. While chronic injections produced significant reduction over 12 days, single injection produced a significant decrease on Day 6 and the six injections produced an effect on Day 9. Despite the effects on body weight and adiposity, there was no significant change in GLUT-1 expression. This study provides evidence that peripheral administration of liraglutide can potentially protect and recover WD-induced increases in body weight and body fat gain, but it cannot be concluded that liraglutide protects the hippocampus from changes in GLUT-1 expression.

A Pilot Study Examining the Feasibility of A Mindfulness-Based Intervention for Obesity in an Adolescent Population

Jenny Fotang, Graduate Student: Masters, Psychology

Obesity in adolescence is predictive of obesity in adulthood and risk for chronic disease. Traditional behavioral approaches to addressing obesity in adolescence rarely yield meaningful changes in

body mass index (BMI), suggesting that adjunctive treatments are necessary. In this study we examined the feasibility of integrating a brief mindfulness intervention into the standard recommended care for adolescent obesity in a pediatric weight management clinic. We conducted a single arm open-label trial with 11 adolescent patients with obesity. Participants received standard medical management of obesity from their primary physician in addition to a six-week mindfulness intervention. To assess our primary aim of feasibility, we examined recruitment, retention, and satisfaction rates. Participants also completed measures of mindfulness, emotion regulation, disordered eating, quality of life, and executive functioning, and had their BMI and blood pressure measured. 11 adolescents participated in the intervention, with 8 (73%) completing the entire program. Attendance rates (85%) and satisfaction rates (88%) were promising for a larger trial. While preliminary analyses of changes in health outcomes should be examined with caution, effect sizes ranged from small to large with some promising trends in eating behaviors. Results suggest it might be feasible to augment existing behavioral interventions for adolescents with obesity with brief mindfulness; however, some adaptations are needed to enhance recruitment and retention. The lessons learned in this feasibility study can inform an adequately powered efficacy trial.

Modulation of the cerebellum regulates functional brain networks in autism

Hayli Spence, Senior, Neuroscience

Autism spectrum disorder (ASD) is characterized by core deficits in social communication, social interaction, and flexibility of thought and action, although symptoms vary considerably between individuals. At the neural level, ASD has been associated with atypical structure and function of the cerebellum, and recent work has indicated that cerebellar neuromodulation with transcranial direct current stimulation (tDCS) may alter the underlying functional connectivity of cerebellar-cortical neural circuits relevant to social cognition. Specifically, we have found that participants with autism demonstrate improved social learning following the administration of inhibitory tDCS targeting the cerebellum. Here we used functional neuroimaging to determine how sham, anodal (excitatory), and cathodal (inhibitory) cerebellar tDCS alter resting state functional connectivity in neurotypical adults (n=14) and adults with autism (n=9). Data-driven multivariate pattern analysis (MVPA) of the resting state data confirmed a significant difference ($p < 0.005$) in baseline functional connectivity between the neurotypical and autism groups, specifically in cerebellar right crus I and the medial frontal gyrus (MFG). Following cathodal cerebellar tDCS, these connectivity differences decreased, such that brain connectivity in participants with autism became more similar to that seen in the neurotypical cohort. As previously demonstrated, social learning also improved following cathodal cerebellar tDCS, suggesting that the changed connectivity pattern is also associated with improved social learning. Overall, the results of this study suggest cathodal cerebellar tDCS might have therapeutic potential for adults with autism.

The Reported Effects of Foods and Beverages on Cigarette Palatability: An Examination of Menthol Preferences and Racial Differences

Darian C. Weaver, PhD Candidate, Clinical Psychology

Cigarette taste plays an important role in smoking pleasure. Thus, factors that alter cigarette taste may affect smoking behavior. In the current study, smokers completed a novel 25-item Taste Sensitivity Questionnaire. Participants (N = 100, 42% female, 54% menthol, 44% Black) rated the effects that different foods have on cigarette taste using a 5-point scale (1 = makes cigarettes taste much worst - 5 = makes cigarettes taste much better) and their frequency of consumption (0 -7 days per week). Some food types were combined for analyses due to high correlations (e.g., milk and dairy). Cigarette taste "made worse" (value of 1 or 2) was reported by 66% of smokers for

