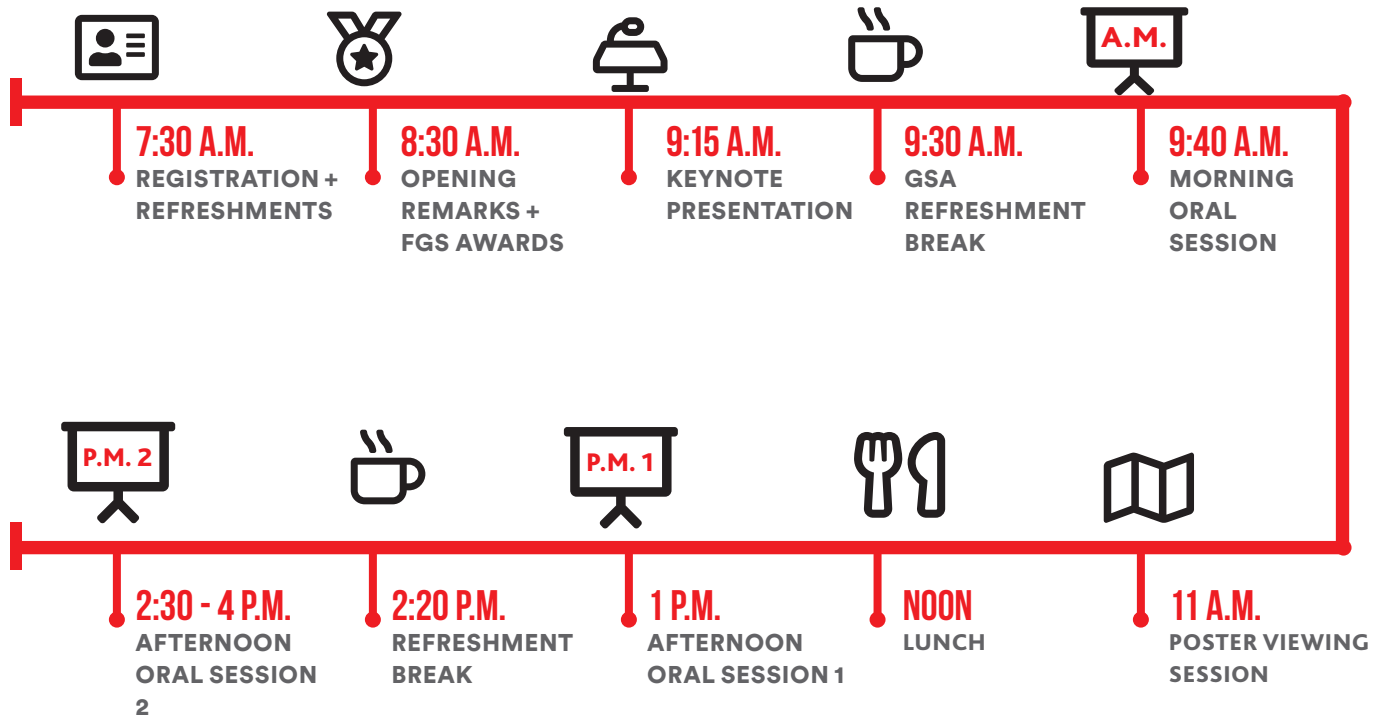




# CONFERENCE SCHEDULE



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# CONFERENCE SCHEDULE DETAILS

## Registration + Light Breakfast

**Plaza 4<sup>th</sup> Floor Mezzanine | 7:30 a.m.**  
Be sure to register before the opening remarks!

## Opening Remarks + FGS Awards

**Plaza 4<sup>th</sup> Floor Mezzanine | 8:30 a.m.**  
Vice-Provost and Dean of Graduate Studies, Suzanne Curtin, welcomes attendees and presenters to the 18<sup>th</sup> annual Mapping the New Knowledges Graduate Student Conference. The FGS Awards announcement will follow in recognizing and congratulating outstanding graduate community members and students.

## Keynote Presentation

**Plaza 4<sup>th</sup> Floor Mezzanine | 9:15 a.m.**  
Join Dr. Sheila O'Keefe-McCarthy as she presents the keynote for MNK 2023.

## Refreshment Break provided by GSA

**Plaza 4<sup>th</sup> Floor Mezzanine | 9:30 a.m.**  
Join us and our gracious sponsor - Graduate Students' Association for the first refreshment break.

## Morning Oral Session

**Plaza 3<sup>rd</sup> and 4<sup>th</sup> Floor Mezzanine and Goodman School of Business | 9:40 a.m.**  
See pages 8 and 9 for a full list of presenters.

## Poster Viewing Session

**Cairns 3<sup>rd</sup> Floor Hallway | 11 a.m.**  
Leisurely view and engage with our grad students' research posters.

## Lunch

**Decew Dining Hall | Noon**  
Complimentary lunch card will be provided.

## Afternoon Oral Session 1

**Plaza 3<sup>rd</sup> and 4<sup>th</sup> Floor Mezzanine and Goodman School of Business | 1 p.m.**  
See pages 10 and 11 for a full list of presenters.

## Refreshment Break

**Plaza 4<sup>th</sup> Floor Mezzanine | 2:20 p.m.**  
Join us for a refreshment break before our last oral session.

## Afternoon Oral Session 2

**Plaza 3<sup>rd</sup> and 4<sup>th</sup> Floor Mezzanine and Goodman School of Business | 2:30 p.m.**  
See pages 12 and 13 for a full list of presenters.

# WELCOME

**Welcome to the 18<sup>th</sup> Annual Mapping the New Knowledges Graduate Student Research Conference!**

**We are thrilled to have you here today to witness the diverse research undertaken by our exceptional graduate students.**

**The Faculty of Graduate Studies is always happy to support this legacy event, which provides students an opportunity to exhibit their research and establish connections with peers and faculty members across diverse fields in a nurturing and professional environment.**

**I extend my sincerest appreciation to our organizing committee for their meticulous planning and hard work, and to all participants and attendees for their continuing commitment to research excellence at Brock.**

**Enjoy your day!**

Sincerely,

**SUZANNE CURTIN**

Vice-Provost and Dean  
of Graduate Studies



**140+**  
**STUDENT**  
**PRESENTERS**



WELCOMING  
**STUDENTS**  
FROM MORE THAN

**25**

**PROGRAMS.**



SHOWCASING GRADUATE  
RESEARCH

**SINCE**  
**2005**

# KEYNOTE

## **DR. SHEILA O'KEEFE-McCARTHY**

Associate Professor, Department of Nursing,  
Applied Health Sciences

**Sheila O'Keefe-McCarthy is a nationally certified expert in cardiovascular critical care and holds the National Research Director for the Canadian Council of Cardiovascular Nurses. Sheila is a Cardiovascular and Pain Scientist at the Social Justice Research Institute, the Centre for Research Across the Life Span, and the Brock Functional Inclusive Training (Bfit) Centre.**

**Her Heart Innovation Research Program includes, a) patient-focused, clinical research in women's and men's cardiovascular health, b) education of patients, healthcare providers, trainees, and the public, c) extending reach to create awareness, and mobilize knowledge, to improve the promotion, prevention, treatment and understanding of the human health care experience.**





# FACULTY OF GRADUATE STUDIES AWARDS



Each year, we celebrate the accomplishments of graduate students, faculty and staff and the generosity of donors who invest in excellence at Brock. These awards are presented to winners at MNK to honour outstanding mentorship, leadership and research excellence within the graduate community at Brock.

## Michael Plyley Graduate Mentorship Awards

The Michael Plyley Graduate Mentorship awards honour and recognize the essential role of faculty supervisors in the mentorship of graduate students. Nominations came exclusively from grad students.

## Marilyn Rose Graduate Leadership Award

To recognize faculty, staff and students for their work, vision and leadership in developing and/or enhancing graduate studies and the graduate student experience for students at Brock University. The Marilyn Rose Graduate Leadership Award recognizes the kind of work that encourages a strong and vital graduate culture in support of students and the University's academic and research goals.

## Jack M. Miller Excellence in Research Award

The Excellence in Research Award is awarded to graduate students who have displayed excellence in research. Each graduate program are allowed to nominate one master's and one doctoral graduate student from each of the Brock's faculties.

## \*NEW\* Suzanne Curtin-Christopher Yendt Graduate Collaboration Award

Established in 2023, the Suzanne Curtin – Christopher Yendt Graduate Collaboration Award was created to recognize graduate students who have been outstanding in areas of fostering collaboration to bring together diverse elements of the graduate community, championed opportunities for cooperation and provided leadership with different partners resulting in significant contribution(s) to graduate student life at Brock.



# MORNING ORAL SESSION PRESENTER ABSTRACTS

9:40 A.M. - 11 A.M.

## SESSION 1

CHAIR: KAY WABOSO | PLAZA 308

### PRESENTER

### PROGRAM

Md Tanaz Abir

Management

Daniela Gatti

Management

Oussema El Ajel

Management

Maryam Vashahi

Management



## Md Tanaz Abir

*Factors driving consumers' continuous usage of online grocery shopping platforms in the post pandemic era.*

The purpose of our research is to explore the several factors that influence consumers' intention to continue using online grocery services after the Covid-19 pandemic. We conducted a field survey of 314 Behavior, as well as the Expectation-Confirmation Theory, and we incorporate Perceived Risk, E-Loyalty, and Trust as the theoretical framework to develop an extended model with fifteen hypotheses. One of the key findings of our study is that consumers are more likely to continue using online grocery services if they initially intended to do so during the pandemic. Our empirical results also show that consumers' perceived risk has a significant impact on their intention to continue using the service. Furthermore, our study reveals that intention to use the service leads to increased E-Loyalty. This suggests that retailers can increase customer loyalty by encouraging consumers to use their online grocery services and providing them with a positive experience. We also discovered new relationships between Perceived Usefulness and Trust, and Attitude and Perceived Risk. These findings can help online grocery retailers better understand the factors that influence consumers' decision-making and tailor their marketing strategies accordingly. Finally, we tested the moderating effects of demographic variables such as Age, Gender, Employment, and Income Level on the relationship between Intention and Continued Intention and found that Generation (categorized as age groups by definition) significantly influences consumers' continued intention to use online grocery services.

## Daniela Gatti

*Beyond the Glass Ceiling: How marginalized genders attain tenure and career progression in stigmatized careers*

There is a growing labour shortage within the skilled trades in Canada, partly due to the decrease in incoming workers and an increase in employees retiring in the incoming years. The trades are also often stigmatized, which contributes to careers being perceived as less attractive to some potential employees. Simultaneously, women are disproportionately underrepresented in the skilled trades, particularly in leadership and managerial roles, and face additional marginalization because of their underrepresentation. Previous research addressed how stigmatized employees create and use support buffers to limit the negative impacts of stigma from their careers, making their work experience more tolerable and sustainable. However, there is a research gap regarding how stigmatized employees form their support buffers and how the use of support buffers contributes to their career progression. Utilizing thematic analysis and the long interview method of qualitative data collection, 27 participants including 21 women and six men in various trades and career levels were interviewed to understand their experience with entering and working in a stigmatized industry like the trades. The findings suggest that participating in online support groups is beneficial for women in the trades, possibly due to the anonymity as well as the voluntary nature of participating. Meaningful work and financial support also contributed to long-term career progression. These findings can help stakeholders to better attract and retain employees, as well as promote more diverse representation in leadership roles in the trades in the future.

## Oussema El Ajel

### *Can we Speak Sustainability into Existence? Shareholder Engagement and Corporate Innovation Strategy*

In this study, we investigate the effect of environmental shareholder activism on target firms' innovation strategies, particularly their green and dirty innovation output. We utilize the Direct Acyclic Graph (DAG) to construct our empirical strategy. We also use a hurdle model coupled with propensity score matching and a difference in difference specification in an attempt to estimate an unbiased average treatment effect for the treated (ATT). The results of the first stage show no evidence for an effect on environmental engagement through shareholder proposals and firm's likelihood of engaging in either types of innovations. In the second stage, we find weak evidence for a negative relationship between environmental shareholder activism and dirty innovation. However, we are unable to obtain reliable estimates for the relationship between environmental shareholder activism and green innovation. Through a cross sectional analysis, we further show that firms subject to a higher regulatory environmental scrutiny through the TRI reporting requirements drive the negative relationship between environmental shareholder activism and dirty innovation, and we also find weak evidence for the superior ability of institutional activist to influence firms' dirty innovation output.

## Maryam Vashahi

### *Local Religiosity and CEO Gender Pay Gap*

In this study we focus on the effect of local religiosity on the probability of hiring female incoming CEOs while transitions, and how local religiosity relates to female CEO compensation. Given that all major religions facilitate patriarchy contributing to gender stratification, justifying men's hierarchical superiority to women, we predicted that local religiosity is negatively related to appointing and remunerating female CEOs. We found no evidence that local religiosity relates to the probability of appointing a female incoming CEO. Moreover, using both a longitudinal as well as propensity scored matched sample, results indicate that local religiosity slightly negatively relates to the level of CEO compensation for male CEOs as opposed to the positive and significant association with the level of female CEO remuneration. Contrary to predictions, local religiosity shifted pay discrimination against female CEOs in secular states to their favor in religious states.

## SESSION 2

CHAIR: DANIEL COUSINS | PLAZA 311

### PRESENTER

### PROGRAM

Gurprince Atlas	Psychology
Zoe Gagnon	Biological Sciences
Victoria Vella	Psychology
Kingston Wong	Psychology

### Gurprince Atlas

*Effects of cross-fostering on neural development in degu (Octodon degus) pups*

Parental care is essential for social, behavioural, and neural development in offspring. In rodents, parental separation affects the amount and quality of parental care and offspring development. Work to date has focused on maternal and paternal deprivation, but it is not clear how cross-fostering, another form of parental-offspring instability, can affect offspring behaviour and brain development. Stress significantly impacts the hippocampus (suppressing neurogenesis) and increasing inflammation, but this can vary between sexes. We investigated how cross-fostering affects biparental care, offspring behaviour, and hippocampal development in both sexes in degus. Degus (*Octodon degus*) were assigned to one of three groups at PND8: control (litters remained with parents), complete cross-foster (entire litter was cross-fostered), and partial cross-foster (only one pup/litter was cross-fostered; n~15/group).

Parental care and offspring play fight behaviour were scored in the home cage. At weaning, offspring brains were collected for immunohistochemistry. Complete cross-foster mothers spent more time licking/grooming pups and spent more time off the nest compared to mothers in the control and partial-cross foster groups. Complete cross-foster fathers spent less

time licking/grooming pups compared to fathers in partial cross-foster and control conditions. In the offspring, play fighting behaviour increased in partially cross-fostered females compared to controls. There was no significant effect of cross-fostering on dentate gyrus (granule cell layer and hilus) volume in offspring. Analyses are ongoing to examine changes in neurogenesis and microglia with cross-fostering. This study contributes to our understanding of how early life environment impacts hippocampal development and behaviour.

### Zoe Gagnon

*Examining the role of Sema3A in hippocampal spatial memory formation in the adult mouse*

Memory formation is mediated by rapid modification of excitatory synapses, sites of communication between brain cells. The dominant experimental model for the cellular basis of learning and memory is long-term potentiation (LTP), which proposes that activity-dependent Ca<sup>2+</sup> influx through N-methyl-D-aspartate (NMDA) glutamate receptors can trigger a functional reorganization of fast ionotropic  $\alpha$ -amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid (AMPA) glutamate receptors, effectively rendering the postsynaptic neuron more sensitive to presynaptic glutamate release under normal physiological conditions. LTP has also been linked to structural reorganization of dendritic spines that form the principal site of excitatory neurotransmission. The formation, elimination, and modification of synapses and dendritic spines during development depends on guidance cue proteins, which can regulate changes in cell morphology, promote synapse formation, and mediate cell-cell adhesion. Semaphorins are a family of guidance cues and include membrane-bound and secreted proteins linked with chemorepulsion.

In developing neurons, Sema3A regulates cytoskeletal architecture through intracellular cascades associated with activation of a neuropilin-1 (NRP1) / PlexinA4 (PLXNA4) holoreceptor. Activation of NRP1/PLXNA4 leads changes in phosphorylation of collapsin response mediator protein 2 (CRMP2), a protein required for normal synaptic transmission. Dysregulation of CRMP2 is linked with synaptic dysfunction underlying neurodegenerative disorders, and changes in phosphorylation status of CRMP2 are required for post-synaptic expression of LTP. We examined changes in phosphorylation of CRMP2 in the adult mouse brain following a test of spatial learning, suggesting activation of Sema3A signaling cascades following memory formation. These experiments provide novel insights into the signaling cascades that regulate synaptic function in the adult brain.

### Victoria Vella

#### *Dysregulation of immune system function and gut microbiota composition following prenatal alcohol exposure in male and female rats: An ontogenetic approach*

Introduction: There is growing evidence for bidirectional communication between the gut and immune system. Prenatal alcohol exposure (PAE) is associated with changes in immune function, but in the context of PAE, alterations in gut microbiota composition have only been studied in adulthood. This study takes a developmental approach to evaluate the relationship between PAE-induced alterations in immune function and gut microbiome composition.

Methods: Blood and fecal samples were collected from control and PAE male and female rats across three timepoints: P8 (infancy), P22 (weaning), and P38 (adolescence). Blood samples were used to assess cytokine levels (IL-1, IL-10, IL-13, IFN- $\gamma$ , IL-4, IL-5, IL-6, KC/GRO, TNF- ) and fecal samples were used to assess the microbiome (16S rRNA sequencing).

Results: There were no changes in cytokine levels at P8, but by P22, both male and female PAE rats had higher levels of IL-13 and IL-6 compared to controls, while females showed higher IFN- $\gamma$ , IL-10, IL-13, IL-4, and IL-6 compared to males, regardless of prenatal exposure. At P38, PAE rats had higher levels of IL-10 and IL-4 compared to controls (in both sexes). By P38 only TNF- showed sex differences, with higher levels in males. Preliminary analysis of the gut microbiome indicates that PAE results in changes in bacterial richness and community structure that varies based on age and sex.

Conclusions: PAE alters both the microbiome and cytokine levels across development, with some of these changes being sexually dimorphic. These sex specific outcomes highlight the continued need to include both sexes in research.

## Kingston Wong

*Prenatal alcohol exposure induces anxiety-like behaviour in male and female rats: Possible role of gut-brain axis*

Up to 90% of individuals affected by Fetal Alcohol Spectrum Disorder will experience mental health problems during the lifespan. These consequences indicate the need to elucidate the potential biological systems linking prenatal alcohol exposure (PAE) to subsequent changes in behaviour. Recent research suggests that PAE-induced behavioural changes may be mediated by alterations in how the gut-brain axis functions. A well-established PAE animal model was used to investigate the differential impacts of PAE on gut microbial contents, and anxiety- and depressive-like behaviors. Pregnant Sprague-Dawley rats were randomly assigned into two cohorts - liquid ethanol diet ad libitum (PAE) and pelleted control diet ad libitum. Open Field (anxiety-like), dark-light emergence (anxiety-like), and sucrose consumption (depressive-like behavior) tests were performed in adult male and female rats while fecal pellets were collected during the rest period. The Open Field test indicated that PAE increased anxiety-like behaviours compared to controls. Male and female PAE rats spent less time in the center compared to controls. PAE males entered the center and periphery zones less frequently than control males. Regardless of PAE, the distance traveled in the apparatus was lower in males when compared to females. Although, PAE did not affect sucrose consumption, females had higher sucrose consumption/body weight compared to males. Our results captured PAE-induced anxiety-like but not depressive-like behaviours across both sexes.

Ongoing analyses will determine if these PAE-induced behavioural changes are associated with alterations in the gut microbiome and gut bacterial metabolites. Support: NIH/NIAAA R01 AA022460 and Azrieli Foundation to CR and TSB.

## SESSION 3

CHAIR: BRIANNA ANDERSON | PLAZA 408

PRESENTER	PROGRAM
Elyse Gorrell	Psychology
Aisha Aliyu	Management
Farzad Mehrpour	Management
Mateo Paez Beltran	Management

## Elyse Gorrell

*Athletes vs. Coaches: Perspectives about Social Media*

The purpose of this study is to understand the different perceptions of social media in athletes and coaches. Social media's effects on coaches, and the relation between coach and athlete, has not been examined. There is typically an age gap between the two groups, and beliefs and usage in the relation may differ. Previous literature suggests that athletes may not understand the implications of social media, and that there are implications that could alter an athlete's mentality for performance. It is also recognized that athletes' preoccupation with social media is a perceived challenge for coaches. The study aims to bridge the gap in understanding the coach-athlete dyad about the effects that social media has on athletes and their performance.