milk/dairy, 31% for fruits, and 27% for vegetables. Taste “made better” (value of 4 or 5) was reported by 74% for alcohol and 77% for coffee. A series of 2 (race) by 2 (menthol) ANOVAs were run using scores (1-5) for each of the food types with frequency as a covariate. Non-menthol smokers reported greater taste enhancement from alcohol and greater taste worsening from fruits than menthol smokers (all p values < .05). There were significant racial differences for dairy, vegetables, fruit, chocolate, pizza, and meats. For example, while both groups on average reported a worsening of cigarette taste from dairy, fruits, and vegetables, Blacks reported greater worsening (all p values < .05). Additional research should investigate if cigarette smoking shifts dietary consumption and if dietary changes could facilitate smoking cessation.

Fragment-Based Discovery of antibacterials: focus on *Mycobacterium tuberculosis*

Mari Cohen, Postbaccalaureate Student, Postbaccalaureate Pre-Med

Antibiotic resistance is a significant threat to global health, including in the context of *Mycobacterium tuberculosis*. Though this concern has been well-documented, drug development has lagged behind the need for new treatments. This gap was addressed by synthesizing novel antibacterial compounds via fragment-based drug discovery (FBDD), a technique that allows for random screening with an element of structure-based design, creating compounds of low molecular weight and complexity. This experiment produced two compounds that used FBDD that were active against *M. tuberculosis*, likely behaving as inhibitors of the LipY enzyme.

Smoking outcome expectancies differ among African American and White smokers

Lindsey Sparrock, MS Candidate, Experimental/Biological Psychology

Darian Weaver, PhD Candidate, Clinical Psychology

Tommy Gunawan, PhD Candidate, Behavior, Cognition, and Neuroscience

Smoking outcome expectancies (SOEs) have been shown to predict smoking initiation, nicotine dependence, and cessation outcomes. Differences have been reported among African American (AA) and White smokers in smoking behavior, nicotine dependence, and cessation outcomes. However, there has been little research investigating SOEs among AA smokers. The 55-item Smoking Consequences Questionnaire-Adult (SCQ-A), a common measure of SOEs, has not been adequately validated for AA smokers. The present investigation assessed the factor structure of the SCQ-A using a sample of 463 AA smokers (86% menthol, M = 13.74 cigs per day, M = 41.8 years old) from the community who participated in a laboratory study. Exploratory factor analysis resulted in a structure generally consistent with the 10-factors previously identified. Seven of the expectancy factors were associated with nicotine dependence scores and 4 with reported desire to quit smoking (all ps < .05). When compared to White smokers from the same study (N = 184), AA smokers had greater Fagerström Test of Nicotine Dependence scores (4.64 vs 3.96, p < .001), but significantly lower scores on all 10 the SCQ-A factors (all ps < .05). Most differences remained significant even after controlling for multiple confounding variables (e.g., age, education, menthol). The reasons underlying the attenuation of SOEs among AA smokers are unknown and warrant further exploration. Interpretations are further limited by the high overlap of menthol preference and AA race. Improved understandings of racial and cultural differences in smoking beliefs and behaviors may inform cessation efforts aimed at reducing health disparities.

Effects of cerebellar tDCS on reading

Marissa Marko, PhD Candidate

The cerebellum is a region of the brain that is traditionally associated with the control of coordinated movement, but recent research suggests its involvement in cognition as well. It has been hypothesized that the cerebellum supports fluent cognitive processing in the same way it supports fluent movements. Consistent with this, cerebellar regions, such as right lobule VI, have been implicated in rapid, automatic reading in typical readers. That said, right cerebellar regions have also been associated with phonemic decoding (i.e. sounding out words). To determine whether the cerebellum is a key modulator of these reading processes, we used cerebellar neuromodulation with transcranial direct current stimulation (tDCS) and examined the impact of tDCS on phonological skills and reading fluency. In separate sessions, typical readers (n=5, preliminary data) completed the Sight Word Efficiency (SWE) and Phonemic Decoding Efficiency (PDE) tasks before and after 20min of 2mA anodal (excitatory), cathodal (inhibitory), or sham tDCS. After excitatory tDCS, the SWE improved by 2.13 points compared to the control sham condition, whereas inhibitory tDCS decreased SWE scores by 2.04 points compared to the control sham condition. Both excitatory and inhibitory tDCS decreased performance on the PDE task compared to sham, by 5.89 and 5.18 points respectively. These preliminary results are consistent with prior research implicating the cerebellum in reading, and indicate differential effects of cerebellar modulation on speed and phonemic aspects of reading. The improvement of reading speed following cerebellar tDCS is compelling early evidence for the potential therapeutic use of tDCS in reading disorders.

Testing new epigenetic drug candidates in colorectal carcinoma cells

Kyli McKee, Senior, Biology and Public Health (Minor)

Epigenetics--the study of functional, heritable changes to DNA that do not alter its sequence--has been linked with cancer and other diseases. DNA methylation is an epigenetic mechanism involving addition of a -CH₃ methyl group to cytosine bases of DNA. Unfortunately, while two drugs exist that alter DNA methylation and are used to treat cancer but they have significant toxic side-effects. Therefore, the goal of this project research is to identify new drugs capable of demethylating DNA, thereby reactivating silenced tumor suppressor genes. Using colorectal carcinoma cells we performed DNA methylation testing of 29 candidate compounds from a high-throughput screening project, and we found five promising compounds for follow-up testing. The drugs being used in this research have already been FDA-approved for other purposes, so they can be repositioned for cancer use. Drug repositioning is valuable because it significantly decreases the amount of time and money required to create a new drug from scratch.

POSTER Q&A_SESSION TWO: 12:30 – 1:30 PM

Scientific and Global Trends

moderated by Victoria Connaughton, Associate Professor, Biology

Featured Posters:

Transient developmental exposure to tributyltin (TBT) alters short-term visually guided behaviors and morphology in larval zebrafish (*Danio rerio*)

Rachel Bernardo, Senior, Public Health and Biology (Minor)

Most EDCs are shown to affect estrogenic pathways, and estrogen is a critical component in eye development and vision maintenance, which suggests that EDCs have a direct effect on the visual system. The purpose of this experiment was to explore how acute developmental exposure to tributyltin (TBT), well-known anti-estrogenic environmental EDC, affects visual system development. The goal was to identify age- and concentration-dependent differences of exposure at these three developmental ages. The hypothesis is that TBT will affect specific estrogenic pathways during defined periods in eye and vision development and impact the anatomy of the overall growth and of the retina, as well as behaviors indicative of effects on vision. Zebrafish were exposed at either 24 hours, 72 hours, and 7 days postfertilization to TBT for 24 hours. Immediately after exposure, larvae were removed from the treatment and behaviorally tested. Seven days post-exposure, larvae were behaviorally tested again and then assessed morphologically. It was determined transient, developmental TBT exposure caused short-term effects as evident as a decrease in positive OMR in larval zebrafish. There was no statistically significant interaction between the effects of treatment and exposure age on startle response. Therefore, this shows that TBT affects the visual system. It also affects eye development and overall notochord development as it was shown to cause delayed growth in both aspects.

Learning to choose: dynamic processes underlie decision making strategy and optimization in rats

Samantha White, PhD Candidate, Behavior, Cognition, and Neuroscience

When we study decision making behavior, there's an assumption that making decisions between options takes more time than if there was only access to one outcome. This idea has been challenged by behaviors observed in starling birds; when they were trained to respond to visual cues leading to a reward, they did not deliberate, and instead chose more quickly when an alternative choice was available compared to the same cue presented on its own. In the present study, we implemented the same behavioral training paradigm to assess whether rats, like starlings, would choose between multiple options more quickly than with one cue available. Here we found that rats show evidence for deliberation, and more interestingly, with repeated experience in making decisions, rats learn to choose more quickly. We used computational models of reaction time variability and decision making to assess the potential underlying psychological processes that change through decision making experience. Overall, we found that with repeated decision making between options, rats show a greater change in motor strategy and slight change in decision making strategies. This study provides insight into potential neural mechanisms of learned choice behaviors, which will be further investigated through electrophysiology and calcium imaging studies.