## Aisha Aliyu

*Examining the combined effects of Cyberbullying, ethical climate, and dark triad personality on work outcomes: Unravelling the mechanisms of vengeful rumination and knowledge sabotage behaviors*

The present study aims to examine the relationship between cyberbullying and knowledge sabotage, an extreme form of counterproductive knowledge sharing behaviour. The study considers vengeful rumination as a bridging mechanism between cyberbullying and knowledge sabotage, whereby victims of cyberbullying engage in retaliatory behaviour in response to a perceived interpersonal transgression. Although workplace bullying has been proposed as a potential antecedent of knowledge sabotage, there is no extant research on the link between cyberbullying and knowledge sabotage in the workplace. The prevalence of knowledge sabotage is alarming, with almost half of employees reporting being victims of sabotaged knowledge. Effective knowledge management is critical for organisational competitiveness, and information sharing barriers can cost firms millions of dollars annually. However, the mechanisms and causes of knowledge sabotage are not well understood.

This study aims to add to the existing research by looking at how cyberbullying, vengeful rumination, and knowledge sabotage are connected and their consequences. Particularly on an individual (psychological strain) and group level (interpersonal harmony and team performance). Furthermore, the study will examine the role of dark triad personality traits and a caring ethical climate in mitigating or exacerbating these relationships. The study will be the first to investigate how cyberbullying victimisation impacts knowledge sabotage through vengeful rumination.

The study's findings will have practical implications for organisations, allowing them to recognise the negative impact of cyberbullying on their employees and take measures to prevent it.

## Farzad Mehrpour

*Analyzing Twitter Sentiment and Hype in Real Estate Market: A Topic Modeling Approach*

This study presents an overview of my MScM thesis ANALYZING TWITTER SENTIMENT AND HYPE IN REAL ESTATE MARKET: A TOPIC MODELING APPROACH (2023), the abstract for which states "This study investigates the correlation between sentiment and hype on Twitter and the housing market across 10 cities in the S&P/Shiller-Case composite in the United States from 2010 to 2021. We gathered and analyzed data on housing price indexes, fundamental economic factors, sentiment, and hype scores relating to various topics in the real estate market based on people's tweets. Using Latent Dirichlet Allocation (LDA) for topic modeling, we identified seven topics, including Households, Economic policy, Commercial real estate, Price and rate, Residential housing, Investing, and Future trends. The study's results indicate that social media data, specifically hype scores, has superior predictive power compared to sentiment for forecasting real estate market trends. Furthermore, the study highlights the potential benefits of integrating social media data into existing economic models to gain a more comprehensive understanding of the factors driving fluctuations in the housing market.

However, we also noted that the number of tweets expressing human opinions about the housing market is significantly smaller than the total number of tweets due to a large number of bots and advertising tweets. Therefore, the study emphasizes the importance of addressing potential sources of bias and error in social

media data to ensure the reliability of statistical inferences. Overall, this research contributes to advancing knowledge on the connection between sentiment and hype on Twitter and the housing market in the United States.

### Mateo Paez Beltran

#### *The effect of Tweets on cryptocurrencies around the Pandemic Period*

This study investigates the impact of Twitter activity on cryptocurrency price diffusion components, return and volatility. In particular we examine the intraday effects of Tweets from influential users around the Covid-19 pandemic recession. We also examine the effects of scheduled macroeconomic news announcements and unscheduled Covid-19 pandemic-related figures on cryptocurrencies. . More specifically, the research will consider the effects of Covid-19 news releases such as new confirmed cases, number of deaths, and government response measures aimed at mitigating the spread of the virus, as well as macroeconomic figures related to developed economies such as US, UK, Europe and Japan.

### SESSION 4

CHAIR: CAROLINE HUMMELL | PLAZA 409

#### PRESENTER

#### PROGRAM

Susana Boateng

Social Justice and Equity Studies

Stephanie Wadge

Applied Health Sciences

Justine McKay

Critical Sociology

Brianna Sirotnik

Applied Health Sciences

### Susana Boateng

#### *Mental Health and the Society: A Social Justice Enquiry into the Social Determinants of Mental Health Among Female Politicians in Ghana*

Mental health is prioritised globally due to its close linkages with the holistic well-being of an individual (Morrow & Malcoe, 2017). Despite the prioritization of mental health research across the globe, there is insufficient empirical evidence on the impact of the Social Determinants of Health (SDOH) on the mental health of women, especially those in politics. Meanwhile, women and girls tend to show high cases of mental health disparities due to the exclusionary power dynamics (Tabassum, 2017). Using a qualitative approach and intersectionality theory as its framework, this study examined the multiple forms of inequities that interlock to influence the mental health experiences of women in Ghana. Findings from these studies revealed that: 101 out of the 133 physical and physiological illness groupings have significant linkages with the socio-physical environment. Again, gender inequality was described as a major determinant of mental health experiences. Lastly, the nature of a person's occupation was described as a social determinant of mental health. This research was successful in linking SDOH to mental health experiences of women, especially those who find themselves in male-dominated spheres of work, including politics. The study concluded that the structure of most African societies is inimical to women, thus the high levels of mental health disparities among them. Therefore, efforts to dismantle sociocultural and political structures that encompass the social construction of gender among other SDOH is highly recommended.

## Stephanie Wadge

### *Youth Homelessness & Mental Health: What's Gender Got to Do with It?*

Housing is a determinant of health, and experiences of homelessness negatively shape mental health status, trajectories, and healthcare access for youth. It is well established that gender shapes mental health experiences for people of all ages: yet research that explores the intersection of gender, homelessness, and youth mental health is limited.

Gendered norms are the explicit and implicit social rules that prescribe how people of a perceived gender are expected to behave, see themselves, relate to others, and are evaluated by the world around them. The expectations and constraints of being a female, male, or transgender young person may add a layer of complexity to the experience of homelessness.

I will present preliminary findings from interviews with youth aged 16-24 who have lived experiences of homelessness in the Niagara Region to animate how gender, homelessness, and age intersect to shape mental health. Using a Gender Based Analysis+ framework, I will challenge preconceived notions that all youth have similar experiences of homelessness

## Justine McKay

### *The Influence of Students' Race and Socioeconomic Status on Teachers' Assessment of ADHD: Implications for Educational Inequalities*

Implicit Bias and its impact on the schooling experience of racial minorities with ADHD is significant.

ADHD has become a globally diagnosed disorder. The lack of an objective diagnostic tool for ADHD has created controversy over the disease and its validity. ADHD is referred to as a social construct or a suburban problem related to active white boys who disrupt classrooms. The subjectivity of an ADHD diagnosis and the diagnostic process is based on norm-referenced checklists of behaviours completed by the student, caregiver, teachers, clinicians, and other community members. Teachers' perceptions of classroom behaviours are influenced by implicit bias related to race and socioeconomic status. The same behaviours displayed by white and marginalized or low-income students are perceived differently. The white student is perceived to be struggling academically and needing support, while the marginalized or lower-income student's behaviour is seen as disruptive or criminal. The presence of teacher implicit bias results in the inequity of diagnosis, and academic support, which has long-term implications for these students. The subjectivity of the diagnostic process socially reproduces the systemic injustice of opportunity for marginalized youth within the education system.



## Brianna Sirotnik

### *Effects of Depressive Symptomology on Central Arterial Stiffness*

Depression symptomology is linked with incident cardiovascular disease (CVD). Increased central arterial stiffness represents a potential mechanism connecting depression and increased cardiovascular risk. Therefore, the objective of this study was to examine the association between depressive symptomology and central arterial stiffness in healthy young adults without cardiovascular disease. The study tested the hypothesis that higher depressive symptomology is associated with increased central arterial stiffness. Using existing data from the Niagara Longitudinal Heart Study (NLHS), a sample of 293 young adults (22.5±1.71 years; 55% female) were included. Depressive symptomology (Centre for Epidemiological Studies Depression Scale; CESD), central arterial stiffness (carotid-femoral pulse wave velocity; cfPWV), beat-by-beat mean arterial pressure (MAP; finger photoplethysmography), and heart rate (HR; electrocardiogram) were measured. Multiple linear regression analyses were used to examine the association between depressive symptomology and cfPWV, adjusting for age, sex, body mass index, physical activity, smoking status, MAP, and HR. Depressive symptomology was categorized as low (CESD score < 16), moderate (CESD score ≥16 and < 26), and high (CESD score ≥ 26), where low symptomology was used as the reference group. After adjusting for covariates, high depressive symptomology was predictive of a faster cfPWV (B = 0.134, p = 0.026), whereas moderate depressive symptomology was not (B = 0.053, p = 0.365).

These findings suggest that high depressive symptomatology is associated with a faster cfPWV, signifying elevated central arterial stiffness. Therefore, central arterial stiffness may act as an intermediate health outcome connecting depression to CVD.

## SESSION 5

CHAIR: JEREMIA COISH | PLAZA 410

PRESENTER	PROGRAM
Matteo Nadile	Applied Health Sciences
Ahmad Mohammad	Applied Health Sciences
Amanda Kornel	Applied Health Sciences
Danja Den Hartogh	Applied Health Sciences

## Matteo Nadile

### *CARNOSIC ACID, A ROSEMARY POLYPHENOL INDUCES APOPTOSIS AND ACTIVATES AMPK AND ASK1 IN PROSTATE CANCER CELLS*

Prostate cancer is the second most prevalent cancer in men worldwide and accounted for 375,304 deaths in 2020. While many treatments exist for prostatic carcinoma, novel therapeutic agents with increased efficiency are needed to target more aggressive and hormone-resistant forms of prostate cancer, while sparing healthy cells. Traditionally, plant-derived chemicals have been established to treat cancers including prostate cancer. Such examples of plant-derived chemotherapy drugs are docetaxel and paclitaxel. Carnosic acid (CA), a polyphenol found in the herb rosemary (*Rosmarinus officinalis*) has been shown to have biological effects including anticancer properties but its effects in prostate cancer and its mechanisms of action have not been examined. In our preliminary studies, CA has been shown to cause a dose dependent inhibition of cell proliferation (IC50: 66 µM) and cell survival in PC-3 prostate cancer cells. Furthermore, CA induced apoptosis and decreased phosphorylation/activation of Akt. A notable increase in phosphorylation/activation of AMP-activated kinase (AMPK), acetyl-CoA carboxylase (ACC) and Liver kinase B1 (LKB1) was seen with CA treatment.

In addition, treatment with CA increased the phosphorylation/activation of apoptosis signal-regulating kinase 1 (ASK1). Our data indicate that CA activates LKB1-AMPK signaling leading to phosphorylation/activation of ASK1 and induction of apoptosis. The use of inhibitors and small RNA interference (siRNA) approaches will be employed, in future studies, to elucidate the mechanisms involved in carnosic acid's inhibitory effects of prostate cancer.

### Ahmad Mohammad

*Transitional menopause induced by accelerated rodent ovarian failure as a menopausal model for the study of Alzheimer's disease*

Background: Females account for 70% of Alzheimer's disease (AD) cases. The estrogen depletion experienced during menopause is a causal factor in the pathogenesis of AD. Ovariectomy (OVX) doesn't allow for the examination of gradual estrogen loss that occurs in human perimenopause. Administration of 4-vinylcyclohexene diepoxide (VCD) has emerged as a rodent model of transitional menopause.

Aim and Objectives: To determine how AD and neuronal markers are impacted by the transitional menopause VCD model.

Methods: CD1 female mice were injected with VCD (160 mg/kg/d IP for 15 days) to cause gradual ovarian failure over 120 days. Sample was collected at four separate timepoints. Two timepoints were representative of early and late perimenopause (60 and 120 days post injection) while the other two represented early and late menopause (137 and 176 days post injection). Open field and novel object recognition testing (NORT) were performed to assess changes in behaviour and active memory recall. Both the prefrontal cortex and hippocampus were collected for protein analysis.

Results: The NORT showed that VCD groups had lower activate memory recall compared with control. The prefrontal cortex western blotting demonstrated that the VCD mice had lower NeuN content at all timepoints. NeuN is a marker of mature neurons. SNAP25, a pre-synaptic protein involved in synaptic communication, was also lower in the cortex of VCD mice.

Conclusion: VCD impacted active memory recall as well as it reduced neuronal and synaptic markers. This indicates that estrogen loss through transitional menopause leads to early changes in neuronal markers and memory.

### Amanda Kornel

*Carnosic acid, a rosemary-derived polyphenol, exerts anti-cancer effects against triple-negative breast cancer cells*

Breast cancer is the second leading cause of cancer related deaths affecting thousands of Canadian women every year; nearly 30,000 women were diagnosed in 2022 leading to 6000 deaths. Breast cancer is driven by specific mutations and is characterized by accelerated proliferation and reduced apoptosis. Triple-negative breast cancer (TNBC) is the most aggressive subtype and is characterised by loss of estrogen, progesterone and Human Epidermal growth factor 2 (HER2) receptor, making it difficult to treat and more likely to recur. Current treatments for TNBC include chemotherapy, radiation and surgery, however TNBC becomes treatment resistant and therefore new treatment options are required.

Plant-derived chemicals, such as paclitaxel and docetaxel derived from Pacific yew trees, are established chemotherapy agents and our research is aimed to find other plant-derived chemicals with strong anticancer potential. Carnosic acid, a polyphenol found in

rosemary extract, has shown effects against lung and prostate cancer. Limited studies have examined the effects of CA in breast cancer cells, however its effects in TNBC are still not fully known and its mechanism of action is not understood. My research aims to examine the anti-cancer properties of CA against triple-negative breast cancer cells. The human TNBC MDA-MB-231 cells will be used. Cell proliferation, clonogenic cell survival, cell cycle, apoptosis, and cell migration will be examined utilizing established assays. Western blot analysis, inhibitors and small interfering RNA (siRNA) approaches will be utilized to identify key signaling molecules involved in the anti cancer effects of CA.

### Danja Den Hartogh

#### *Anti-diabetic properties of novel plant-derived polyphenols*

Obesity and elevated blood free fatty acid (FFA) levels lead to impaired insulin action/insulin resistance, in skeletal muscle contributing to the development of Type 2 diabetes mellitus (T2DM). Mechanistically, insulin resistance is associated with increased serine phosphorylation of the insulin receptor substrate (IRS) mediated by serine/threonine kinases including mTOR and p70S6K. Evidence demonstrated that activation of the energy sensor AMP-activated protein kinase (AMPK) may be an attractive target to counteract insulin resistance. We reported previously that rosemary extract (RE) and the RE polyphenol carnosic acid activated AMPK and counteracted the FFA-induced insulin resistance in muscle cells.

The effect of rosmarinic acid (RA), another polyphenolic constituent of RE, on FFA-induced muscle insulin resistance has never been examined and is the focus of the current study. Muscle cell (L6) exposure to FFA palmitate resulted in increased serine phosphorylation of IRS-1, and reduced insulin-mediated i) Akt

activation, ii) GLUT4 glucose transporter translocation, and iii) glucose uptake. Notably, RA treatment abolished these effects, and restored the insulin-stimulated glucose uptake. Palmitate treatment increased the phosphorylation/activation of mTOR, p70S6K, and JNK kinases known to be involved in insulin resistance and RA significantly reduced these effects. RA increased the phosphorylation of AMPK, even in the presence of palmitate. Importantly, pretreatment with AMPK specific inhibitor, compound C, prevented the effects of RA on mTOR and p70S6K. Our data indicate that RA has the potential to counteract the palmitate-induced insulin resistance in muscle cells and further studies are required to explore its antidiabetic properties.

### SESSION 6

CHAIR: IKE IKERIONWU | PLAZA 411

#### PRESENTER

#### PROGRAM

Tara Lundy

Applied Health Sciences

Katrina Carbonara

Applied Health Sciences

Taylor Baillie

Applied Health Sciences

Anna Roshni Jose

Interdisciplinary Humanities

### Tara Lundy

#### *Community-Based Workers' Health and Wellness: Supporting Women Survivors of Intimate Partner Violence*

An individual's working conditions are a key social determinant of health. Community-based workers (CWs) provide vital support to survivors of intimate partner violence (IPV); they are directly and repeatedly involved in serving those who experience harmful acts of violence, which may subsequently affect health. Using a salutogenesis theory, this qualitative study explores the health, wellness, and coping strategies of CWs employed in non-profit settings who support women survivors of IPV in Niagara.

The purpose of this study is to generate and contribute knowledge to the IPV field by understanding CWs' work experiences in relation to overall health and wellness, and to inform the development of support strategies to assist CWs so they can continue to provide quality support to survivors. A total of 19 CWs from four non-profit organizations in Niagara participated in interviews between November to December 2022. A thematic approach was used to generate the following preliminary themes after analysis: (1) internal interferences; (2) unmanageable structural challenges; (3) women empowering women; (4) unique ways of coping; and (5) structural strategies. While there are meaningful and inspiring aspects of supporting survivors that enhanced CWs' health and wellness, the findings suggest that CWs experience internal interferences and unmanageable structural challenges that diminish their ability to survive in work and personal life. Individual coping methods and structural recommendations to protect against these challenging experiences are discussed. The implications are relevant as these experiences influence CW retention and health promotion is needed to address the gaps in workplace health in this sector.

### **Katrina Carbonara**

*Identifying protective factors against cardiovascular disease in those that have experienced childhood adversity*

If we want to understand the oak, it's back to the acorn we must go" – Oprah Winfrey. Approximately 62% of Canadians have experienced 1 adverse childhood experience (ACE) (severe household dysfunction, physical/sexual/emotional abuse). These stressful experiences activate a cascade of physiological responses that can lead to longer-term, negative changes within the body. One heavily investigated outcome is cardiovascular disease (CVD; disease of the heart and blood vessels); however, the risk

for developing CVD following a high level of ACEs is dependent on many other factors such as psychosocial (stress, mood), inflammatory (immune and blood vessel cells), and lifestyle (diet, physical activity). These factors can be investigated separately but are also interconnected. For example, high stress can cause inflammation and altered diet. It's likely these interconnected pathways are linked by complex molecular mechanisms. The best way to identify these mechanisms is by investigating overall differences in biologically active proteins which, to our knowledge, has never been conducted. This study aims to answer the question, "why do individuals who have experienced similar traumatic events (ACEs) differ in their risk for a pathological outcome (CVD)?" This will be done by analyzing the total active protein content of readily available serum (pre-processed blood) in participants (ages 19-26) with a high level (4) of ACEs and in the highest and lowest quartile of previously measured arterial stiffness, a strong marker of future CVD. The results of this study will provide crucial insight into the molecular mechanisms associated with ACEs and risk of CVD.t

### **Taylor Baillie**

*Becoming Engaged: Exploring Treatment Initiation Delays for Combat-Related Post-Traumatic Stress Disorder among the Canadian Armed Forces*

Despite the abundance of mental health services and resources available for members and veterans of the Canadian Armed Forces to access after returning from active military combat, concerns regarding post-deployment mental health constitutes a significant public health concern.

Specifically, failure to initiate treatment in a timely manner for post-traumatic stress disorder (PTSD) and comorbid mental health conditions, such as major depressive disorder and generalized anxiety disorder, continues to be problematic

for the military population. The vast majority of research in relation to PTSD and the military has focused on the effectiveness of various treatments of PTSD or examined the prevalence of PTSD within the military population. In comparison, limited research has studied the specific factors that are responsible for causing delays in treatment initiation, and the detrimental effects that military personnel are subjected to as a result of delayed or untreated combat-related mental health conditions. The purpose of this case study is to explore the factors contributing to delays in treatment initiation for combat-related PTSD by examining the experiences of Canadian Armed Forces veterans with accessing post-deployment mental health services. Critical qualitative research was conducted through the use of semi-structured interviews and document analysis. Analysis revealed that factors contributing to treatment initiation delays occur at the intrapersonal, community, and systematic levels, with impacts severely affecting veterans across the bio-psycho-social-spiritual realms. Overall, this study provides knowledge that can create effective interventions aimed towards destigmatizing mental health conditions, and reducing delays in treatment initiation, especially in a military context.

### **Anna Roshni Jose**

#### *Why Storytelling? A Study of Palestine Resistance and Resurgence*

Palestine is a region that has a complex history of decades-long conflict and upheaval, making it a burgeoning field of research, as its wounds are forever raw and open. The paper studies how Visualizing Palestine uses storytelling to challenge and subvert the dominant narratives by amplifying Palestinian voices in the face of ongoing colonization. The paper also unpacks how storytelling serves as a medium to memorize, narrate and document traumatic experiences to render them meaning and significance. The paper delves into how the storytelling mechanism is a mnemonic metaphor

for resistance, collective memory, and nation-building by gaining insights from the theorists Ron Eyerman and Sandra L. Bloom. The paper also studies the potential pitfalls and ethical challenges the project Visualizing Palestine faces due to the persisting colonialism in Palestine.

### **SESSION 7**

#### **CHAIR: SHEALIN MURRAY | GSB 307**

#### **PRESENTER**

#### **PROGRAM**

Jennifer Mooradian

Applied Health Sciences

Jana Bataine and  
Sydney Bartlett

Public Health

Sarah Ciotti

Child and Youth Studies

Jacob Preston

Applied Health Sciences

### **Jennifer Mooradian**

#### *(Re)presentations of Disability: Images of Persons with Down Syndrome*

Disabled people have been misrepresented by mass media for decades. The result of disability misrepresentation is the perpetuation of negative disability stereotypes and models of disability. Disability representation has rarely been informed by authentic first-hand knowledge about what disability is and who disabled people are. As such, representations of disability have been formed from an outsider perspective most commonly based on ableism. This study seeks to explore the ways in which disabled people choose to represent themselves and if this representation is consistent with or resistant to dominant disability narratives. Borrowing from Critical Disability Studies and the concept of disability life writing, this study utilized qualitative content analysis to analyze the visual images, comments, and hashtags of randomly selected data posted to four publicly accessible Instagram accounts. Findings show disabled people choose to represent themselves in ways that resist dominant disability narratives, allowing for expanded ideas of what disability is and who disabled people are.

## Jana Bataineh

Correlations between weight-perception and overt risk-taking among Canadian adolescents

Perceptions of body weight represent an important health issue for Canadian adolescents. While associations between weight perception and mental health complaints like eating disorder symptomatology are well established, there is need for more Canadian evidence about how weight perception is associated with overt risk-taking among adolescents, and further how such associations differ by gender. We conducted a national analysis of grade 9-10 students participating in the 2017-18 cycle of the Canadian Health Behaviour in School-aged Children (HBSC) study. This analysis described contemporary patterns of alternate weight perception and examined the strength and statistical significance of such associations by gender, with tobacco, alcohol and cannabis use, binge drinking, fighting, and illicit drug use as outcomes. Behaviours were considered both individually and in combination. Analyses were descriptive and analytical, with regression models accounting for the nested and clustered nature of the sampling approach. Responses from 2,135 boys and 2,519 girls were available for a complete case series analysis. 26% and 35% of boys and girls, respectively perceived themselves as “too fat” while 20% and 9% identified as “too thin”. Girls perceiving themselves as “too fat” simultaneously reported higher likelihood of engaging in individual and scaled indicators of overt risk-taking. Conversely, among boys, alternate weight perception was associated with lower levels of such behaviours.

Alternate weight perception is common among girls and relates strongly and consistently with engagement in overt risk-taking. Patterns of alternate weight perception vary among boys, with no pronounced associations with higher levels of overt risk-taking, and even some protections.

## Sarah Ciotti

*I can do anything if I've overcome that": A case study of one young person's experiences with symptom persistent Lyme Disease in Canada*

This qualitative case study explores the experiences of one Canadian young person with symptom persistent Lyme disease. Lyme disease is the most prevalent vector-borne illness in North America, and infection rates are rising across Canada. Peak incidence occurs in children aged 5-9 years making it a significant childhood infectious disease. This study addresses a gap in current health research as it involves collaboration with a young person with symptom persistent Lyme disease in Canada. This empirical research is guided by the central research question: “What is the experience of a young person with symptom persistent Lyme disease in Canada?” The purpose of this study is to understand the experiences of a young person with symptom persistent Lyme disease in Canada by emphasizing his unique voice. The findings from this case study demonstrate how challenging it was for this young person to receive appropriate diagnosis and treatment for Lyme disease and point to a need for increased awareness for health professionals regarding the impact and prevalence of tick-borne illnesses for young people, their caregivers, and their healthcare providers. Additionally, it is important that researchers continue to engage young people in health research to ensure accurate representation of their experiences. Finally, findings from this case study suggest that collaborative healthcare may be beneficial for patients with symptom persistent Lyme disease.

## Jacob Preston

*Mechanistic exploration of the mast cell-endothelial cell axis in the development of cardiovascular disease following adverse childhood experiences*

Adverse childhood experiences (ACEs), such as abuse and neglect, are associated with an increased risk for chronic diseases in adulthood, including asthma and cardiovascular disease (CVD). ACEs can be extremely stressful events, triggering various physiological mechanisms—including an important role for the hypothalamic-pituitary-adrenal axis—which help the body to acutely cope. Severe and/or repeated exposure to ACEs can dysregulate this stress response, ultimately resulting in systemic chronic low-grade inflammation. Inflammation which is not temporally and spatially controlled is damaging to the body and is an immunological mechanism of interest in elucidating links between ACEs and adult CVD. Mast cells (MCs), a dynamic immune cell abundant in connective tissues throughout the body (including cardiac tissue), regularly interact and functionally coordinate with vascular endothelial cells (ECs) lining the blood vessels of the CV system. ECs act as both mediators and physical barriers, regulating the passage of immune cells and molecules between circulating blood and tissues within the body—an often-dysregulated process early in the development of CVD. This research will aim to determine—in the context of ACEs—how MCs contribute to EC dysfunction by exposing vascular ECs and MCs alone and in tandem to serum from individuals who have experienced high vs. low ACEs and measuring functional responses. Ultimately, this will contribute to a transdisciplinary effort aimed at understanding how the psychosocial stress created by ACEs mechanistically influences the development of EC dysfunction and adult CVD through immune system dysregulation.

## SESSION 8

**CHAIR: MATTIEU DEGANNAIS | GSB 308**

PRESENTER	PROGRAM
Xiaomei Li	Applied Health Sciences
Vanessa Zarb	Public Health
Alison Smoke	Applied Health Sciences
Valerie Pagnotta and Jessica Goddard	Applied Health Sciences

## Xiaomei Li

*Challenges and Chances of International Student Mobility Amid and Post-Covid-19 pandemic in Canada*

The outbreak of Covid-19 caused unexpected additional problems for international student mobility (ISM), such as border closure, everchanging traveling and immigration policies, physical or mental health problems, rising racism/xenophobia, and international students' expectations about studying abroad. On the contrary, since Covid-19, the Canadian government announced many immigration strategies and policies to provide more chances to drive international students to study and immigrate to Canada after graduation to promote international student mobility. Additionally, the Covid-19 pandemic not only challenges existing and prevailing theories about international student mobility, but also provides a valuable opportunity to reflect on current ISM theories. It also calls for the transdisciplinary and intersectional framework to deal with the complicated problems about international student mobility affected by the global pandemic.

This review paper draws on journal articles, books, immigration policies, and media reports to investigate the impact of global pandemic on international student mobility through the lens of immigration policies, health concerns, rising racism/xenophobia, financial difficulties and the additional challenges of social adjustment. The

it critically synthesizes the related theories or perspectives on international student mobility in the contexts during and post- Covid-19. Finally, this paper attempts to provide implications to reframe ISM studies that have addressed COVID related issues to expand and deepen the understanding of the works of literature on international student mobility in Canada.

### **Vanessa Zarb**

#### *Teachers Voice: An Examination of Teachers Lived Experiences During The COVID-19 Pandemic*

The outbreak of the COVID-19 pandemic has caused major disturbances in education. The related public health measures put in place to mitigate the spread of the virus (e.g., self-isolation, physical distancing, stay-at-home orders) have been particularly challenging for teachers who have experienced poorer mental health since the onset of the pandemic (Alves et al., 2021; Cain et al., 2022; Kim et al., 2022). This experience was significantly challenging for teachers as a previously in-person and interactive learning environment became a 'faceless' interaction (Cain et al., 2022; Rose 2017), leaving teachers feeling vulnerable, disliked, isolated and undervalued (Kim et al., 2022). The primary aim of my proposed research is to examine the experiences of Ontario teachers during the COVID-19 pandemic to help develop a more nuanced understanding of teachers' lived experiences during this time.

My study will address the following research questions: (a) What impact did the pandemic have on teachers' workload compared to pre-pandemic, including impacts on stress and other mental health concerns? (b) How do teachers identify and talk about benefits and challenges associated with teaching during the pandemic? This study is not designed to explore a particular theory or theoretical model but rather is

designed as an exploratory research project. Archival qualitative data will be used to answer these research questions. The data was collected between July 2021 and November 2021 based on teachers' experiences from September 2020 to June 2021 school year.

### **Alison Smoke**

#### *I try my very best to bounce back": Understanding facilitators of academic resilience during the COVID-19 Pandemic*

Introduction: The COVID-19 pandemic and its impact on learning had negative impacts on post-secondary students' mental health, including their abilities to cope. Despite these challenges, many students are showing resiliency, including academically. Academic resiliency reflects the ability to succeed in school despite experiencing challenges and stressful events.

Objective: The aim of this research is to understand the factors that shape academic resilience among undergraduate students.

Methods: Sixty undergraduate students within the Department of Health Sciences participated in this study, which took place between January and April 2022. Participants completed weekly reflective journal prompts over the course of 14 weeks through their institution's learning management system. Students had the option to submit text responses, or to upload multi-media content such as photos, memes, and gifs.

Preliminary Findings: Three overarching factors that facilitate academic resiliency among students were identified. They were: 1) motivation, which involved anticipation, goal setting, interest, and challenge; 2) experiences of help, including asking for help, receiving help, giving help, and perceived levels of help; and 3) support systems, which provide external validation and a sense of community.



Each of these factors supported participants in succeeding academically despite adversities they encountered throughout the term.

**Preliminary Conclusions:** Students faced challenges academically, particularly due to disruptions from the COVID-19 pandemic, but found ways to overcome them. They identified factors that helped them to succeed in school, which may be used by professors, administrators, and university staff to inform pedagogy and support university environments that promote the development of academic resiliency.

### **Valerie Pagnotta & Jessica Goddard**

#### *Financial Worry and Mental Health Changes in Canadian Adolescents during the COVID-19 Pandemic*

**Introduction:** The COVID-19 pandemic intensified the impact of risk factors for adolescent mental health, including financial worry. Social support has shown to protect from negative mental health during times of stress. We examined the effect of financial worry on changes in anxiety and depression symptoms among Canadian adolescents prior to, and during the pandemic, and assessed whether social support from family and friends moderated any changes.

**Methods:** Three-year linked data from the 2018/19 (pre-pandemic) and 2020/21 (during pandemic) waves from the COMPASS study were analyzed, with reports from 12,995 Canadian secondary school students. A series of multilevel linear regressions were conducted to examine the main hypotheses under study.

**Results:** Students scored a 7.2 ( $\pm 5.8$ ) and 10.0 ( $\pm 6.5$ ) on the anxiety (GAD-7) and depression (CESD-10) scales, respectively, and 16.1% reported they experienced financial worry during the pandemic. Financial worry was a strong and significant predictor of increased anxiety

scores (+1.7 score between those reporting “true/mostly true” versus “false/mostly false”) during the pandemic, but not for depression scores. Low family and friend support were identified as risk factors for anxiety, and family support for depression. However, no significant interactions were detected between social support and financial worry.

**Conclusion:** Pandemic-related financial worry was significantly associated with anxiety in our large sample of Canadian adolescents. Clinical and public health initiatives need to address financial worry in adolescents during times of crisis as a priority, and evaluate formal steps to mitigate the effects of financial worry on anxiety.



# AFTERNOON ORAL SESSION 1 PRESENTER ABSTRACT

1 P.M. - 2:20 P.M.

## SESSION 9

CHAIR: NICO GADEA | PLAZA 308

### PRESENTER

### PROGRAM

Lauren Stepien

Child and Youth Studies

Alex Wilder

Biology

Zihang Bu

Child and Youth Studies

Jenna Osborne

Applied Health Sciences

### Lauren Stepien

*The Effects of Trait Anxiety on Attention Allocation and Neurophysiological Markers of Early and Late Information Processing: An ERP Study Using the Go/NoGo Paradigm*

Background: Individuals exhibiting high levels of Trait Anxiety (TA), marked by persistent anxiousness, often experience difficulties in effectively processing information. High TA can lead to decreased inhibitory control, heightened distractibility, and interference with goal-oriented behaviors. To evaluate attention allocation, target detection, and response inhibition, the Go/NoGo paradigm is a commonly employed continuous performance task.

**Methods:** This study aims to investigate the relationship between TA, performance through reaction time (RT) mean and variability, and neurophysiological markers of early (P1 and P2) and late (P3) information processing. 60 University students (29 males) ages 18-26 participated in a distractor Go/NoGo EEG task and filled out the State Trait Anxiety Inventory questionnaire to provide a measure of TA. It was hypothesized that high TA would be associated with (a) higher and more variable RTs in trials with distractors and (b) decreased efficiency in early and late information processing.

**Results:** High TA group had significantly higher mean RT overall. In NoGo (response inhibition) conditions with distractors, high TA individuals had significantly higher RT variability, lower P1 and P2 amplitude, and higher P3 latency.

**Conclusions:** These results may suggest that high TA individuals have more inefficient response patterning in addition to taking longer to respond to targets. When response inhibition is required from the anxious person, results suggest inefficient early stimulus detection and attention allocation. This study supports potential implications in schoolwork and daily life due to inefficient processing when distractors are present and when more effortful tasks are being required of the anxious person

### Alex Wilder

*Smell you later: Understanding the role of olfactory signals in African penguin communication*

Animals use a variety of signaling modalities to communicate including visual, auditory, and chemical, and many of these signals are linked to attracting a mate. In colonial species with high rates of fidelity, these signals are essential for creating and maintaining social bonds. African penguins (*Spheniscus demersus*) are colonial seabirds commonly kept under human care and

are of conservation concern. Other species in this genus have been shown to use preen oil, a waxy substance used for feather maintenance and waterproofing, as a scent signal to discriminate between kin and non-kin individuals, yet we know little about the mechanism of this kind of signalling. Furthermore, human managed penguins lose their pair bonds more often than in nature, and this might be due to reduced mate choice and the absence of signals during pair bond formation, such as chemical signalling. I intend to determine the types of signals penguins kept under human care are using to maintain (or not maintain) these bonds. I will investigate the chemical composition of preen oil between individual penguins and determine if penguins show preference for the preen oil of their mates as compared to other individuals. My research has implications for the welfare of penguins under human care by investigating ways to return an element of mate choice to their environment. Better understanding the signals used between birds could allow conservation managers to employ these signals when determining pair-bonds and possibly determine which individuals would be most successful for reintroductions across taxa.

### Zihang Bu

*Exploring the Relationship between Sensory Sensitivity, Anxiety, and Impulsive Behaviour among Young Adults: A Structural Equation Model*

Anxiety has persisted as a prevalent mental health issue for several decades. Research in academic and clinical fields has extensively explored anxiety and anxiety disorders. Prior studies have suggested that heightened sensory sensitivity is a predictor of general anxiety, and there is significant comorbidity between attention deficit hyperactivity disorder (ADHD) and anxiety. Impulsivity, one of the key characteristics of ADHD, is also strongly associated with anxiety and sensory sensitivity.

To investigate the relationship between impulsivity, sensory sensitivity, and anxiety among emerging adults, this study employed confirmatory factor analysis (CFA) and structural equation modeling (SEM). A sample of 236 university students completed the Adolescent/Adult Sensory Profile, Beck Anxiety Inventory, and Conner's ADHD Rating Scales to measure sensory sensitivity, impulsivity, and anxiety. The findings revealed that anxiety significantly predicted impulsivity ( $\beta = .302, p < .05$ ), and sensory sensitivity had a substantial impact on anxiety ( $\beta = .646, p < .00$ ). Although there was no significant direct relationship between impulsivity and sensory sensitivity ( $\beta = .211, p > .05$ ), the total indirect effect model indicated that anxiety mediated the relationship between these variables, and the effect was statistically significant ( $\beta = .195, p = .005$ ). This model suggested that young adults with high sensory sensitivity and anxiety may exhibit impulsive behaviour that may resemble the impulsivity observed in ADHD. This study's findings offer valuable insights into the behavioural consequences of the simultaneous presence of multiple risk factors. Standard coefficient Beta.

### Jenna Osborne

*Interaction of exercise-related cognitive errors and social support to predict postpartum physical activity*

Background Pregnancy creates new barriers for new mothers to overcome to be physically active. Social support is a commonly studied concept that facilitate physical activity for new parents, however, considerable heterogeneity exists and there is a need to examine moderating variables. Exercise-related cognitive errors (ECEs) are a biased lens that causes individuals to have a negative view of exercise. ECEs may disrupt how new mothers view their confidence and support to be active, helping to account for the heterogeneity. The purpose of the proposed study is to evaluate whether ECEs are related

to physical activity and other antecedents of physical activity during the postpartum period. The primary hypothesis is that social support will individually predict physical activity and interact with ECEs to predict physical activity during the postpartum period.

Methods: Adult mothers with postpartum (10 weeks-12 months;  $N = 300$ ) will be recruited to complete an online survey. Measures include physical activity participation (Craig et al., 2003), social support for exercise (Sallis et al., 1987), postpartum social support questionnaire (Hopkins & Campbell., 2008), Self-efficacy for exercise (Marcus & Owen., 1992), exercise-related cognitive errors (Locke & Brawley, 2016), and perceived barrier measurement (Garcia & King, 1991).

Significance: We will examine the individual and interacting relationships between exercise-related cognitive errors (ECEs) and perceived social support in predicting new mothers' physical activity. Findings may help us understand new mothers' perceived barriers and physical activity in the post-partum period which may inform future health promotion efforts.

### SESSION 10

**CHAIR: KIRINA ANGRISH | PLAZA 311**

#### PRESENTER

#### PROGRAM

Joesph Dick

Applied Health Sciences

Chandler McFall

Applied Health Sciences

Jonathon Edwards

Business Economics

Isaac Yabu

Business Economics

## Joseph Dick

### *The Sacred and the Profane in Sport Consumer Behaviour: The Varying Responses to the Demar Hamlin Situation*

In January of 2023, following aggressive physical contact with another National Football League (NFL) player, Demar Hamlin collapsed and had to be resuscitated on the field of play. The event focused a spotlight on an already widely contested problem debate: player-safety. Astonishingly, however, while potentially dangerous play is becoming a large-scale problem for the NFL; and indeed, for professional sports in general, little attention is being paid to its impact on sport fandom, the very “life blood” of the business of sport.

In this presentation, social identity theory and theories surrounding sacred values, will be employed as a framework to explore fan reaction, and speak to the internal processes involved in fan retention or alienation. Here, both NFL public relations and media coverage surrounding Demar Hamlin’s collapse are examined with a view to understanding more fully the effect[s] of messaging on fandom. Analysis of Twitter social media posts, as well as rhetoric from popular sports talk show host, Skip Bayless, afford for a first-hand, real-time assessment of fan reaction[s].

By comparing media-messaging surrounding players at risk, and fan responses to different figures in the sporting world, insights will be formulated into how messaging is a variable in directing fan outrage and de-escalation. Armed with these insights, sports organizations will better be able to garner and retain fan support.

## Chandler McFall

### *Examining the Effects of Organizational Change on External Stakeholders in Sport*

Change is both an inevitable and instrumental phenomenon within the management of organizations, and organizational change has been a continually evolving concept in the research field of sport management for decades. Given the dynamic nature of the sport context where social movements influence how people behave and perform, recent literature has covered various factors associated with organizational change (e.g., Wagstaff et al., 2016; Burnes, 2017; Thompson & Parent, 2021; Thompson & Parent, 2022). As outlined by Thompson and Parent (2021), sport organizations have become increasingly reliant on a variety of stakeholders in that sport managers commonly rely on the key resources of external stakeholders through change. This reliance on stakeholders shifts power and influences the decision-making process (Thompson & Parent, 2021).