Detection of Oxytocin on Fast Scan Cyclic Voltammetry using Carbon Fiber Microelectrodes

Joshuana Edmond, Senior, Biochemistry with a Minor in Physics

Arianna Lopez, Senior, Biochemistry

Favian Liu, Junior, Biochemistry

Improving the detection of peptide hormones has been a topic of interest for many in the medical field. Optimizing the detection method of these hormones will allow for higher sensitivity and selectivity at a cheaper cost in a shorter time span. In humans, low oxytocin levels can lead to high levels of cortisol resulting in symptoms like depression, stress, and increased appetite. Detecting oxytocin levels is beneficial to physicians attempting to diagnose patients who may be exhibiting these symptoms. Thus far, various detection methods have been used to detect oxytocin in blood,

such as immunoassays; however, they're either expensive or time consuming. In this study, we will be testing whether fast scan cyclic voltammetry (FSCV) is an improved and efficient method to detect oxytocin levels. FSCV has the potential to detect compounds on a nanomolar scale with the use of carbon fiber microelectrodes. In this presentation, we will discuss how FSCV is a viable option for the selective detection of oxytocin in blood, its optimization, and how using different coatings on the carbon fiber microelectrodes can increase oxytocin detection.

Transient developmental exposure to bisphenol-A alters zebrafish optomotor response.

Angelo Barberio, Senior, Biology

Mikayla Crowley-Perry, Postbaccalaureate Pre-medicine

Erica Winston, Senior, Biology and Pre-medicine

Jude Zieno, Junior, Public Health and Pre-medicine

Compounds that disrupt estrogen signaling can affect the visual system, though little is known about long-term consequences. We examined whether transient developmental exposure to bisphenol-A (BPA), an estrogen agonist, alters zebrafish optomotor (OMR), startle, and thigmotactic responses. Embryos (24hpf) and larvae (72hpf, 7dpf) were exposed to either high (0.1uM) or low (0.001uM) BPA, water, or vehicle (DMSO<0.1%) and assessed immediately after exposure and after 1, 2, and 4 wk of recovery. Larvae exposed at 24hpf showed comparable OMRs across all groups at 1 and 2wk; at 4wk, significantly increased OMRs were observed only in the high BPA group. Larvae exposed to high BPA at 72hpf displayed an increase in OMR at 1wk and 4wk; at 2wks the highest percentage of responders was in the low BPA group. Larvae exposed to high BPA at 7dpf had significantly more positive OMRs at the initial and 1wk timepoints; at 2wk, the OMRs were comparable across groups. Differences in startle responses were only noted in larvae at 1wk and 2wk recovery when exposure occurred at 72hpf or after 2wk when exposure occurred at 24hpf. Qualitative observations suggest swimming activity increased with age, regardless of treatment, and with increased recovery time, larvae appeared to have reduced thigmotaxis. Transient developmental exposure to environmentally-relevant BPA levels at critical points in vision system maturation enhances OMRs, selectively affects startle and may increase stress responses, suggesting functional changes, as well as aged-dependent effects.

LPL Agonists: A Fragment-based Approach

Shelbi Wuss, Junior, Biochemistry and Psychology (Minor)

Elevated triglycerides (TG) contribute towards increased risk for cardiovascular disease. Lipoprotein lipase (LPL) is an enzyme that is responsible for the metabolism of core triglycerides in the vasculature. Although statins and other pharmacological approaches have improved the management of lipid abnormalities, there exists a need for newer treatment modalities especially for the management of hypertriglyceridemia. The focus of the research study was to develop a fragment-based library of compounds in order to test several different "fragments" to determine the most active one as an activator or modulator of LPL. The prepared compounds were analyzed using Nuclear Magnetic Resonance (NMR) and Mass-Spectrometry (MS) and purified using High Performance Liquid Chromatography (HPLC). Once the required purity of the compounds is achieved, they were tested, in triplicate, in 2-6 different biological concentrations combined with the LPL enzyme + 18A-C2 (apoC2 deficient plasma) against several control groups including. Several compounds were identified as LPL modulators.

The Impact of increase Glucose Exposure on Behavior in Zebrafish

Elizabeth McCarthy, MS Candidate, Behavior Cognition and Neuroscience

With rising obesity rates in America, Type II Diabetes (T2D) diagnoses are also increasing. T2D has many detrimental effects on the human body, including degradation in the blood retinal barrier (BRB) that can lead to blindness. There is also a reported correlation between T2D and development of Alzheimer's, possibly due to a decrease in the blood brain barrier (BBB), which suggests similar mechanisms in retina and brain. The purpose of this study is to assess if cognitive decline, that is apparent in memory loss, is correlated with changes in molecular markers associated with the BBB. Zebrafish at four weeks of hyperglycemia (a characteristic of T2D) have increased permeability of the BBB and cognitive decline. Here, we extend the hyperglycemic insult to eight and twelve weeks of exposure to assess long-term effects. Our ongoing research is specifically looking at recovery of hyperglycemic insult and the acclimation to hyperglycemic conditions. This will be studied using behavioral and molecular techniques. With more information about how hyperglycemic conditions affect the BBB in zebrafish, steps can be taken to help people with T2D live more normal lives.

Interactive age specific effects of face gender and face race in infants' ERP face processing responses

Fabiola Fernandez, Senior, Neuroscience

Very few studies have explored the interactive effects of face race and gender on infant face processing. We aimed to determine if face race and gender have interactive effects on infants' Event-Related Potential (ERP) responses to faces. We hypothesized that race and gender would have interactive effects on the N290 and P400 components associated with infant face processing, and that due to experience these effects would increase with age. Existing data from a cross-sequential study of infant ERP responses to faces was used (Sudgen & Moulson, 2013). The sample included 24 3-month-olds, 26 6-month-olds, and 18 9-month-olds. Linear mixed-effects models revealed that regions of interest (ROI) and age ($p < .001$), but not face race or gender, had significant interactive effects on N290 mean amplitudes. In contrast, analysis of P400 mean amplitudes revealed a significant interaction between face race and gender ($p = .002$) that also interacted with age ($p = .046$). P400 amplitudes were larger for own-race female faces and other-race male faces in 9-month-olds, with significant main effects of face race for female ($p = 0.003$) and male ($p < .001$) stimuli, and of face gender for own-race ($p = .013$) and other race stimuli ($p = .012$). In summary, we found age-specific effects of face race and gender on infant ERP responses to faces, including a race-by-gender interactive effect emerging by 9-months and possibly reflecting the impact of experience.

Leveraging Cheminformatics to Bolster the Control of Chemical Warfare Agents and their Precursors

Charlotte Slavick, Senior, Finance and Pre-Medicine

A number of international frameworks, such as the Chemical Weapons Convention (CWC), the Australia Group (AG), and the Wassenaar Arrangement, contribute a coordinated multilateral effort to stem the proliferation of chemical weapons (CW). These frameworks contain lists of chemical warfare agents (i.e. the toxic chemicals on which CWs are based) or precursors for their synthesis. Some of these lists are a compilation of exact structures, where each chemical is individually enumerated. Other lists comprise both exact structures as well as families of chemicals identified by a common scaffold with variable substituents. Indeed, chemicals are better described by

structures than names. A single letter difference in a chemical name can account for an important difference in the chemical structure, marking the watershed between chemicals that are controlled and those that are not. Documents annotated with structures would make it easier for chemists and scientific advisors to communicate these differences to policy makers. For these reasons, we are putting together a website (<https://costanziresearch.com/cw-control-lists/>) with manually curated tables in which the above-mentioned lists for the control of chemical warfare agents and precursors are annotated with chemical structures as well as simplified molecular-input line-entry system (SMILES) notations. Our tables also are annotated with information that highlights the overlaps within the various lists, noting for each entry of each list whether that chemical is covered by one or more additional lists, either as an individual chemical or as a member of a family of chemicals.