With the importance of organization’s external environments acting as a cohesive unit in the change process, the use of stakeholder theory (Mahon & Waddock, 1992) is critical to the understanding of the effects of change on external components of organizations. As change involves varying influences, factors, rationales, and desired outcomes, the use of a stakeholder theory lens can examine challenges to potential implementation processes which may be exacerbated and result in varying effects on stakeholders during different types of change (Thompson & Parent, 2021; Friedman et al., 2004). Therefore, the purpose of this presentation is to explore external stakeholder experiences during organizational change in the sport industry and propose a case study methodology to explore the change process in depth.

## Jonathan Edwards

### *Interest and Inflation: A re-examination of the Fisher Effect under strenuous circumstances*

the impact of risk factors for adolescent mental health. This paper measures the deviation from the Fisher Effect, before, during, and after the Covid-19 pandemic. The purpose of this study is to observe the link between expected inflation and interest rates on bonds, as an attempt to understand the robustness of this relationship (how well the Fisher Effect holds under various conditions). The Fisher Effect is one of the most important rules in economics, and it is important to test the robustness of such an effect.

## Isaac Yabu

### *Exchange rate pass-through and the global financial crisis*

The global financial crisis of 2008 had significant impacts on international trade, financial markets, and macroeconomic policies. One of the key areas affected by the crisis was the exchange rate pass-through (ERPT). Exchange rate pass-through (ERPT) refers to the extent to which changes in exchange rates affect the prices of goods and services in a country. Due to its potential effects on inflation in particular, and given the clear-cut implications for macroeconomic stability in general, quantifying the magnitude by which exchange rate variations are transmitted to domestic prices (exchange rate pass-through-ERPT) has been a paramount concern for researchers and policy makers. (Aisen, Manguinane, Simione, 2021, p. 03). This study aims to provide a general view of how exchange rate pass-through has unfolded for both advanced and emerging market economies after the financial crisis (2008).

## SESSION 11

### CHAIR: ROBERT BLOM | PLAZA 408

#### PRESENTER

#### PROGRAM

Isabelle Hill

Applied Health Sciences

Pratik Nath

Psychology

Ben Johnson

Child and Youth Studies

Alex Popescu

Biological Sciences

## Isabelle Hill

### *Examining the acceptability of tailoring cognitive reframing coaching for persons with multiple sclerosis*

Multiple Sclerosis (MS) is a chronic and progressive disease that leads to decreases in cognitive and physical functioning, and reduced quality of life. In absence of a cure, strategies are needed to manage the disease's unpredictable progressions. Physical activity (PA) may be an effective management strategy for MS, however individuals with MS are not sufficiently active. Reframing is a coaching strategy that helps individuals challenge the negative thoughts to overcome their PA barriers. It has been examined in the general population, but requires tailoring and validation for individuals with MS. The aim of this proposed study is to examine the feasibility and acceptability of reframing for individuals with MS. Participants (N=40) will meet the following inclusion criteria: (a) diagnosed with MS, (b) currently exercising <90 mins/week, (c) MS disability score < 6. This experiment consists of a single reframing session (~15 mins). Reframing includes: (1) helping individuals identify biases that contribute to negative thinking, (2) challenging the accuracy of their thinking, and (3) reframing their view to be more accurate. The two primary outcomes will be physical activity intention and cognitive biases. Participants will complete online surveys (pre/post) and will be interviewed about their barriers and facilitators to participation, and perceived acceptability of reframing. Braun and Clark's thematic analysis will be used to analyze the interview data and t-tests to analyze pre-post

changes. Findings will provide insight on how to acceptably deliver reframing coaching for individuals with MS. Future research will build on these findings to run a larger-scale trial.

### **Pratik Nath**

#### *An Electrophysiological Study of Noisy Channel Sentence Comprehension*

The present study employed Event-Related Potential (ERP) paradigm to investigate qualitative and quantitative aspects of on-line sentence comprehension containing deletion and insertion errors, compared to controls. We used Prepositional-object (PO) plausible constructions such as (i) The aunt mailed the letter to her niece by post, compared to double-object (DO) implausible constructions such as (ii) # The aunt mailed the letter\_ her niece by post (deletion error). Besides, a DO plausible construction such as (iii) The aunt mailed her niece the letter by post, was compared to a PO implausible construction like (iv) The aunt mailed her niece #to the letter by post (insertion error). Based on Noisy Channel model assumption, deletions are more likely to occur than insertions. This assumption would be held true if, comprehenders show differential sensitivity to different error types during on-line sentence comprehension task. Behavioural and ERP data from our study revealed differential sensitivity to error types. The language processing system responded with a sustained negativity (anterior) at head-noun sentence position for deletion error, while insertion error elicited a long-lasting centro-parietal positivity at a later sentence position. Overall, our results indicate that the language processing system is immediate in detecting the anomaly in case of deletion error and might engaged in a lexical search process (depicting higher workload). The long-lasting positivity observed for insertion error was thought to be associated with a repair process and might be because of a clear availability of alternative plausible meaning due to semantic attraction.

### **Ben Johnson**

#### *Pursuing Universal Design for Learning in Reading Remediation: Investigating How Executive Functioning Predicts Success*

This research seeks to address the literature gap on the relationship between the executive functions (e.g., working memory) of children with reading disability (RD) and the gains they show throughout an evidence-based reading remediation program. Despite showing promise, previous research shows that not all children show significant reading gains after participating in these interventions. To understand why this happens, my research investigates which executive functions (e.g., attentional control, working memory, shifting) predict intervention response and to what extent. Executive functions are associated with the “action and expression” principle of Universal Design for Learning (UDL). This project involves a new analysis using data already collected for a previous study. The sample consists of 120 children in grade 3 and 4 identified as having a reading disability. Children either participated in an evidence-based reading remediation program or a wait-list control. The program lasted for one school year and was provided by a trained special education teacher. Predictor variables were the executive function measures (e.g., Delis–Kaplan Executive Function System [DKEFS]). The outcomes variables were intervention response, as measured by reading skill tests (e.g., Test of Word Reading Efficiency). These data will be analyzed through a multiple linear regression to see which executive functions predict intervention response. The results of this study could help understand why certain children struggle with reading gains through these reading interventions and why other children do not, in order to improve these interventions. Specifically, these may demonstrate how reading remediation needs to better uphold UDL principles.

## Alex Popescu

### *Heads up! Social vigilance behavior in American crows*

American crows are the black-clad rulers of a city's skies and can be spotted in most North-American cities. Their abundance in cities has increased in the last decades, suggesting they benefit from living near humans. Recent literature shows that these urbanized species can have behavioral adaptations to better exploit anthropogenic resources and maximize their benefits and fitness in urban areas. While individual-level behavioral adaptations are an active area of research, adaptations of social behaviors and their contribution to the success of urbanized species are underexplored.

Last summer, we performed observational trials in green and commercial areas selected from a Brock community science initiative (<https://crowkemon.weebly.com/>) and found that American crows have modified social vigilance behavior in urban settings. We found that the presence of a sentinel, a prominently perched individual that exhibits constant vigilance, and the type of environment in which they forage had a significant effect on the duration of behaviors performed by foragers, but not their pecking rate or the proportion of time allocated to each behavior. A significant interaction effect was also observed on bout duration. Our results demonstrate that, in the presence of a sentinel, American crows in commercial areas increase the duration of bouts of alert and foraging behaviors but decrease them in green areas.

This suggests that their reliance on sentinels differs, and reflects the individual's perception of their foraging environment. Our findings could be insightful in understanding how social species respond to urbanization, and how these responses can benefit synurbic species.

## SESSION 12

### CHAIR: SIMRANJEET KAUR | PLAZA 409

#### PRESENTER

#### PROGRAM TYPE

Rebekah Norman

Applied Health Sciences

Patrick Segawa

Child and Youth Studies

Daria Do

Geography/Education

Melissa Blackburn

Child and Youth Studies

## Rebekah Norman

### *Young Carers and their Leisure: A Critical Participatory Action Research (CPAR) Project*

the impact of risk factors for adolescent mental Statistics Canada (2012) estimated there were a minimum 1.2 million Canadians under 25 years of age supporting a family member or friend with a long-term health condition, disability, or as an older adult. Literature suggests that young carers provide similar tasks to adult carers but are often hidden and unsupported, exposing them to several health risks such as anxiety and emotional distress (Becker & Sempik, 2019). Leisure experiences may have important implications for young carers; however, very little research has explored the experiences of young carers and leisure in that context. Grounded in critical youth studies (O'Dell et al., 2010) and an authentic partnership approach (Dupuis et al., 2012), the purpose of this critical participatory action research project (Watson & Shulman, 2008) was to expand understandings of young carers' experiences of care and how those care experiences shape leisure by: privileging the voices of young carers, challenging dominant perspectives of young carers, and ensuring young carers are better supported in their roles. Working collaboratively with two young carer organizations and four young carers, we used research conversations with young carers and a Critical Creative Hermeneutic Approach (Leishout & Cardiff, 2011) to creatively illuminate young carers' perspectives of their experiences. Our project brought attention to four key



themes: There is Nothing Unnatural About Being a Young Carer: It's About Just Being Human; Tensions in Understandings and Experiences of Young Carers; Leisure as Relational Moments of Rejuvenation in Everyday Life; and Being Acknowledged as Relational Beings.

### **Patrick Segawa**

*Drawing on Lived Experience of Peer Support Workers in provision of Substance and Addiction Services in St. Catharines; a case of CASON.*

the impact of risk factors for adolescent mental Background: Substance and drug abuse can have long-term effects on the physical, social, and mental well-being of people, and can lead to death. The highest percentage of drug users can be accounted for by youth and young adults in Canada. The use of substances such as alcohol, tobacco or cannabis may lead them into vulnerable situations and risk of addiction.

Method: I conducted a qualitative research study where six peer support workers working with CASON were recruited and interviewed to obtain diverse information on their lived experiences in the provision of substance and addiction services in St. Catharine. One Focus Group Discussion (FGD) was conducted among clinicians and/or counsellors who work with and support CASON's youth peer support workers. Data was collected in January 2023. The semi-structured interviews and FGD were audio recorded, transcribed, de-identified, and analysed thematically.

Results: Many of the peer support workers have previously been clients with CASON and their greatest motivation is the desire to help other youths who are going through similar situations that they have recovered from. Some of the day-to-day activities conducted by peer support workers include: conducting one-on-one sessions with clients, facilitating

group discussions, and providing referrals for information and services. Some of the benefits associated with peer support include; being in a position to support other people recover from substance and addiction challenges. Peer support also empowers the client to make informed and healthy decisions about their recovery. Some of the challenges faced by peer support workers include: the feeling of being vulnerable; not knowing when to draw the line in oversharing; difficulty in hearing similar traumas; and fear of being put into compromising situations.

### **Daria Do**

*Exploring the Diverse Work Experiences and Support Networks of Female Small Business Owners in Downtown St. Catharines, Ontario, Canada*

Like many of their counterparts across Canada, female small business owners in Downtown St. Catharines, Ontario, Canada, face several institutional and financial barriers, especially during the COVID-19 pandemic. Based on virtual interviews, this study shows how female small business owners navigate structural barriers of intersectional power dynamics in every day life and business interactions. The study shows that, despite challenges, female small businesses navigated several financial and institutional obstacles by relying on informal relationships and networks to support their businesses and livelihoods. Ultimately, these female small business owners have a different sense of belonging and a strong commitment to downtown and their community culture. Through this continuous engagement with their downtown, they acknowledge how valuable of an investment female business networking programs are for the longevity of their enterprises and the inclusive urban culture of downtown. This study contributes to the debates on feminist economic geographies in mid-size North American cities. In addition, this study advances discussions

involving urban geographies, such as downtown revitalization, urban culture, inclusion and urban renewal.

### Melissa Blackburn

*With Texting, I'm Always Second Guessing Myself: Adolescent Perfectionists' Experiences of (Dis)Connection Online*

Little is known about how perfectionistic adolescents experience social connection in online spaces. This qualitative study addressed this gap by examining themes related to social (dis)connection in online and in-person settings from semi-structured interviews with 43 adolescents (Mage = 15.16, SD = 2.43; 62.8% female; 58.1% white; 54.4% self-identified perfectionists). Results demonstrated that perfectionists expressed feeling less connected online than non-perfectionists, which was likely driven by heightened levels of interpersonal sensitivity. However, a subgroup of perfectionists sought out meaningful online relationships, often in response to a fear or experience of rejection by in-person peers. The results highlight the role of interpersonal sensitivity in fuelling feelings of disconnection among adolescent perfectionists in both online and in-person settings, as well as the importance of self-monitoring in the social experiences of perfectionistic youth. Future work should continue to examine the role of self-monitoring as a central component of perfectionists' social experiences.

### Danielle Martin

*Measuring the influence of nuclear power plant emissions and fossil fuel contributions on atmospheric carbon dioxide using tree rings in southern Ontario*

Trees absorb atmospheric carbon dioxide (CO<sub>2</sub>), which is structurally added into annually grown tree rings. Atmospheric CO<sub>2</sub> contains carbon-12 (12C), carbon-13 (13C) and carbon-14 (14C). Atmospheric radiocarbon (14C) can be measured from tree rings to obtain atmospheric CO<sub>2</sub> data. Observational measurements of 14C can deviate from background 14C levels due to various factors. This study observes how atmospheric CO<sub>2</sub> measurements are influenced by anthropogenic carbon sources (i.e., nuclear power plant emissions—a 14C source—and fossil fuel contributions—a 12C and 13C source) and meteorology via spruce (*Picea* spp.) tree ring measurements from southern Ontario. Southern Ontario is considered a “hot spot” for nuclear power plant emissions and has a high urban influence (and thus elevated fossil fuel contributions) due to the large population of the Greater Toronto Area (GTA). With the presence of three nuclear generating stations in southern Ontario, tree rings that grew in proximity of these Canadian Deuterium Uranium (CANDU) reactors (specifically near the Bruce Nuclear Generating Station) are 14C-enriched. Conversely, tree rings that grew in the City of Toronto can be 14C-depleted because these trees are near to higher levels of fossil fuel contributions from urban activity. The 14C tree-ring data from these sample sites are compared to “clean-air” data from Egbert, Ontario (regional background site) and the Northern Hemisphere (NH) atmospheric background sites of NH zone 1 (including Jungfraujoch, Switzerland). By measuring the 14C signature of tree rings, we can observe the influence of anthropogenic carbon sources on the atmospheric CO<sub>2</sub> inventory of southern Ontario.

## SESSION 13

**CHAIR: LISA WHITTINGHAM | PLAZA 410**

PRESENTER	PROGRAM TYPE
Danielle Martin	Biological Sciences
Lauren Nesbitt	Biological Sciences
Sebastian Roa-Goyes	Sustainability
Sandra Kroeker	Child and Youth Studies

## Lauren Nesbitt

*High-resolution paleofire reconstructions from the Northwest Territories, Canada using macroscopic charcoal and pollen records*

Climate change is expected to lead to an increase in the frequency and severity of wildfires in northern boreal regions. Records of past wildfires are spatially limited and temporally short in northern regions making it difficult to assess the impact of wildfires on a long-term basis. Using paleolimnological techniques, including the analysis of macroscopic charcoal from two small lakes in the Northwest Territories, Canada, we constructed high-resolution fire records spanning the Holocene. Additionally, we used available data from the Global Paleofire Database and previously unpublished charcoal records to reconstruct regional fire history. The charcoal record from Lake 18YK16 (unofficial name) had a total of 38 fire events during the past ~9000 years BP. Lake 18YK20 (unofficial name) had 67 fire events throughout the past ~10,000 years BP. For both lakes, fire events increased in frequency ~8000 and ~5500 years BP corresponding to the presence of spruce (*Picea* spp.) and warming temperatures. Additionally, for 18YK16, a third peak in fire activity occurred coinciding with the end of the Medieval Warm period ~600 years BP. Fire occurrence declined during the middle to late Holocene (~5000-600 years BP) which is a period of climatic cooling during the Neoglacial period. Preliminary results from a larger set of 12 lakes across the North Slave Region, indicate peaks in fire activity between 7000-5000 years BP and declining afterwards across these broader landscape scales. This research contributes to knowledge of fire frequency in northern regions and how fire occurrence changes in response to climate and environmental change.

## Sebastian Roa-Goyes

*Youth attitudes and preferences for carbon labels on food products: Insights from Argentinian and Canadian consumers*

The climate impact of food production is undeniably a growing issue that transcends borders and generations. Therefore, communicating the climate damage of food products efficiently to younger generations is imperative for more environmentally knowledgeable purchasing decisions for a sustainable future. Nevertheless, the perception of carbon labelling by youth has been surprisingly understudied. This cross-cultural study investigates youth familiarity with carbon footprint and carbon labels and explores attitudes and preferences toward six carbon labels in Argentina and Canada. Using a mixed methods approach that integrates a quantitative questionnaire with an incomplete block design and open response questions, we found that Canadians have higher familiarity with the term carbon footprint and both Argentinians and Canadians have low level of familiarity with carbon labelling. Regarding Carbon label assessment and preference, participants highly rated and selected labels with a traffic light system with colours from green to red and poorly rated labels that mainly include raw CO<sub>2</sub> numerical information. The findings suggest that there is a demand for clear, transparent, and reliable carbon footprint information on food; however, a low level of familiarity might negatively affect the use of carbon labels for climate-friendly food purchasing decisions. Overall, results indicate that Argentinian and Canadian youth are receptive to carbon labels on food, but the effectiveness of implementing this mechanism might be limited without communication strategies from private entities and public institutions.

## Sandra Kroeker

### *Fractal Processes as the Blueprint Guiding Development*

This project is about locating the instruction manual that tells an organism how to assemble itself into a whole organism. When studying the history of development genetics and evolution one comes across a paradox. The question is how can an organism be both creator and the thing being created? Is the process of development inside the organism or is there a separate outside guiding force? This project has discovered Fractal patterns both inside and outside the organism, leading to the conclusion that the fractal equation might code for DNA. To test this hypothesis a nematode DNA set was transduced into two dimensional binary sets using a quantum computer. The next step is to train the computer to find the fractals inside the DNA.

## SESSION 14

**CHAIR: CARLY MAGEE | PLAZA 411**

### PRESENTER

### PROGRAM

Taranjot Dhillon	Applied Health Sciences
Isabella Tremonte	Applied Health Sciences
Jesica Jabbar	Applied Health Sciences
Zaraa Zaman	Applied Health Sciences

## Taranjot Dhillon

*A scoping review exploring and identifying gaps in the body image literature about South Asian women living in Western settings*

South Asian women living in Western countries are an underrepresented demographic within the body image literature. As evident in the limited literature, this population is especially susceptible to negative body image (i.e., appearance concerns, body size/weight

dissatisfaction, skin tone/colour preferences). Following the Arksey and O'Malley framework, this review mapped characteristics of research examining body image in South Asian women in Western countries and identified gaps in the literature. The inclusion criteria included peer-reviewed articles investigating body image in South Asian women living in Western countries across all ages. A search of databases (OVID Medline, PsychInfo, CINAHL, Web of Science, Google Scholar) and the journal Body Image up to December 2022 yielded 26 eligible articles (1996-2022). The following data was extracted: study characteristics (e.g., purpose, study design, study location), participant demographics, and body image outcomes. A total of 12,357 participants (aged 5-92 years) were included. 10 studies focused on negative body image, five studies examined positive body image, while the remaining studies assessed both negative and positive body image. The body image measures in these studies assessed one or more of the four body image dimensions: affective, perceptual, cognitive, and behavioural, speaking to the multidimensionality of body image. Although four studies included measures assessing aspects of ethnicity or race specifically, the remaining studies failed to consider how Western and South Asian cultural factors impacted body image. These findings indicate a need for more research studying body image in this group, particularly using measures addressing the influence of South Asian cultural impacts.