POSTER Q&A_SESSION THREE: 1:30 – 2:30 PM

Social Trends and Human Innovation

moderated by Ethan Mereish, Assistant Professor, Health Studies

Featured Posters:

Deep in the Bottom: Dumpster Diving into America's Wealth

Loretta Dzanya, Senior, Sociology and Public Health (Minor)

Freegans, often referred to as dumpster divers, are a group of anti-consumerists that resist consumerism and America's exploitive capitalist hegemony that has essentially lead to exorbitant food waste. Dumpster diving for food is how freegans minimize their participation in America's conventional economy. Critics of freeganism view the radical social movement as a group of delinquents stealing from supermarkets, trespassing on abandoned property and complacent in dirt by physically digging for food in dumpsters. Through a qualitative content analysis of freeganism member's experiences, this research contributes to dialogues regarding environmental waste, perceived knowledge about food waste and what constitutes as dirty and finally, reshaping how we live. This study illustrates not only how freegans adopt an alternative way of living free from consumerism and capitalism but also draws attention to America's excessive food waste system that has led to environmental degradation and left millions of Americans living in poverty malnourished. Using sociological theorist Max Weber theory of social action that attempts to explain the meanings actors attach to their actions and motivates to achieve their goals, freegans can be understood as conscious actors that utilize logical rationale to achieve their goals in the best means possible through dumpster diving to feed themselves and not the pockets of capitalists. Using Everett C. Hughes concept of dirty work helps understand both the stigma associated with dirt and how physically dirty social movements are. For that purpose, this study will attempt to grasp an understanding of the obstacles freegans face in creating social change.

Applying the Socioecological Model to Interventions and Protective Factors that Improve LGBT Youth's Mental Health

Marnina Hornstein, Senior, Public Health and Psychology (Minor)

Lesbian, gay, bisexual, and transgender (LGBT) youth have poorer mental health outcomes compared to their heterosexual peers. The socioecological model was developed to better understand the dynamic between personal and environmental factors that affect behavior and health at five different levels: individual (e.g., personal factors); interpersonal (e.g., an individual's

relationship with others); organizational (e.g., schools and other small organizations); community (e.g., neighborhoods); and policy or laws on the state and federal level. This study utilizes the socioecological model to analyze current interventions and protective factors that can help reduce mental health disparities for LGBT youth. Peer-reviewed empirical articles in PubMed and PsycInfo databases were reviewed and organized into the five levels of the socioecological model. Results from the review of the literature indicated that there are interventions or protective factors at each level of the socioecological model. At the individual level, interventions included counseling and self-acceptance. Interpersonal interventions focused around family acceptance and organizational interventions focused on school interventions such as gay straight alliances and anti-bullying initiatives. Organizational interventions highlighted the importance of a supportive social environment and policy interventions showed that anti-bullying and LGBT acceptance policies were effective. While researchers were able to find interventions and protective factors at every level of the model, it was clear that there is still a lot of research and work to be done in this field to improve the mental health of LGBT youth.

Comparing perceptions of indirect bullying against different social minority groups: a mixed-methods study

David Kalwicz, Senior, Psychology and Applied Statistics (Minor)

The association between bullying and negative mental health outcomes for young people is well established, particularly for marginalized youth. There is less research about the personal characteristics that contribute to sensitivity to and awareness of bullying, or if behavior is differentially perceived as bullying depending on the target group. Understanding the differences in bullying perception against social minority groups is essential in addressing how similar experiences can potentially yield different outcomes. The current study evaluates the level of concern regarding ambiguous behavior directed toward several social groups that are targeted for bullying as well as the moderating effect of participant characteristics. College students ages 18+ completed a mixed-methods study where they read three letters supposedly written by high school students sharing unpleasant experiences that they witnessed or experienced. All participants read incidents about a student targeted for their weight or academic excellence and then also read about either a Jewish or Gay student. Participants wrote free responses to each letter, where their level of sympathy and likelihood to rate the incident as bullying were evaluated. Participants indicated their emotional reaction to and concern about the incident, their predicted behavior if they witnessed the event, reported their LGBTQ status, religion, any history of victimization and completed scales of moral disengagement and empathy. These findings will potentially help address personal factors that contribute to the awareness of bullying and the differences in bullying sensitivity across social minority groups. (Data Collection will be finalized by mid-March)

Is all experience the same? Effects of including LGBTQ work experience on a resume for a leadership position

David Kalwicz, Senior, Psychology and Applied Statistics (Minor)