## Isabella Tremonte

*Body appreciation and well-being in female powerlifters undergoing weight loss for competition: A longitudinal analysis*

In weight class sports, purposeful weight loss (PWL) is often undertaken to gain a competitive advantage at a body weight below what is habitual for the athlete. PWL in preparation for competition has been associated with increased anger, tension, fatigue, depression,

and anxiety. Interviews with female powerlifters linked PWL simultaneously to both enhanced body appreciation and lower well-being. Yet female weight class athletes are seldom included in quantitative explorations into the experience of PWL. Adopting a longitudinal cohort design, the purpose of this study will be to examine body appreciation and well-being in female powerlifters during PWL surrounding competition. Guided by the broader literature, it is hypothesized that from baseline to competition female powerlifters engaging in PWL will report an increase in body appreciation and a decrease in well-being. One-week post-competition (when weight re-gain typically occurs), it is hypothesized that body appreciation will decrease and well-being will increase. Female powerlifters (N = 25) competing in regional-to-international level competitions will be recruited. Participants will be asked to track weight loss using self-reported weight while completing measures of body appreciation and well-being across five timepoints. Two separate pooled time series regression analyses will be used to test the temporal association between PWL and body appreciation/well-being. Results from this study will highlight the implications of PWL in an underrepresented female athlete cohort. Current weight loss guidelines for sport include physiological considerations which may be integrated with resulting psychological outcomes to support the training of weight class athletes in preparation for competition.

### Jesica Jabbar

*Examining the effects of internalized weight bias on physical activity participation through a dual process perspective*

Weight Stigma represents discrimination associated with the social beliefs that people in larger bodies have low willpower, are unmotivated, and are personally responsible for their elevated weight. Internalized Weight Stigma is the extent to which social perceptions

of weight stigma are attributed to the self by people in larger bodies. Dual process models may be uniquely situated to help us understand how weight stigma becomes internalized and how this impacts physical activity (PA) participation. Within dual process models, the automatic system reflects implicit associations and feelings, whereas the reflective system represents deliberate and controlled reasoning. Past research has examined weight stigma from a dual process perspective but has examined social perceptions of explicit weight stigma alongside implicit measures, rather than examining the internalized form of weight stigma. The purpose of this study is to examine the relationship between internalized weight stigma (a reflective process) and implicit weight bias in predicting PA. The primary hypothesis is that internalized weight stigma and implicit weight bias will predict stigma outcome expectations and PA intentions. Eligible participants will be over 18, self-identify as a woman, have a BMI over 25, and self-identify as being overweight. Participants will be recruited through online postings. The following validated measures will be examined: implicit weight bias (Implicit Association Test), perceived weight discrimination scale, internalized weight bias scale, and PA intention scale. Examining internalized weight stigma through a dual process lens will provide insight into the nuanced relationship that people in larger bodies have with PA participation.

### Zaraa Zaman

*Breaking Barriers, Building Biceps: The Effect of Strength Training on South Asian Women's Body Image*

the impact of risk factors for adolescent mental Positive body image, love, respect, and appreciation towards one's own body, is associated with positive mental health outcomes (e.g., quality of life) and health behaviours (e.g., increased physical activity).

Research investigating body image in South Asian populations (e.g., India, Bangladesh, etc.) show that they experience low positive body image. Exercise, specifically strength training, is associated with improvements in body image in non-ethnic populations and this improvement is attributed to greater physical self-efficacy. Whether this relationship holds true for South Asian women requires investigation. Thus, this study will determine the effects of a 6-week culturally-sensitive strength training program on South Asian women's body image. It is hypothesized that participation in the strength training program will lead to an increase in positive body image, with greater physical self-efficacy mediating this relationship. Thirty English speaking self-identified South Asian women, aged 18-29 years, and inexperienced in strength training, will be recruited through posters on social media (e.g., Instagram) and on the university campus. Participants will complete the Body Appreciation Scale-2 and Physical Self-Efficacy Scale at baseline and post-program. The program will be held twice a week in a private gym at Brock University. A mediation analysis with strength training as the independent variable, physical self-efficacy as the mediator, and body appreciation as the outcome variable will be conducted. Identifying how strength training affects positive body image in South Asian women will help researchers and exercise programmers create effective strength training programs for South Asian women, improving their overall health.

## SESSION 15

**CHAIR: SARAH GALWAY | GSB 307**

PRESENTER	PROGRAM
Megan Piché	Applied Health Sciences
Jesse Porter	Applied Health Sciences
Jacob Morris	Applied Health Sciences

### Megan Piché

*Exploring toxicity in the women's sport social media discourse*

Social media (SM) has become a pillar of communication among sport organizations and fans alike (Abeza et al., 2019; O'Shea & Maxwell, 2021). Digital networking promotes public-sphere discussion in which users are connected by common interests, such as hashtags or specific sub-groups (O'Hallarn et al., 2018; Hambrick & Pegoraro, 2014). SM offers opportunities for women's sport, a historically marginalized group, to overcome barriers and lack of representation (Piché & Naraine, 2022; Sveinson & Allison, 2022). The increased use of digital spaces, however, poses the risk of toxic behaviors to manifest and harm inclusive, supportive discussion between fans on SM (Antunovic, 2019; Fenton et al., 2021; Gruzd et al., 2020). This study, rooted in network theory proper (Borgatti & Halgin, 2011), aimed to explore toxicity present in the women's sport discourse. Posts from the Women's National Basketball Association and National Women's Soccer League were collected on Twitter and Reddit over four periods during the pre-, in-, playoff, and off-season of each league's 2022 season cycle. Using Commanalytic and Perspective Application Programming Interface, toxicity analyses were conducted and produced scores for six toxicity attributes. A secondary, textual analysis was conducted to ensure accuracy of the toxicity scores for each attribute. Results indicated that there is considerable toxicity within women's sport fan

discourse online. Given these findings, sport organizations and entities centered around women should adopt proactive roles on SM to assist in the moderation of toxic discussion.

### **Jesse Porter**

#### *Exploring the Emotional Labour of Women Head Coaches in the Canadian University Context*

Coaching continues to be a male-dominated space, representative of declining numbers of women occupying coaching positions. Scholars have argued that a gendered division of labour impacts female coaches' day-to-day working realities (Finn, 2022; Krahn, 2022). Moreover, growing evidence supports coaching as a relational, interpersonal practice (Jowett & Shanmugam, 2016), which involves significant levels of emotional labour (Wharton, 2009), defined as "labour that requires one to induce or suppress feeling in order to sustain the outward countenance that produces the proper state of mind in others" (Hochschild, 1983, p. 7). This study will utilize a feminist post-structural lens to critically explore the emotional labour of female coaches in the Canadian University context. The research question guiding this study is: How do woman coaches in high-performance head coach roles construct, demonstrate, and experience emotional labour in the Canadian University setting? The study will use qualitative methods, including two in-depth semi-structured interviews with eight female university sport coaches and thematic data analysis to explore female coaches' use of emotional labour. This research will contribute to a more fulsome and nuanced understanding of female coaches work which may lead to the evolution of coach development education that more adequately reflects the emotional realities of the job.

### **Jacob Morris**

#### *An equal opportunity to watch, read about, meet and hear from": An Analysis of CBC's Gender Balance in Sport Programming Commitment*

In March of 2020, the Canadian Broadcasting Corporation (CBC) announced the decision to gender balance all their sport coverage. In the press release about their coverage initiative, CBC claims it will provide audiences with an equal opportunity to watch and read about women's sports, indicating a commitment to airing an equal amount of coverage of men's and women's sports. As part of a larger project analyzing CBC's commitment to gender balance in their sport programming, I will present the findings of a content analysis of the four weeks leading up to and following the Beijing Olympic Winter Games. This analysis explores both the relative quantities of coverage CBC produced and the quality of that coverage.



# AFTERNOON ORAL SESSION 2 PRESENTER ABSTRACT

2:30 P.M. - 4 P.M.

## SESSION 16

CHAIR: JESSICA BRAUN | PLAZA 308

### PRESENTER

### PROGRAM TYPE

Shodhanth Ramaswamy	Management
Aayush Sharma Giri	Management
Matheus Leite	Management
Mourin Mostafiz	Management
Ehsan Khaksar	Management

### Shodhanth Ramaswamy

*Landlord and Tenant Matching System: A Design Science Framework*

This session presents an overview of the MScM thesis Landlord and Tenant Matching System: A design science framework, the abstract for which states that: The recent uptick of immigration in a post-COVID world has seen an increase in number of international students coming into the country. In the current real estate sector, meeting the housing needs of these new immigrants requires a leap of faith by the landlords. This is due to the lack of information available on these new immigrants. By utilizing a design science approach, this



paper designs an artifact that utilizes structured data to evaluate landlords and tenants. The paper defines attributes of ideal tenant and landlord through a literature survey of rental sectors across the world. These attributes are then measured by applying decision analysis methods to the structured data to generate an objective numeric score for both tenants and landlords. This score is then used to prepare a candidate list of potential tenants for the landlord to choose from. The presence of such a system would alleviate the barriers faced by new immigrants in the rental market and alleviate the need for an act of goodwill from the landlords. .

### **Aayush Sharma Giri**

#### *E-Commerce Supply Chain Risk Management and Online Sales Performance*

This thesis explores the relationship between a retailer's commitment to risk management and its impact on online sales performance. While previous research has examined the impact of various service offerings on online sales performance, this study takes a comprehensive approach by investigating the impact of transactional, logistics, and post-sales service offerings.

To build a model that incorporates these three service areas, this study employs e-customer journey mapping. The resulting model proposes three major hypotheses, which are empirically tested using hierarchical multiple linear regression and further tested for robustness using two-step clustering, and binary logistic regression techniques. A sample of 411 top retail companies operating in North America is used for the study.

The findings of this study reveal that there is a positive relationship between a retailer's commitment to risk management and its online sales performance. Specifically, the

results indicate that retailers who adopt risk management strategies are more likely to be categorized as leaders rather than followers in the market.

This study contributes to the existing literature on retail and risk management by highlighting the importance of risk management in the provision of retail services. It also provides guidance for practitioners and managers in assessing their market position and directing their strategies accordingly. By adopting effective risk management strategies, retailers can enhance their online sales performance, which is becoming increasingly important in today's digital age. Ultimately, this study emphasizes the need for retailers to prioritize risk management in order to achieve success in the competitive world of e-commerce.

### **Matheus Leite**

#### *Innovation, R&D and The Business Cycle*

Technological Innovation is a major driver of long-run economic development. It increases wealth generation capacity, productivity, and rewards innovators with temporary monopoly profits. Part of the innovation effort, investments in R&D are uncertain and long-run oriented, and absent market frictions, should not be impacted by current economic conditions. This thesis investigates whether firms' R&D expenses respond to changes in short-run macroeconomic activity in the G7 countries, while considering the endogenous relation between innovation and economic growth. Empirical studies attribute the pro-cyclical behavior of R&D, especially in the U.S, to financial constraints that drive firms away from the optimal allocation of resources. On the other hand, substantial evidence indicates that managers manipulate discretionary expenses to meet their current earnings targets and influence stock prices. We study whether the state of the economy affects firms R&D investments after controlling for the access of internal and

external sources of capital. Our results show that contemporaneous macroeconomic conditions, as well as access to financing, are positively associated with firm-level R&D intensity, most notably in young and high-tech firms. We find a positive association with the 1-year lagged economic conditions in the U.S and Canada, but not in the other countries of the G7. Recessions are especially significant in explaining cuts in R&D investments in all countries. Therefore, real activities managerial maneuvers to improve current earnings performances are present regardless of financial constraints, suggesting they might have a complimentary, rather than mutually exclusive relation. We address the endogenous nature of innovation and economic growth by estimating R&D and GDP in a panel Vector Auto Regression (PVAR) and find no evidence that reverse causality impacts our results. Furthermore, although aggregate level and the weighted average change in R&D of our sample are reasonably correlated, we do not find a relevant long-run relation between firm-level R&D intensity and economic activity, which calls for further investigation.

### **Mourin Mostafiz**

*Responding to organizational crisis: The role of message framing and information processing system*

Crisis management is developing a solid line of research that examines the communicative responses of organizations in crisis. This research conducting 10 experiments studies how different communication message framing (rational vs. emotional) affect people's emotional response to a corporate crisis. The distinct emotions induced by different message frames influenced individuals' information processing (i.e., heuristic vs. systematic processing) and the evaluation of the company differently. Participants who process information systematically and were exposed to rational messages led to higher organizational credibility, on the other

hand participants who process information heuristically and were exposed to emotional messages led to higher organizational credibility. Findings demonstrate a potential for developing effective corporate response strategies in a given crisis situation, considering the type of crisis, when it has been framed by the media, the public's emotional responses, and the use of emotional appeals which were studied as moderating variables. The research would add incremental contribution to practitioners in assisting them design the framing of the communication messages based on their customer profiling post a crisis. In terms of theoretical perspective, the study extends the literature of crisis communication by establishing a matching of emotional vs. rational message framing with heuristic vs. systematic information processing respectively.

### **Ehsan Khaksar**

*Understanding the Relationship between Online Discussions and Bitcoin Return and Volume: Topic Modeling and Sentiment Analysis*

This thesis examines Bitcoin related discussions on Bitcointalk.com over the 2013-2022 period. Using Latent Dirichlet Allocation (LDA) topic modeling algorithm, we discover eight distinct topics: Mining, Regulation, Investment/trading, Public perception, Bitcoin's nature, Wallet, Payment, and Other. Importantly, we find differences in relations between different topics' sentiment, disagreement (proxy for uncertainty) and hype (proxy for attention) on one hand and Bitcoin return and trading volume on the other hand. Specifically, among all topics, only the sentiment and disagreement of Investment/trading topic have significant contemporaneous relation with Bitcoin return. In addition, sentiment and disagreement of several topics, such as Mining and Wallet, show significant relationships with Bitcoin return only on the tails of the return distribution (bullish and bearish markets). In contrast, sentiment, disagreement, and hype of

each topic show significant relation with Bitcoin volume across the entire distribution. In addition, whereas hype has a positive relation with trading volume in a low-volume market, this relation becomes negative in a high-volume market.

## SESSION 17

**CHAIR: KAILYNN MANNELLA | PLAZA 311**

PRESENTER	PROGRAM TYPE
Shajib Chowdhury	Computer Science
Mehenika Akter	Computer Science
Jannatul Ferdous	Computer Science
Amirmahdi Khosravi Tabrizi	Computer Science
Pranjal Chakraborty	Computer Science

### Shajib Chowdhury

*Context-based network switching in 5G vehicular networks*

Connected vehicles assist in increasing the capacity of transportation networks and improving driver safety by utilizing various communication protocols, such as Wi-Fi, WiMAX, 5G, 4G, and 3G. Vehicles

can communicate among themselves by using Vehicle-to-Everything (V2X) and Cellular-Vehicle-to-Everything (C-V2X) communication technology. However, the heterogeneity of communication media causes high-speed nodes to switch from one media to another in heterogeneous wireless networks, named vertical handover (VH). VH is challenging in heterogeneous vehicular networks (HVN) due to several networks relying on different performance parameters. To ensure the Quality of Service and ongoing connectivity a smooth switching between networks is necessary. Our main target is to make the transition from 5G to C-V2X efficient in terms of delay, load balance and network cost for VH so that there is a precise balance between the two media without

interfering with data delivery.

Our proposed solution will utilize multi-attribute decision-making (MADM) techniques for providing always-on connectivity and optimized performance with a precise selection regarding service and application requirements, and user preferences. In order to balance the network load, the system will constantly monitor changes in network attributes and execute the switching algorithm to balance the network load. We hope to improve network efficiency through a reduction in the number of handovers and handover time, ensuring continuous connectivity.

### Mehenika Akter

*Suggesting and Updating Appropriate Log Levels for Monitoring Software Performance*

Log statements help software developers and end users getting informed about different valuable run-time information while log levels notify about the severity of those information. Researchers have been working extensively on log related problems for the last two decades. As a result, a good amount of research has been conducted on logging and its practices. However, determining log levels for log statements designated to monitor software performance is the main objective of this research. Our research proposes to first suggest log level, then update it periodically for log statements while monitoring software performance. To execute the idea, we first filter and collect code snippets having logging statements from the repository of some open-source projects. Then, some general syntactic context features and performance-based features are extracted from the code snippets. Finally, our classification model suggests or updates log level for any new application based on those features. Thus, our research aims to provide developers and users with a better experience while running a new software.

## **Jannatul Ferdous**

### *Reinforcement Learning-based Time-Dependable Modelling of Fog Connectivity for Software-Defined Vehicular Networks*

Connected vehicles are vital for supporting vehicular systems or Intelligent Transport Systems (ITS) because data can be shared autonomously or dynamically over the network through this vehicular network. Numerous studies have been done on predicting connectivity, as well as various approaches, have been proposed to handle this connectivity. In modern days, Learning approaches have gained popularity for handling complex models in an adaptive fashion. Different machine learning algorithms are proved to be a persuasive procedure to make any system adaptable as well as predictive. We thus propose an RL-based model that estimates and optimizes the connectivity with various states and actions and track their connectivity with the changes over time. This model is intended to represent the current connectivity status precisely and forecast the possible changes that might happen in fog connectivity. Networking and vehicular properties will be used in this model to make its prediction accurate. Our model is planned to handle the complexity of the problem through large state space representation by including detailed data, which we hope to gain more adaptability. Incorporating time dependency in our model will help predict the changes in clusters' lifecycles. It will show how the clusters evolve over time which makes a significant contribution in making a stable and efficient network. Long Short Term Memory with an RL-based model will allow the fog system to make more accurate decisions based on the prediction of connectivity and network maintenance.

## **Amirmahdi Khosravi Tabrizi**

### *Software Engineering - Investigating Correlation between Source Code Features and Microbenchmark's Steady State*

Microbenchmarking is a widely used method for evaluating the performance of a piece of code. However, the results of microbenchmarks for applications that utilize the Java Virtual Machine (JVM) are often unstable during the initial phase of execution, known as the warmup phase. This is due to the JVM's use of just-in-time compiler optimization, which is to identify and compile a "hot set" of important code regions. In this study we examine the static features of 586 microbenchmarks from 30 Java applications. To do so, we first extract static source code features of the benchmarks and then employ manual and descriptive data mining methods to identify meaningful correlations between these static features and the benchmarks' ability to reach a steady state. Our findings indicate that the number of function calls and lines of code have a considerable influence on whether or not the microbenchmarks reach a steady state.

## **Pranjal Chakraborty**

### *Early Identification and Proactive Taming in Resource Constrained Devices*

Edge devices such as routers are resource limited by design, and scarcity of system resources like memory can be detrimental to the performance of the device itself and the overall architecture that the device is part of. Also, in worst cases, memory pressure can lead to out of memory errors in primary processes of the system. There are literatures that handle this issue in a reactive way by bypassing the default OOM killer of Linux with their own solution based on memory activity of the device in real-time. Problem with such a strategy is, the real time data is not enough to find out the root cause of memory pressure, and

the OOM killer might not be triggered before it is too late. Moreover, monitoring the memory activity of processes for a couple cycles is important to be confident about the root cause of the memory pressure in the first place before killing it. The caveat here is, monitoring and profiling is costly, and it is more costly in edge devices. So, turning these extended profiling on and off intelligently is important to make it usable in resource limited systems. In this work, we will be proposing an intelligent approach to identify system memory pressure in edge devices before the pressure happens and based on this we will turn on/off extended process level profiling, based on which we are identifying the root cause (process) of the memory pressure, and collecting data for post-mortem analysis.

## SESSION 18

**CHAIR: MARVEL MEGALY | PLAZA 408**

### PRESENTER

### PROGRAM TYPE

Robert Crozier	Applied Health Sciences
Ricardo Alva	Biological Sciences
Colton Watson	Applied Health Sciences
Arsala Ali	Biological Sciences
Natalie Hicks	Applied Health Sciences

### Robert Crozier

*Characterizing the immunometabolic importance of triacylglycerol synthesis following inhibition of diacylglycerol O-acyltransferase 2 (DGAT2) in IL-33 and allergen activated mast cells*

Mast cells are granulated immune sentinels responsible for allergies. During allergic inflammation, allergen-induced Fc RI cross-linkage results in the release of several pro-inflammatory mediators. Mast cell activation is enhanced by IL-33, which through ST2 stimulation, independently activates local mast cells, or synergistically increases allergen activation. Triacylglycerols (TAG) serve as

a source of energy and building blocks for lipids required for cell membrane turnover. Diacylglycerol O-acyltransferase 2 (DGAT2) a rate-limiting enzyme, is responsible for catalyzing the esterification of fatty acid (FA) tails to glycerol during TAG synthesis, prior to storage or immediate utilization through FA oxidation. Currently, metabolic requirements of mast cells following stimulation remain incompletely defined. Therefore, the objective of this study was to characterize the importance of TAG and FA oxidation in mast cells following pharmacological inhibition of DGAT2. IgE-sensitized mouse mast cells were incubated with DGAT2 inhibitors PF-06424439 (PF) or JNJ DGAT2-A (JNJ) and stimulated with allergen or IL-33 under stem cell factor potentiation. Here, DGAT2 inhibition with PF ( $p=0.008$ ) and JNJ ( $p=0.02$ ) reduced allergen-induced mast cell degranulation. Following JNJ treatment and allergen stimulation, there was a significant reduction in IL-6 ( $p=0.0002$ ), TNF ( $p=0.0002$ ), CCL1 ( $p=0.017$ ) and CCL2 ( $p=0.024$ ) release. Alternatively, DGAT2 inhibition with PF reduced IL-6 ( $p=0.048$ ), TNF ( $p=0.029$ ), CCL1 ( $p=0.0025$ ), CCL2 ( $p=0.006$ ) and CCL3 ( $p=0.0047$ ) release, while JNJ only inhibited CCL1 ( $p=0.0074$ ) release following IL-33 stimulation. Together, these results highlight the potential metabolic requirement of TAG and FA oxidation during IL-33 and allergen-mediated mast cell activation, making DGAT2 an intriguing therapeutic target to help combat allergic pathologies.

### Ricardo Alva

*Investigating the cellular response to hypoxia under physiologically relevant oxygen conditions*

Hypoxia, or sub-physiological oxygen levels in tissues, has been subject of extensive research over the past decades. Some of the mechanisms triggered by hypoxia are well characterized, such as the activation of hypoxia-inducible factors leading to the induction of genes

involved in metabolism, angiogenesis, and survival. Nonetheless, several discrepancies exist in the literature, such as the effect of hypoxia on reactive oxygen species (ROS) production. Substantial research has shown that hypoxia increases ROS production, which is counterintuitive since oxygen is the substrate for ROS generation. Several other studies have reported contrasting results. Although many factors may account for such discrepancies, we argue that lack of proper oxygenation in vitro is the most important one. While most tissues are exposed to 2–8% O<sub>2</sub>, routine cell culture is performed at near-atmospheric O<sub>2</sub> tension (21% O<sub>2</sub>), which has been shown to affect variety of cellular activities, such as metabolism, gene expression, and ROS production. Further, lack of monitoring of O<sub>2</sub> levels in the media, or pericellular oxygen, can lead to artifacts. Therefore, in this project, we will study the responses to hypoxia of cells grown in physiological O<sub>2</sub> conditions (here 5% O<sub>2</sub>) versus cells grown in standard conditions (~18% O<sub>2</sub>), while also monitoring pericellular O<sub>2</sub> levels. We will measure ROS production in cells exposed to hypoxia by using the Amplex Red assay. Additionally, we will study changes in gene expression using transcriptomics. Overall, our project will advance our understanding of hypoxia and highlight the need for incorporating physiological oxygen levels in research.

### Colton Watson

*Identification of a novel TAK1-PIP4K2b interaction during allergen-activated mast cell secretion by quantitative proteomics*

Allergic inflammation is an inappropriate immune response, initiated by activated mast cells previously IgE-sensitized to an innocuous environmental agent. Following allergen-induced crosslinking of IgE-Fc RI complexes on the surface of sensitized mast cells, the allergic response occurs in two phases, the early and the late phase. Initial activation rapidly induces the

exocytosis of preformed granules in the early phase, as well as propagation of intracellular signaling ultimately leading to de novo synthesis and exocytosis of late phase inflammatory mediators. We have previously identified TAK1 as a novel regulator of induced exocytosis in the early and late phase, however the mechanism governing its early phase impact remains elusive. Therefore, we aim to characterize its mechanistic contribution in the cellular events leading to degranulation, using a primary mouse mast cell model, treated with TAK1 inhibitor, 5Z-7-oxozeaenol. PIP2 is a membrane phospholipid and plays a key role in the regulation of membrane fusion and exocytosis. In the early phase, it is hydrolyzed into IP3 and DAG which act as second messengers stimulating calcium mobilization promoting degranulation. Co-immunoprecipitation and quantitative mass spectrometric analysis have identified a potential interaction between TAK1 and phosphatidylinositol signaling protein, PIP4K2b. PIP4K2b adds a phosphate group to position 4 on a PI(5)P phospholipid to produce PIP2. This interaction has the potential to mechanistically connect TAK1 with the cellular events leading to early phase degranulation, considering the critical role of PIP2 in exocytotic events. These results provide novel clues facilitating further investigation into the mechanistic control of mast cell exocytosis by TAK1.

### Arsala Ali

*Cell line-specific profiling of genes enriched with TE-derived regulatory sites*

Transposable elements (TEs) have been known to play a regulatory role in the host genome. With varying epigenomic profile of TEs across different tissue types, TE-derived regulatory sites tend to be tissue-specific. We aim to infer and compare TE-regulated genes in different tissue types, by using regulatory region annotations in 14 cell lines belonging to 10 different tissue types. We separately analyzed three different

regulatory region datasets retrieved from ENCODE data portal: DNase hypersensitive sites (DHSs), histone active sites (HA) - (positive regulatory regions) and histone repressive sites (HR) - (negative regulatory regions). For each gene in every cell line, we determined TE-density of the gene-neighboring regulatory region. Observing pairwise correlation among cell lines based on TE-density of the gene-neighboring regulatory region mostly showed negligible to low correlation (Pearson's correlation: 0 – 0.5) among cell lines implying tissue-specificity of TE-mediated gene regulation. Further, for each cell line we collected genes with  $\geq 10\%$  of gene-neighboring regulatory region being TE-derived (TE-density  $\geq 0.1$ ). Majority of the genes enriched with TE-derived regulatory sites were cell line specific. For example, in case of DHS dataset, a total of 12,572 genes were collected with only 98 common to all 14 cell lines. We further observed that TE-regulated genes inferred in a cell line are also related to that cell line specific functionalities. E.g., potential TE-regulated genes in blood cell lines were enriched for immune-related biological processes like interferon production and antigen processing. We conclude that TEs play role in tissue-specific gene regulation leading to tissue-specific functionalities. .

### Natalie Hicks

*Allergic inflammatory phenotype of mast cells is regulated by JNK signaling during differentiation*

Mast cells are tissue resident sentinel leukocytes present in anatomical positions that interface with the external environment. Despite their role in a myriad of biological processes and pathological conditions, the molecular mechanisms that control their development and function remain incompletely defined. Therefore, we sought to examine the role of the JNK node of the MAP kinase (MAPK) signaling pathway in IL-3 mediated mast cell

differentiation. Hematopoietic progenitor cells were obtained from the bone marrow of C57BL/6 mice and cultured into bone marrow derived mast cells (BMMCs) in the presence of the JNK inhibitor JNK-IN-8 for 5 weeks. BMMCs treated with JNK-IN-8—during differentiation and subsequently withdrawn 1 week prior to assay completion—displayed reductions in c-kit expression on the cell surface, which could be first detected at week 3 of differentiation. When allergically activated through IgE and c-kit receptors, JNK-IN-8 differentiated BMMCs exhibited attenuated degranulation as measured through  $\alpha$ -hexosaminidase release. JNK-IN-8 differentiated BMMCs also exhibited alterations in late phase inflammatory mediator secretion, which was characterized by a significant reduction of CCL1, CCL2, CCL3, IL-6, and TNF release. Dual stimulation conditions (IgE+c-kit vs. IgE) revealed that down-regulated c-kit expression contributed to attenuated cytokine secretion in JNK-IN-8 differentiated mast cells. Importantly, normally differentiated and fully mature BMMCs treated with JNK-IN-8 for 1 month following maturation did not exhibit altered c-kit expression or impaired mediator secretion, demonstrating that differentiation is a critical time point where impairment of JNK signaling leads to long-lasting changes to the activation-phenotype of the mature cell.

### SESSION 19

**CHAIR: STACEY WOODS | PLAZA 409**

#### PRESENTER

#### PROGRAM TYPE

Marshall Joseph

Computer Science

Ethan Gibbons

Computer Science

Philip Akoje

Interdisciplinary Humanities

Filip Vlavcheski

Applied Health Sciences

Roopan Dhaliwal

Applied Health Sciences

## **Marshall Joseph**

### *Modelling Emergent Behaviours of Intelligent Agents using Deep Learning.*

Emergent behaviour is behaviour that arises from the interactions between the individual components of a system, rather than being explicitly programmed or designed. In this work, GP is used to control an adaptive game AI, also known as an intelligent agent, whose job is to capture up to twenty-five prey agents in a simulated pursuit environment. For a pursuit game, the fitness score tallies each prey the predator captured during a run. The fitness is then used to evaluate each agent and choose who moves forward in the evolutionary process. A problem with only choosing the best performing agents is that genetic diversity becomes lost along the way, which can result in monotonous behaviour. Diverse behaviour helps agents perform under situations of uncertainty and creates more interesting computer opponents in video games, as it encourages the agent to explore different possibilities and adapt to changing circumstances. Inspired by the works of Cowan and Pozzuoli in diversifying agent behaviour and Chen's work in L-system tree evaluation, a CNN is introduced to automatically model the behaviour of each agent, something previously done manually. This involves training the CNN on a large data set of behaviours exhibited by the agents, which take the form of traces in bitmap images. The resulting model is then used to detect interesting emergent behaviour. When combined with traditional fitness, GP will be able to evolve more innovative and effective agents that can operate in complex environments and perform a wide range of tasks.

## **Ethan Gibbons**

### *Dynamic Vehicle Routing with Pickup and Delivery Using Computational Intelligence*

Within the field of operations research, industries such as public transportation, supply chain management, and delivery services are faced with the problem of efficiently routing a fleet of vehicles in order to serve a set of customers. This optimization problem is known in the literature as the Vehicle Routing Problem (VRP). The dynamic vehicle routing problem with simultaneous pickup and delivery (DVRPSPD) is a variant of the VRP where vehicles are required both to deliver goods to customers and to collect goods from each customer. In this study, We employ computational intelligence paradigms including the genetic algorithm and ant colony algorithm in order to solve 42 publicly available benchmark instances of the DVRPSPD. We compare the performance of these algorithms against each other and against previously reported attempts to optimize for these instances. Using our methods, several new best solutions are found.

## **Philip Akoje**

### *Foucauldian Biopolitics: A Discourse of Nigerian Traditional System*

Foucauldian's "Right of Death and Power over Life," a western theory about the diffusion of power, is based on his study of the evolution of contemporary western societies and how power functions in these societies. Foucault's theory of power was based on the idea that control and domination are not simply the result of those in positions of authority enforcing their will on those beneath them. Instead, he posited that power is more diffuse, less bureaucratic, and hierarchical, and is found in more subtle forms of influence and discursive production. Foucault understood power as a truth-producing capacity, as well as a form of control. This research discusses the application of Michele Foucault's



biopolitics in contemporary Nigerian society, and disconnection because of some traditional practices; these include the killing of twins and other forms of human sacrifice, lack of accurate data on the country's population, extreme poverty, terrorism, and other forms of security challenges. The paper argues that despite the application of Foucault's biopolitics in western societies, it is not fully applicable to the Nigerian political and traditional system.

### Filip Vlavecski

*The rosemary-derived polyphenol, Carnosic acid, stimulates mitochondrial biogenesis and browning in 3T3-L1 adipocytes via AMPK activation*

Adipose tissue is critical in regulating metabolic homeostasis, and its dysfunction in obesity is associated with insulin resistance and type 2 diabetes (T2D). The primary function of white adipose tissue (WAT) is to store energy as lipids while brown adipose tissue (BAT) regulates thermogenesis by dissipating energy in a form of heat. The process of browning involves transdifferentiation of WAT into brown-like or beige adipocytes, which exhibit the same functional properties as BAT. Browning of WAT is an attractive approach against obesity and insulin resistance. In addition, evidence indicate that activation of the energy sensor AMP-activated protein kinase (AMPK) could counteract insulin resistance. The aim of this study is to examine if carnosic acid (CA), induces browning via activation of AMPK in 3T3-L1 white adipocytes.

Lipid accumulation, mitochondrial density, and browning markers such as uncoupling protein-1 (UCP-1) and peroxisome proliferator-activated receptor gamma coactivator-1 alpha (PGC-1) levels were assessed using Oil-O-Red (ORO), MitoTracker Red, immunoblotting and immunocytochemistry.

Microscopic investigation and ORO stain

revealed that CA reduced the lipid content, giving a rise to a brown-like phenotype. Next, CA increased mitochondrial density and protein expression of UCP-1 and PGC-1 in 3T3-L1 adipocytes. Most importantly, pre-treatment with compound C, prevented the CA-induced reduction in lipid accumulation, and mitochondrial density and blocked the CA-induced increase in UCP-1 and PGC-1 expression.

This study demonstrates that CA potently stimulates browning in adipocytes via AMPK-dependent mechanism. Future in vivo studies are required to fully examine the effects of CA.

### Roopan Dhaliwal

*Examining the Effects of BDNF and Exercise Training on Adipose Tissue Browning*

Introduction. Exercise activates white adipose tissue (WAT) mitochondrial biogenesis and browning. Exercise-induced neurotrophin, brain derived neurotrophic factor (BDNF), has been identified as a possible mediator of WAT browning. This study aims to compare the effects of aerobic exercise and BDNF treatment on markers of WAT browning.

Methods. Male C57BL6 mice were assigned to four groups (n=12/group): 1) sedentary (SED); 2) endurance training (ET; treadmill running 1 hour/day, 5 days/wk); 3) BDNF (0.5 mg/kg-bw subcutaneous injection, 5 days/wk); 4) endurance training and BDNF (ET+BDNF). Body mass and food intake were recorded weekly. At conclusion of the 8-week intervention energy expenditure was recorded for 24-hours. Serum, inguinal (iWAT) and epididymal (eWAT) depots were collected for histological and protein analyses.

Results. BDNF treatment resulted in lower body mass and decreased food intake compared to other groups. Energy expenditure and serum BDNF were higher in all treatment groups

compared to SED. BDNF-treated mice had a lower eWAT mass while ET had lower eWAT and iWAT mass. In iWAT, ET resulted in a higher content of mitochondrial complexes involved in oxidative phosphorylation and UCP1 content, lower adipocyte area and higher multilocularity; BDNF treatment resulted in higher mature BDNF, proBDNF, PGC1 content, and lower adipocyte area.

**Conclusion.** This novel work demonstrates that BDNF contributes to changes in energy expenditure that may be due to alterations in adipocyte metabolism. BDNF alone does not explain the full extent of ET adaptations.

<b>SESSION 20</b>	
<b>CHAIR: HYACINTH CAMPBELL   PLAZA 410</b>	
<b>PRESENTER</b>	<b>PROGRAM TYPE</b>
Laurel Donison	Child and Youth Studies
Brianna Anderson	Child and Youth Studies
Simranjeet Kaur	Educational Studies
Emily Bagshaw	Social Justice and Equity Studies
Taylor Manuge	Applied Disability Studies

**Laurel Donison**

*Children perspectives and experiences of their outdoor play space at a child care center*

Research shows that outdoor learning and play is important in many different ways, therefore access to the outdoors and opportunities for play needs to be available to all children (Lannoy et al, 2020). Child care centers play an important role in supporting opportunities for outdoor play because children spend many hours a week in these settings. Learning about children’s lived experiences and perspectives of outdoor play spaces in their early learning childcare environments is important because, as Merewether (2015) states, “children are the in users of such spaces” (p.99). My research

explores children’s perspectives and experiences in their outdoor play space at a child care center in a lower-socioeconomic neighbourhood in the greater Toronto area. In my project I use a relational ethnographic approach and art-based methods which includes photography, drawing, interviews, and field notes. In this presentation I will provide detail on my methods and approach to research with children. I will also share some of my findings (from Nov 2022 to Feb 2023) to provide insight into the children’s experiences throughout the winter season.

**Brianna Anderson**

*Best Practices and Clinical Recommendations for Adapted Group Cognitive Behaviour Therapy to Treat Anxiety and Obsessive Compulsive Behaviours in Children with Autism Spectrum Disorder*

Many children with high functioning autism spectrum disorder (ASD) experience mental health challenges, such as obsessive-compulsive behaviours (OCBs) and anxiety. While several promising studies have evaluated adapted group cognitive behaviour therapy (CBT) with and without behaviour analytic strategies for treating OCBs and anxiety, a synthesis of best practices for clinical implementation is sorely needed. The aim of our paper is to provide clinicians with a cohesive summary of best practices to implement group-based adapted CBT to children with ASD and anxiety and/or OCBs. We synthesize existing best practices across four areas: (a) consent, assent, and child voice; (b) compassionate care; (c) parent involvement; and (d) ASD adaptations (e.g., simplifying instructions, providing structure and predictability). Next, we provide 15 recommendations that may be implemented by frontline clinicians. Finally, we present examples from empirically supported adapted CBT programs for children with ASD to further illustrate these recommendations.

## **Simranjeet Kaur**

### *Traditional play practices of children in an urban slum in New Delhi*

Play's many benefits for young children's development have been cited for decades (Barnett, 1990), with research (Bergen, 2002) suggesting that play supports children's early learning and development. Children, when playing spontaneously, have opportunities to explore, experiment and engage in problem-solving activities, which is critical for knowledge construction (Early Childhood Education Curriculum Framework, 2013). Given the variety of play across different cultures worldwide, it becomes imperative for researchers to document these diversities and use them in the classroom. This presentation draws on the findings of an ethnographic study conducted in a migrant slum in New Delhi to document and elaborate on young children's traditional play practices and games. The study is set in the framework of funds of knowledge (Moll et al., 1992) that considers children's play practices as the historical accumulation of cultural assets from their community. These traditional play practices use materials from the environment, such as old tyres, seeds, twigs and dried leaves and allow children to create their own toys and games. The findings provide evidence that these play practices foster children's literacy development, such as their vocabulary and numeracy skills, including number sense and one-to-one correspondence (Fisher et al., 2013). This has implications for educators to employ play-based to develop children's creativity and critical thinking skills.

## **Emily Bagshaw**

### *The Settler Colonial History of Modern-Day Education*

In 1904, a 7-month international exposition called the Louisiana Purchase Exposition was held in St. Louis, Missouri. This Exposition aimed to educate the public about Western ideals of progress and how settlers were developing and colonizing Indigenous peoples and lands for their own good. The Exposition was thus called the "University of the Future" by the president of Colorado College, an educational institution that still exists today (Parezo & Troutman, 2001, p. 5). The final section of the Exposition's anthropological exhibit was a government-sponsored 'Indian school' that forbid Indigenous children from practicing their cultures in favour of Western ideals of progress and civility, all under the guise of education. This presentation will discuss the often-hidden history of education in Canada and the United States and its use to promote white supremacy and marginalize Indigenous peoples and communities. Through a Métis feminist theoretical framework, this presentation will investigate the history of modern education, from the founding father of modern-day education, John Locke, to Canadian residential schools, to present-day educational practices, to explore the settler colonial ideologies that continue to structure our educational systems. Conference participants who attend this presentation will have the opportunity to learn how and why our educational systems are foundationally structured to fail Black, Indigenous, and people of the global majority. Just as the 1904 Louisiana Purchase Exposition championed Western ideals of progress and civilization, so too do our modern educational systems continue to champion such eurocentric ideals.

## Taylor Manuge

### *A Comparison of Two Training Methods for Teaching Acceptance and Commitment Therapy/Training Concepts*

Acceptance and Commitment Therapy/Training (ACT) is a third wave behavioural intervention (Hayes, 2004), adopted by behaviour analysts (BAs), that teaches people to engage in six core processes of ACT to improve psychological flexibility. To work within their scope of practice, BAs must ensure that their use of ACT meets the required dimensions of Applied Behaviour Analysis (ABA). This study aims to pilot a protocol for comparing two methods for training graduate students to reliably identify two ACT processes from speech samples. A logical analysis was completed in a pre-experimental phase, to determine two ACT concepts that are of relatively equal discrimination difficulty to serve as training targets (fusion/defusion and lack of present moment awareness/present moment awareness). The current study will utilize an adapted alternating treatment design (AATD) with baseline and maintenance phases to compare the relative efficacy and efficiency of two training procedures (direct trainer-led discrimination training and self-paced, mastery-based training) for teaching graduate students to identify the processes from speech samples. If graduate students can be taught to accurately identify the two ACT processes from speech samples, findings may inform how to best train others who implement ACT interventions (e.g., clinician and caregiver facilitators) to identify processes which may increase the effectiveness of ACT interventions.