The current study investigated the effect of including LGBTQ-related work experiences in a resume for a leadership position. A total of 66 participants completed a survey and were randomly assigned to review a resume of a man with either zero, one or three LGBTQ-related work experiences included. Participants were predominantly female (68%) and heterosexual (64%). Participants rated the applicant's qualifications for the leadership position, intelligence, feminine attributes, and masculine attributes. Although all variables were rated in the predicted direction in that the presumed gay male applicants were perceived as less qualified, intelligent, and masculine when

compared to the presumed straight applicant, the results did not reach significance. However, presumed gay male applicants were rated as significantly more feminine than the presumed straight applicant, and the difference was amplified when there were more LGBTQ-related work experiences displayed. There was no interaction between sexual orientation of the participants and how they rated the applicant's feminine attributes, but there was an interaction between gender and the experimental condition. Male participants rated the applicant as more feminine if there were more LGBTQ-related work experiences, whereas female applicants had similar ratings regardless of LGBTQ work history. Implications for applicants and employers are discussed.

PostSec

Grace Lavelle, Senior, Business Administration and Education (Minor)

PostSec is an educational technology platform that aims to make the transition from high school to 4 year institutions easier for high school students. This project will focus on both the FAFSA and CSS Profile, and allow students to take control of their financial future. This project will focus on first-generation students who are going through the college application process for the first time. This platform will connect students to reputable financial advisers, and allow students to have access to credible information and assistance when filling out both the FAFSA and CSS Profile. PostSec will exist as a dual sided platform available at public school with the assistance of the guidance department to facilitate a relationship over the platform between a student and a financial adviser on PostSec. This secure platform will allow the facilitation of mutually beneficial relationship between the student receiving assistance, to the financial adviser who is able to find a multitude of new clients, and the school district who is able to contract out this financial part of college to a reputable third party.

Estimation of manufacturing-related workplace injury risk through a point-based risk score prediction model

Hannah Fuchs, Senior, Applied Statistics and Public Health (Minor)

Risk scoring systems are useful for practitioners and individuals to assess the likelihood of development of a health condition of interest based on relevant risk factors. Applications of risk scores have ranged from heart disease, such as the well-known Framingham Heart Study, to cancer, diabetes, dementia, to hip and osteoporotic fracture risk. Statistical models, such as the Cox proportional hazard regression model, can be used to estimate relative and absolute risk. Conversion of risk estimates to a point system can provide reasonable estimates of risk by using a simplified scoring metric which also highlights factors which contribute more to the risk, relative to other characteristics. In this project we develop a point system for risk of workplace injury from carpal tunnel syndrome in an occupational cohort of manufacturing industry workers. The methodological efforts to assess Cox model assumptions are also assessed and discussed.

Dosso Dossi's "Jupiter, Mercury and Virtue": An Amalgamated Masterpiece

Benjamin Feder, MA Candidate, Art History

Duke Alfonso I d'Este of Ferrara's artistic patronage was greatly influenced by his interest in classical antiquity and Renaissance humanism. The Duke not only commissioned paintings of classical subjects, such as the Greek gods and the heroes, but also filled his court with the famed painters, poets and musicians, transforming his palace into a hub of artistic convergence. While working for the Duke as court painter over the course of three decades, Dosso Dossi painted a myriad of mythological scenes for his patron, including Jupiter, Mercury and Virtue (1524). Little is known about the circumstances surrounding the commission and creation of the painting, which

has lead scholars, such as Marcin Fabianski, to explore the literary sources that could have inspired Dossi to paint such a unique and perplexing work. In his analysis of the painting, Fabianski synthesizes several interpretations of the work into a single theory, arguing that the painting could not possibly be explained by an isolated literary source. While Fabianski's assessment is accurate, his analysis is incomplete as he fails to consider humanist and classical influences beyond the written word. This paper will take his interpretation a step further by covering not just literary sources, but visual ones as well. Building on Fabianski's analysis, this essay will argue that Dosso Dossi's Jupiter, Mercury and Virtue was meant to be a visual synthesis of the variety of humanist and classical works that his patron was so enamored with, from allusions to humanist literature, classical satire, and antique sculpture.