## SESSION 21

**CHAIR: DANILO OLIVEIRA | PLAZA 411**

### PRESENTER

### PROGRAM TYPE

Karl Grantham

Computer Science

Andreas Dimopoulos

Applied Disability Studies

Nicholas Aksamit

Computer Science

Madiha Ahmed

Mathematics and Statistics

Jordan Masi

Applied Health Sciences

## Karl Grantham

### *AI Enabled Drug Design and Side Effect Prediction Powered by Multi-Objective Evolutionary Algorithms and Transformer Models*

The challenge of drug design is finding new, therapeutically useful, chemical compounds within the massive search space of an estimated  $10^{60}$  valid molecules. As a result, it may take 10 to 16 years and US\$800 million to US\$ 1.8 billion to discover and develop a new drug. This is why modern approaches use Machine Learning (ML) algorithms to aid in drug discovery. Within this field there are many different applications of the ML techniques, targeting different areas of the drug development pipeline. This work focuses on multi-objective drug design and side effect minimisation. In multi-objective drug design, the goal is to find well-rounded drugs by optimising several properties at once, rather than one at a time. This allows us to develop drugs that are not only easy to synthesise, but also non-toxic, and possessing any number of desired chemical properties. Another area covered by this work is side effect minimisation. Here, the approach is to use ML techniques to predict the adverse effects a drug might have based on its chemical structure. The idea being that if these adverse effects can be predicted at this early stage, drug discovery can be oriented towards side-effect free drugs. The potential impact of this research is quite significant. One of the main reasons why

drug development is so time consuming and expensive is due to late-stage failures in the drug development process. By helping develop well-rounded, adverse effect free drugs, with desired chemical properties, the drug development process can be considerably expedited.

### **Andreas Dimopoulos**

#### *Evaluating the Impact of Psychotropic Medication on the Function of Challenging Behaviour in Persons with Intellectual and Developmental Disabilities*

Demographic research suggests that up to 50% of persons with intellectual and developmental disabilities engage in behaviour that can be described as challenging. That is, behaviours that interfere with skills acquisition, access to services, and may increase the risk of injury to self or others (e.g., aggression, self-injury, property destruction). Psychopharmacological interventions represent an oft applied approach to reduce challenging behaviour. Unfortunately, efficacy research on this topic is relatively limited, including applied behavioural pharmacology research aimed at evaluating the behavioural effects of psychotropic medication in this clinical population (Cox & Virués-Ortega, 2016).

In behaviour analysis, challenging behaviour is perceived as ‘learned’ behaviour. That is, the individual learns the behaviour over time because their interaction with the environment produces a ‘desired’ outcome. The challenging behaviour, thus, serves a specific purpose (i.e., behaviour function). To identify behaviour function, behaviour analysts often conduct a functional analysis (FA) to systematically examine the relationship between challenging behaviour and environmental events (Hanley, 2012). Theory around how psychotropic medications may be affecting behaviour suggests that FAs may facilitate uncovering drug-behaviour interactions. Thus, the proposed study examined

the behavioural effects of clinically-indicated psychotropic medication changes across six adults with IDD who engage in challenging behaviour and were taking psychotropic medication as their primary treatment element. Repeat FAs were conducted across psychotropic medication conditions, including psychotropic PRN (as needed medication) conditions, to monitor changes in behaviour function and rate. Clinical implications, limitations, and future directions are discussed.

### **Nicholas Aksamit**

#### *Combining the Power of Generalist Attention Models and Many-objective Computational Intelligence Algorithms for Drug Design*

AI-based approaches have been recently applied to in silico drug design. However, existing approaches and protocols consider the ADMET (absorption, distribution, metabolism, and excretion - toxicity in pharmacokinetics) properties of drug candidates in a later stage of drug design processes. To address this challenge, in this research, two objectives are pursued: (1) exploration of Transformer-based models for molecular property (ADMET) prediction and generation; and (2) multi- and many-objective computational intelligence algorithms will be applied in the continuous latent space produced by the Transformer for generating optimal drug candidates that fulfill ADMET and other essential properties in parallel.

### **Madiha Ahmed**

#### *Transformer-Based Generation of De Novo Multi-Target Drugs for Cancer*

Cancer is consuming many lives worldwide annually. Even with chemotherapy reducing the rate of cancer, there are various side-effects associated with it including loss of appetite, fatigue and hair loss. Therefore, Cancer Research has switched to anti-cancer drugs to greatly eliminate these side-effects. Cancer

has many associated macromolecules, called proteins, in the body. Each contributes to the progression of the disease. To inhibit cancer activity, a drug is designed for each protein to bind to their respective proteins. However, it is inconvenient to consume many medicinal pills as this can cause cancer patients to develop resistance towards them. Therefore, the essence of my research focuses on developing multi-target drugs, where one drug can modulate multiple cancer targets simultaneously. This approach has shown to enhance the therapeutic effect. With respect to methodology, cancer research has evolved to Artificial Intelligence (AI) driven drug discovery, that has shown promising results in terms of time, money and accuracy in comparison to prior traditional approaches. It has steered cancer research towards generative chemistry, a field where AI models are trained on existing drug databases to generate novel drugs with an improved safety profile. Although, this method has been implemented for recommending one drug – one target solutions, it has never been explored for poly-pharmacological compound design. In my thesis, the current state-of-the-art generative models called transformers will be explored for generating potential multi-target drugs for cancer. Transformers, with their self-attention mechanism, have shown to improve the validity and chemical feasibility of the designed molecules.

are highly permissive to ZIKV and are potential early therapeutic targets during infection. Polyphenols are bioactive compounds that have been found to exert anti-inflammatory and antiviral activities against various flaviviruses, including dengue, Japanese encephalitis, and ZIKV. Therefore, the purpose of this study is to investigate the signaling cascades induced during ZIKV infection and evaluate the antiviral activity of carnosol and carnosic acid, polyphenols derived from rosemary extract, in human dermal fibroblasts. Plaque assays will be performed in HFF-1 and Vero cells to determine polyphenol antiviral activity. Western blotting will be used to quantify protein signaling during ZIKV infection and identify pathways modulated by polyphenols. Co-cultures will be established to examine fibroblast-mast cell (LAD2) interactions and measure cytokine/chemokine gene expression via qPCR and corresponding protein release via ELISA following ZIKV infection. We hypothesize that polyphenol treatment will successfully impair ZIKV replication in human dermal fibroblasts, through modulation of cell signaling and subsequent secretory pathways that contribute to viral dissemination. The proposed study will enhance our mechanistic understanding of the antiviral activity of polyphenols and expand our knowledge of ZIKV pathogenesis and early immune responses that occur in response to infection.

### Jordan Masi

*Investigating the Antiviral Effects of Carnosic Acid and Carnosol During Zika Virus Infection*  
Zika virus (ZIKV) is a mosquito-borne virus that is associated with Guillain-Barré syndrome in adults and congenital malformations in newborns. Despite its high infectivity and mortality rate, there are currently no approved antiviral drugs to prevent or treat ZIKV infection. Fibroblasts, skin cells abundant at the site of viral transmission,

## SESSION 22

CHAIR: TARANJOT DHILLON | GSB 307

### PRESENTERS

### PROGRAM TYPE

Matthieu Dagenais	Applied Health Sciences
Mishka Blacker	Applied Health Sciences
Melanie Burgess	Applied Health Sciences
Julia Lavalle	Kinesiology
Naomi Vos	Management

### Matthieu Dagenais

*Application of the Embodiment Model of Positive Body Image and Physical Activity Across Age, Gender and Weight Status*

This study examined differences in multidimensional indicators of positive body image (PBI; functional appreciation, body appreciation, body responsiveness and authentic body pride) based on age, gender and body mass index (BMI) classification, their relationship to physical activity (PA) and tested the embodiment model in a diverse sample. A total of 4517 participants (age 18-86 years) completed demographic information and measures of PBI and PA. A total of 978 participants (21%) had complete data (51% women). Participants were classified by gender as male or female and into one of four age groups: young (18-29 years), middle (30-44 years), middle older (45-64 years), and older ( $\geq 65$  years) adults. BMI was calculated from body mass (kg) and height (m<sup>2</sup>), and participants were classified as normal weight, overweight, or obese. All PBI measures were weakly correlated with embodying and non-embodiment PA but embodying PA were more strongly associated with PBI than non-embodiment PA. Adults who were obese scored lower on PBI measures than adults who were overweight or normal weight status. Women scored higher than men on functional appreciation, but men scored higher on body

appreciation and body responsiveness. Older adults scored higher on functional appreciation and body appreciation. There was a direct effect of total embodying PA on PBI indicators as well as an indirect effect of embodying PA through embodiment and self-objectification on PBI. This study provides evidence regarding social identity differences on PBI and provides support for the embodiment model in diverse populations.

### Mishka Blacker

*Assessing the Validity and Distinctiveness of Mental Toughness in High-Performance Sport*

Mental Toughness is a psychological construct that has been highly valued and pursued by sport participants without a collective understanding of what it is or how it differs from similar constructs (Anderson, 2011; Burns et al., 2022; Gucciardi, 2020). While there is empirical support for the relationship between Mental Toughness and both performance and psychological functioning across a range of competitive contexts (Gucciardi et al. 2015; Lin et al., 2017; Stamatis et al., 2020), scholars who are interested in developing and/or researching Mental Toughness are faced with the challenge of understanding its conceptual boundaries in addition to the conceptual differences between various models and measures that are still in use (Farnsworth et al., 2021; Gucciardi, 2020). This study examined the convergent and divergent properties of the Mental Toughness Index (Gucciardi et al., 2015) and the conceptually similar constructs of Grit (Grit-O; Duckworth & Quinn, 2009), Resilience (CD-RISC; Connor & Davidson, 2003) and Hardiness (DRS-15; Bartone, 2008) in a sample of 197 high-performance athletes. Analyses showed that the data was a poor fit to the bi-factor solution that Price (2019) found with these measures in a non-athletic sample (CFI = .740; RMSEA = .056, SRMR = .074). A series of Canonical Correlations revealed that none of the models for Grit, Resilience, or Hardiness correlated with the MTI

in ways that supported their factor structures. Based on these results, it appears that Mental Toughness in athletes is a distinct, but related, construct to those of Grit, Resilience, and Hardiness.

### Melanie Burgess

#### *Examining the Contribution of Self-Compassion on Performance in a Putting Task.*

Within the sport literature, equivocal evidence supports the link between self-compassion and performance. Further, the bulk of this research has been conducted using exclusively self-rated performance and female athletes. Based on this understanding, the purpose of this study was to examine the contribution of self-compassion on performance in a putting task in male golfers. Using a cross-sectional design, male golfers ( $N = 87$ ,  $M_{age} = 54.94$  years;  $SD_{age} = 15.37$  years) completed the Self-Compassion Scale - Athlete Version immediately prior to the putting task. The putting task consisted of 15 consecutive putts from 7 feet on an outdoor practice putting green. The number of putts holed served as an objective indicator of performance. On average, participants holed an average of 7.77 ( $SD = 3.15$ ) putts. Results from the linear regression analyses showed that self-compassion ( $\beta = -0.171$ , 95% CI  $-2.12, 0.23$ ,  $p = 0.11$ ;  $f^2 = .03$ ) did not significantly predict total putts holed. Overall, conclusions from this research offer evidence that the psychological resources of self-compassion did not impact objective performance on the putting task in adult male golfers. Greater insight into whether, and if so under what conditions, self-compassion is associated with performance in sport warrants additional empirical scrutiny. Funding: Match of Minds.

### Julia Lavalle

#### *"Put me in coach": Protective Outcomes of Sport Participation*

Intuitive eating is an approach to eating which fosters positive mental and physical health outcomes. Positive body image (e.g., body appreciation), as outlined in the body acceptance model of intuitive eating, can influence engagement in intuitive eating. This study quantitatively examined differences in positive body image and intuitive eating as outlined in the acceptance model of intuitive eating across athlete status (competitive, recreational, and non-athletes). 106 participants identified as competitive athletes, 107 as recreational athletes, and 98 as non-athletes. All participants completed an online questionnaire inquiring about their engagement with physical activity, body image (body appreciation, focus on functionality of body, body acceptance by others), intuitive eating, and demographic information. The data was analyzed using a MANOVA to examine differences on body appreciation, functionality focus, body acceptance by others, and intuitive eating across athlete status, controlling for age, physical activity, and body mass index. The MANOVA showed an overall significant effect for athlete status ( $p = .021$ ). Overall effects for gender ( $p = .069$ ), and the interaction between athlete status and gender ( $p = .149$ ) were not significant. A one-way ANOVA was then conducted to examine group differences on body appreciation. The ANOVA was significant ( $p = .004$ ). No other outcomes were significant. Pairwise comparisons revealed that competitive athletes and recreational athletes reported significantly higher body appreciation compared to non-athletes but did not differ from each other. Overall, body appreciation was higher in athletes regardless of competition level. Future research can examine differences in body appreciation through other sport specific differences, such as individual versus team sports, aesthetic vs non-aesthetic sports, or extreme sports.



## Naomi Vos

### *Sex Differences in Sympathetic Neuronal Discharge Patterns During Isometric Handgrip Exercise in Humans: A Study Proposal*

The sympathetic nervous system communicates with our blood vessels to maintain blood pressure homeostasis during physiological stress. To increase sympathetic outflow, the central sympathetic nervous system relies on two main strategies: 1) there is an increase in the firing rate of low-threshold neurons that are active during rest, and 2) there is recruitment of higher-threshold neurons that were previously silent. Recent work has highlighted considerable sex differences in sympathetic neurocirculatory control. For example, during exercise, females demonstrate smaller increases in both sympathetic activity and blood pressure compared to age-matched males. Whether these sympathetic neuronal strategies are affected by biological sex remains unknown. Accordingly, this study aims to investigate sympathetic AP discharge, recruitment, and latency strategies in humans during rest and exercise. This study will test the hypothesis that compared to females, males will demonstrate increased firing of already-active action potential (AP) clusters and increased recruitment of previously silent, larger, and faster conducting AP clusters during isometric handgrip exercise and post-exercise circulatory occlusion. The impact of biological sex on sympathetic AP latency patterns will be explored. Significance: This study will generate new knowledge regarding how the human brain and a branch of our nervous system, called the SNS, regulates the human cardiovascular system and if it is affected by biological sex.

## SESSION 23

**CHAIR: AURORA BATTIS | GSB 308**

### PRESENTER

### PROGRAM TYPE

Shuai Gong	Accountancy
Luv Khandelwal	Management
Mina Monshi	Management
Yu cao	Business Economics
Jobandeep Sethi	Management

## Shuai Gong

### *Does Accumulated Other Comprehensive Income “Accumulate” Risk?*

This study links Accumulated Other Comprehensive income (AOCI) with future crash risk in the banking sector. AOCI accumulates current and previous Other Comprehensive income (OCI). We focus on AOCI because, first, it is the accumulation of different market risks that banks are exposed to, and second, it contains information about accounting discretions and banks’ opacity. Using a sample of COMPUSTAT banks from 2006 to 2020, we hypothesize and test whether the market risks and managers’ discretion contained in AOCI have predictive power on future crash risk. By comparing the results of banking and non-banking samples, we find that AOCI is predictive of stock price crash risk in one-year-ahead for banking sector, whereas this association does not exist for non-banking firms. We further find that the association between AOCI and future crash risk in the banking sector is more pronounced when banks have more extreme OCI (large positive OCI or negative OCI) or medium AOCI. For additional tests, we find that this association is more pronounced when banks have higher opacity and lower LLP-based earnings management (therefore possible higher transaction-based earnings management). At last, we find that the significant association

between AOCI and future crash risk only exists for commercial banks, not for savings banks. The study contributes to a better understanding of the risk relevance of OCI and the unique effects of financial reporting on crash risk in the banking sector.

### Luv Khandelwal

#### *A Predictive Analytics Approach for Ventilators and other Critical Medical Resources*

The COVID-19 pandemic wrecked an avalanche of resource management disaster on many countries. Unnecessary deaths occurred just because of lack of resources, especially ventilators. One major unforgettable lesson we can learn from the COVID-19 disaster is that proactive evidence regarding required number of ventilators can save a huge number of lives globally in future pandemics. In this study, we aim to address this need and develop a predictive model for ventilators and other critical medical resources for different variants of COVID-19 with higher severity rates. Using open-source data from ‘Our World in Data’, we employ an ensemble of existing time series analysis techniques and missing data handling strategies to predict ventilators at a population level. Further, building on the initial results, we use regression analysis for situation of increased severity (e.g., increased deathrate) during a pandemic. The proposed modelling framework was further extended to address prediction of other critical medical resources. A full-scale application of the proposed modelling framework was demonstrated for India, Nigeria, Uruguay and Poland as representative cases of different scenarios. This thesis contributes to the existing body of knowledge and methods for predicting ventilators and other critical medical resources, which are mostly addressed at local settings. More importantly, the proposed framework can be used to predict resources for COVID-19 like pandemics for any global population level where ICU patients data is scant.

In addition to the methodological contribution, this thesis demonstrates the role of evidence-based decision-making in healthcare disaster recovery plan.

### Mina Monshi

#### *Understanding Employee Attrition Factors in the Information Technology Sector and Their effects on Financial and Total Rate of Companies: A Text Analytics Perspective*

Recently online reviews on websites have provided a precious source of data for businesses. Some of these websites collect customers’ opinions about products and services provided by these businesses, some others such as Glassdoor and Indeed are the websites on which the employees of these businesses write their opinion about their company. Although this data source is usually used by job seekers to find proper job opportunities, it has been used recently by researchers and business owners for discovering the employees’ satisfaction and dissatisfaction factors. In this study we collected 825129 comments people left on Glassdoor and Indeed websites about their current or previous companies in IT section. First, we have applied Latent Dirichlet Allocation (LDA) topic modelling technique to find out the most important factors which are mentioned in the comments. We recognized that “Personal Development”, “Financial and Professional Development” and “Cultural Development” are the factors mentioned by employees in IT companies. Then, by applying the sentiment analysis technique we have tried to figure out the polarity of comments about these found factors. The trend of these factors in terms of their importance and polarity were tracked through the time. The assessment of current and former employees’ comments showed that these two groups have some behavioral differences which can help IT companies to unravel the reasons of their recent high attrition rate. Further analysis showed that there is a strong relationship between the

importance and polarity of these factors and financial and ranking state of IT companies.

### **Yu Cao**

#### *Research Report*

This project's study subject is the influence of college graduates working as village administrators in rural China. This study will investigate whether college graduates have a beneficial or negative effect on the local economic and social development of rural China.

### **Jobandeep Sethi**

#### *Improving Patient Flow and Operational Efficiency of Emergency Rooms using a Discrete Event Simulation Approach*

Emergency rooms (ERs) are essential components of the healthcare system, but in recent times, ERs across Canada have been experiencing extended emergency department length of stay (EDLOS), patients leaving without being seen, and overcrowding. The purpose of this research is to address these issues by utilizing a discrete event simulation approach to improve patient flow and operational efficiency. We propose two policies and interventions that can help alleviate the pressure on ERs, improve operational efficiency, and reduce complications associated with delayed treatment. To develop the simulation model and test the impact of proposed strategies, we used Rockwell Arena 16 and factored in real-life factors associated with ERs such as arrival rates, service times, and patient acuity levels. Our findings indicate that intervention strategies, such as acute medical unit and On-call physician, can reduce the number of patients leaving without being seen, hence reducing the complications associated with delayed treatment and addressing overcrowding in emergency rooms. Therefore, the proposed policies have the potential to improve patient flow and operational efficiency in ERs. These findings have significant implications for healthcare facilities as they can utilize this simulation model to test various resource planning strategies and make informed decisions to improve patient healthcare experiences.

# POSTER VIEWING SESSION

11 A.M. - 12 P.M. | CAIRNS BUILDING 3<sup>RD</sup> FLOOR HALLWAY

POSTER PRESENTATIONS		
#	PRESENTER	PROGRAM
1	Macgregor Allen	Business Economics
2	Kirina Angrish	Applied Health Sciences
3	Michelle Bomberry	Educational Studies
4	Kassie Burns	Sustainability
5	Elena Campbell	Geography
6	Haleigh Cumiskey	Applied Health Sciences
7	Zahra Fouladgar	Management
8	Joceline Gaffan	Child and Youth Studies
9	Madison Gagnon	Applied Health Sciences
10	Majuriha Gnanendran	Applied Health Sciences
11	Paige Groot	History
12	Felicidy Hocking and Kira Prince	Child and Youth Studies
13	Alexandra Hutchinson	Applied Health Sciences
14	Jordan Isnor	Political Science
15	Maya Karanouh	Interdisciplinary Humanities
16	Zahra Karimi	Applied Health Sciences
17	Anthonie Korstanje	Business Economics
18	Tamar Kritzer	Applied Health Sciences
19	Shivani Mall	Applied Health Sciences
20	Steven McKinnon	Business Economics

POSTER PRESENTATIONS		
#	PRESENTER	PROGRAM
21	Alanna McNulty	Computer Science
22	Kaitlyn Michener	Child and Youth Studies
23	Alicia Miller	Child and Youth Studies
24	Shealin Murray	Psychology
25	Alexis Napper	Applied Health Sciences
26	Silvana Nguyen	Biomedical Sciences
27	Nurunnahar Noushin	Business Economics
28	Nadine Ott-Peon	Biotechnology
29	Veronica Panchyshyn	Child and Youth Studies
30	Shamae Quinquito	Biomedical Sciences
31	Md Ata E Rabbi	Management
32	Niruba Rasuratnam	Applied Disability Studies
33	Matthew Rollins	Psychology
34	Wenting Rong	Education
35	Ruchika Suri	Child and Youth Studies
36	Diana Tosato	Biological Sciences
37	Nina Tran	Management
38	Vanessa Turchio	Psychology
39	Melody Rebecca Van Massenhoven	Political Science
40	Kailey Webster	Applied Health Sciences
41	Breyer Woodland	Biotechnology
42	Umar Yousufy	Applied Health Sciences

## Macgregor Allen

### *International Comparison of Demand for Carbon Premiums on Carbon Intensive Stock Between U.S. and the Top Economic Performers in Europe (UK, France, and Germany)*

The objective of this research is to analyze the relationship between a firm's carbon emissions and their stock return, and to observe the difference in this metric across countries. Using time series data from the Carbon Disclosure Project (CDP) and data on stock returns from Bloomberg Market Terminal, a comparison will be made on the adverse effect of high carbon emissions (measured in tons of CO<sub>2</sub>) on stock returns for comparable firms across countries controlling for industry and, where required, seasonal effects.

## Kirina Angrish

### *The Mediating Role of Body Appreciation between Prenatal Yoga and Depression Among Canadian Pregnant Women*

Empirical evidence shows prenatal yoga effectively improves mental health outcomes, particularly depressive symptoms (i.e., persistent low mood with the onset of pregnancy). Research suggests prenatal physical activity elicits greater positive body image (i.e., overall love, respect, and appreciation for the body) and reduces depressive symptoms. However, very few studies have examined the mechanisms and temporal effects of positive body image improvements on depressive symptoms in the context of pregnancy. This study will determine if prenatal yoga increases body appreciation, consistent with the embodiment model of positive body image, leading to fewer depressive symptoms across pregnancy. This randomized controlled study will recruit N=90 Canadian pregnant women in their first or second trimester who (1) do not have a contraindication

to exercise, (2) are at least 18 years old, (3) can understand English, (4) have internet access. Women will be randomized into either the (1) online yoga or (2) waitlist control group. The yoga group will participate twice weekly in a 12-week synchronous prenatal yoga program led by a certified prenatal yoga instructor. All participants will complete measures of (a) physical activity, (b) body appreciation, (c) embodiment, (d) self-objectification, and (e) depressive symptoms at baseline, week 6 and week 12. Results will allow researchers to understand mechanisms of yoga on prenatal depressive symptoms and will allow clinicians to create effective prenatal yoga programs to improve maternal mental health.

## Michelle Bomberry

### *Ēdwadewáyęsta Ohwējádeh: We Learn from the Earth*

Building on the 2015 Student Success Research Consortium report that outlined areas impacting Six Nations of the Grand River Territory educational student success, those areas included; intergenerational trauma, parenting, curriculum, cultural and language. Six Nations of the Grand River Territory is Canada's biggest First Nation with six distinct languages and nations, plus two government bodies (confederacy and elected). Each nation is grounded in the Creation Story and vitally connected to the Earth (Land). It was important to pursue continued research that validated and valued Indigenous voices of change. Through listening to the stories of knowledge keepers, educators, children, and parents, at a Six Nations immersion school, they shared historical, cultural, educational knowledge – both traditional and contemporary, and articulated a paradigm shift needed for a culturally based, strong Ogwehoweh (Original People) decolonized education structure. Over the course of six months, seven conversations and 10 children's

illustrations were conducted with Six Nations members. The research approach was informed by the Kuswenta or the Two Row Wampum, whereby Indigenous and non-Indigenous ways of knowing work parallel.

The strength of the community and connection to nature was a core finding and is clearly depicted in the pictures the children illustrated. This presentation focuses on three main themes that emerged from the children's photos and supported by the adult conversations: the innate connection to Mother Earth, the significance of authentic language-land-culture experiences for learning, and how reciprocal relationships and responsibilities between people and nature can be nurtured.

### **Kassie Burns**

#### *Building Engagement and Education Strategies in Environmental Community Science*

The explosive popularity of community/citizen science (CS) based projects highlights the importance of public recruitment on producing high quality project outcomes. Use of the public in environmental science has attributed to two main areas: data collection to establish baselines or monitor projects and for input of individuals experiential backgrounds as context experts to help governance practices for plans/policy development. Although much research exists to aid with recruitment and participation, less research has investigated strategies to maximize engagement levels during projects and approaches to learning opportunities. The purpose of this research is to design a framework to help organizations and governmental agencies learn best practices for engaging and educating individuals participating in community science. An inductive content analysis will be conducted to explore key themes within the literature. This review will build off current research to derive strategies that can be used to create foundations

for an engaging community science experience and understand the impact of education in these projects.

### **Elena Campbell**

#### *The Public Transit Experience of Female-Identifying Students at Brock University*

The purpose of this study was to investigate how female-identifying students navigate public transit during their time at Brock. Previous research highlighted the need for this study as research findings identified the unique challenges and concerns that post-secondary students encounter while navigating the Niagara Region. Female-identifying post-secondary students face obstacles and barriers while operating local and regional transit systems. This research includes the survey results from undergraduate students about their experiences and levels of ease of travel with public transit for the purposes of getting to school, work, shopping, and social activities. The findings of this research suggest that female-identifying students use public transit to travel to campus which is serviced by many direct routes. When travelling to work, female-identifying students avoid and prefer to use other modes of transit, such as driving in a personal vehicle, since trips to work are typically longer, more complicated, and outside the hours of peak transit service. Respondents stated that they adapt how they travel and attend shopping centres and social activities due to being reliant on public transit. Overall, female-identifying students face safety concerns such as avoiding travelling alone and being hyperaware of their surroundings, particularly at night. Respondents were satisfied with current public transit systems while recognizing that small changes can be implemented to make public transit more efficient and comfortable for riders with unique needs. These transit users identified many potential improvements that can be used

to improve the experience of using public transit while in post-secondary school.

### **Haleigh Cumiskey**

*Hunger, its effects on academic performance, and the moderating role of social support in Canadian youth*

1.2 million young Canadians experience hunger on a regular basis. Youth who experience hunger are more likely to underperform in school which in turn can lead to negative outcomes and trajectories that impact their long-term health, well-being, and ability to succeed in adult life. Public health interventions require an evidence base to address this phenomenon. My thesis will therefore provide observational epidemiological data to describe whether social supports, as a potential point of intervention, act as modifiers of relationships between hunger and the relative ability of adolescents to perform well in school. I will examine the hypothesis that the relationship between hunger and academic performance can be moderated by the degree of social support experienced by young people. The thesis will be conducted using the 2018 cycle of the Canadian Health Behaviour in School-aged Children (HBSC) study. Results from this study will be important theoretically and also provide foundational evidence in support of integrated efforts to support youth in academic and community settings.

### **Zahra Fouladgar**

*How Virtual Tourism Environment Influences Purchase Intention: The Role of Mental Imagery and Affective Forecasting*

Emergency rooms (ERs) are essential Given the continuous advancement of information technologies in the presentation of online products, tourism practitioners have already increased the use of technology-mediated preview modes: web-based tours (2D) and virtual reality (VR). These digital technologies

have influenced the way through which tourists search, book, plan, and experience travel (Beck & Egger, 2018). When planning, tourists mentally simulate future trips, visualize themselves in related events, and predict how they would feel (Karl et al., 2021), which is called affective forecasting. Affective forecasting motivates behaviour, especially future goals that guide decision-making (Karl et al., 2021; Sjøstad et al., 2020). This is undoubtedly true in the case of travel experiences, especially hotel stays, as they are intangible, impossible to judge in advance (Karl et al., 2021), experiential (Kang, 2020) and psychologically distant (Jia et al., 2021).

The objective of this study is to compare the effectiveness of VR and 2D as marketing tools in the tourism industry through affective forecasting and purchase intention. This study has two main research aims. Firstly, we aim to investigate whether a higher level of mental imagery (resulting from VR) is more effective than a lower level of it (2D) in a tourism marketing context. Using an experimental method, we will evaluate this effectiveness through the predicted dominance, predicted pleasure and predicted arousal, and purchase intention toward the hotel. Secondly, this study aims to introduce the boundary condition of psychological distance on the relationship between mental imagery and affective forecasting.

### **Joceline Gaffan**

*An Investigation on Parental Physical Activity Behaviours that Affect Children with and without Developmental Coordination Disorder*

This proposed study examines how parental physical activity affect children's physical activity behaviours. The investigation will come from the Coordination and Activity Tracking in Children (CATCH) study, to understand how parental physical activity affects differ between at-risk for developmental coordination (pDCD) and typically developing children (TD). It is critical to examine the parental PA behaviours

to understand how this impacts pDCD and TD children PA behaviours. Furthermore, parental PA as a predictor for child's PA will be examined as this has heavily focused on TD children, and little to no focus on the pDCD and DCD population. There is less research regarding this topic and is the reason this study is crucial to the DCD community.

Past research on this topic has concluded that parental influences significantly impact typically developing children. As for parental physical activity, there is research regarding how parental physical activity impacts TD children. There is less research on how parental physical activity directly affects their child's physical activity. It is hypothesized that we will see a difference between the TD and PDCD group when looking at the differences between physical activity and how their parents' physical activity impacts it. This investigation will inform parents how.

### **Madison Gagnon**

*Adverse Childhood Experience-conditioned serum from young adults promotes a dysregulated endothelial cell gene expression profile*

**INTRODUCTION:** Adverse Childhood Experiences (ACEs) are known to cause long-lasting health problems. In particular, ACEs have been associated with an increased risk of developing cardiovascular disease in adulthood, although the governing mechanisms remain poorly understood. Endothelial dysfunction is one of the earliest signs of cardiac pathology. In this study, we measure endothelial dysfunction by monitoring changes in expression of several critical genes of relevance when primary human endothelial cells are exposed to serum from young adults who have not experienced ACEs (zero) compared to a high accumulation of ACEs (>4).

**METHODS:** Serum samples (n=20/group) collected from young male adults were added to near-confluent male human coronary artery endothelial cells for various lengths of time (0, 1, 4, 24 hours). The mRNA from these cells were collected and an amplification efficiency optimized qPCR design was used to determine expression changes for a panel of genes of interest in mechanisms of endothelial dysfunction.

**RESULTS AND DISCUSSION:** When exposed to high ACEs serum, the endothelial cells had significantly higher expression of I-CAM1 (p<0.001), CCL2 (p=0.02), VCAM1 (p<0.001), and EDN1 (p<0.01) and lower expression of NOS3 (p=0.48) than the cells that were exposed to zero ACEs serum. Overall, higher expression of inflammatory mediators (I-CAM1, CCL2, VCAM1), as well as decreased expression of the vasodilator NOS3 and increased expression of the vasoconstrictor EDN1 points to an endothelial transcriptional profile in which high ACEs promote circulating blood conditions in young adulthood that support endothelial dysfunction—a potential mechanistic link to poor CV health trajectories.

### **Majuriha Gnanendran**

*What can we learn from each other? The importance of intergenerational connections in the field of aging*

Intergenerational connections is considered to be an important aspect for all age groups. As a student who is interested in the field of aging, I have come to learn that intergenerational relations are essential when researching the field of aging. My research during my thesis program will focus on older adults who volunteer and how intergenerational connections can sustain volunteerism as people age. With my experience as a research assistant for a project within the field of gerontology and my interest in the aging population, my goal through this research is to



make others aware of how intergenerational connections can be an important discussion to have.

Using a narrative presentation method, the story of older adults will be shared with the audience. Sharing my research experience as a student and including the narrative of older adults, the audience will gain a unique perspective into this topic.

In my master's program thesis, I would like to research and discuss how intergenerational relations can positively affect the aging population. From a student perspective, I believe I have the knowledge and passion to bring forth this idea to more people. I believe this information can benefit many communities and showcase the benefits of volunteering for all ages. The research-practice gap can be brought closer by learning more about intergenerational relations. Since this topic allows all ages to join as one, we are more inclined to share knowledge and experiences with one another that can ultimately turn conversations into ideas.

### **Felicidy Hocking and Kira Prince**

#### *Thematic Analyses of Shaking the Movers Reports: Rights-Based Concerns Around Intrapersonal Relationships and Institutional Experiences*

A thematic analysis was carried out to develop key themes using Shaking the Movers (STM) reports with Canadian children aged 3-18 from 2007 to 2017 by the Landon Pearson Centre which captured young people's recommendations for decision-makers on child rights-based issues that are relevant to their lives. The young people who participated in these STM workshops expressed various concerns about their position in society, adults' positions in their lives, and limited education pertaining to their rights. The following key themes emerged from the thematic analysis: ostracization from

others, a desire for more adult involvement in their lives, difficulty forming identity, an overwhelming unawareness of their rights that they want to learn about, and frustration from the barriers toward youth agency and expression. Overall, children have voiced their concerns about rights-based issues that pertain to their lives, which we encourage adults to actively listen to.

### **Alexandra Hutchinson**

#### *Exercise and Body Image in Older Adults: A Scoping Review*

Meta-analyses have consistently shown exercise is linked to improved body image across young adult populations. However, across these reviews, older adult populations have generally been excluded, often due to a lack of studies including older samples. Given the impact of age-related changes on body image, it is important to understand the relationship between exercise and body image in older adulthood. The purpose of our scoping review was to examine the nature of the existing literature on body image and exercise in adults aged 65 years of age and older. We searched the following five electronic databases: Embase, Ovid Medline, SportDiscus, CINAHL, and AgeLine. The search strategy yielded 8,860 titles and abstracts, of which 12 articles met our inclusion criteria. Among these 12 studies, most used cross-sectional observational designs. Overall, research on body image and exercise in older adults was scant, with many gaps in the literature related to samples, measurement, and study purposes. Most research focused on negative body image, particularly body dissatisfaction. Surprisingly, few studies found a significant relationship between body image and exercise. However, there was a great deal of variability in how older adult populations were defined, how body image was measured, and the mode and quantity of exercise implemented. Future research should use experimental designs

to provide an understanding of exercise types and frequencies that are best suited to improve body image in this group. It is also important to examine positive body image and exercise in older adults.

### **Jordan Isnor**

*Teaching Coast Salish Traditional Knowledge in Ensuring Marine Conservation for Canada's West Coast.*

The modern world is changing rapidly; while the population increases, so do human actions using fossil fuels such as oil, charcoal, and gas. As a result, fossil fuels release significant carbon dioxide into the atmosphere, concentrating on and heating the planet. The result of climate change has devastating effects on the earth, including the oceans, due to the rising temperatures, causing migration of species to higher latitudes and altitudes where the water is cooler. Therefore, society must find solutions to combat climate change to ensure marine conservation.

Indigenous ways of knowing are one solution to preserve marine life, providing insights into implementing efficient uses of land and spiritual connections with nature. Furthermore, giving crucial areas for fishing and collecting distinct species and seasonal rounds for when and where species are harvested. In particular, Canada's west coast in British Columbia provides habitat for endangered species such as sea otters, eulachon, abalone, and housing salmon, a significant food and economic resource for many communities along the coast. This impact can significantly affect human societies along the coast of British Columbia that depend on those species, such as fish, for food and trade.

In my proposed presentation, I will discuss how teaching Coast Salish Traditional Knowledge is crucial for ensuring marine conservation on British Columbia's west coast, which is being

impacted by climate change. I will address the implications of using Indigenous Knowledge behind the various approaches to teaching these new ways of knowing to colonial settlers. I will also discuss strategies to embed Traditional Knowledge into Canadian society that challenge settlers to move beyond their colonial ways of knowing. Finally, I will address the significance of Traditional Knowledge in managing marine conservation due to their close observation of generations of the natural lands.

### **Maya Karanouh**

*AI's Disruptive Posthuman Agency in the Creative Design Industries*

The technological innovations of the Fourth Industrial Revolution, which started in the 21st century, are characterized by the innovations in the fields of artificial intelligence (AI), robotics, the Internet of Things (IoT), which are rapidly changing the process which people generate, produce and share value (Klaus 2016). My research-creation based dissertation is focused on how Generative AI will disrupt the creative industries which include the professions of architecture, graphic design, and industrial design. Generative AI models, such as ChatGPT, Midjourney, and DALL-E, have received considerable attention in the news recently, yet continue to be poorly understood. These tools are trained on are trained on largescale datasets and have the ability to produce text, images, music and video through simple text prompts thus creating human-like content from essays and songs, to paintings and avatars (Larsen 2023). My dissertation will explore how these new creative abilities of AI will affect designers when viewed through a posthumanist theoretical lens. As more designers use Generative AI to collaborate with them it is important to study the agency of AI as a co-collaborator in the creative design process. By mobilizing posthumanist theories, I will analyze how these interconnected fluid relationships and entangled multispecies

inform about the specific agency of AI as a co-designer, co-collaborator, and co-creator, roles which has been typically designated to describe humans.

### **Zahra Karimi**

#### *Overcoming Mental Health Stigma in Athletes: A Systematic Review of Intervention Characteristics*

Mental health stigma (MHS) among athletes is a significant concern and has been identified as the most significant barrier to care-seeking. Yet the evidence base attesting to the benefits of interventions to reduce MHS in athletes is equivocal (Breslin et al., 2022). Current, interventions have shown heterogeneity in terms of their processes and key features, rendering the translation of empirical findings into application problematic. It is therefore, not surprising that calls for interventions to more effectively overcome MHS for athletes has been forthcoming (Reardon et al., 2019). The objective of the proposed systematic review is to identify core intervention characteristics that may be associated with improvements in MHS in athletes. Guided by using the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) and the Template for Intervention Description and Replication (TIDieR), a comprehensive search of PsycINFO, PubMed, Web of Science, Scopus, and SPORTDiscus will be conducted. Following a systematic screening protocol, primary sources adopting intervention studies targeting MHS in athletes will be retained for subsequent analysis. The main findings of this study may provide a structured and standardized approach to reporting and replicating interventions targeting MHS in athletes. So that researchers can enhance the transparency and reproducibility of their research and facilitate the dissemination. Such findings also hold implications to inform evidence-based interventions, ultimately improving access to care and promoting mental health in athletes.

### **Anthonie Korstanje**

#### *Competitive Balancing Act: Are Salary Caps Truly Effective in Professional Sports*

A major point of interest in North American sports leagues is the attempts to limit the gap between “large market” and “small market” teams, as this study investigates effects of salary caps or other revenue sharing methods which league use to aid in competitive balance for teams both in terms of in-game performance and the stability of the organizations on their business sides. The results of such a study into whether or not a salary cap in leagues is truly beneficial to the league in terms of competitive balance and stability is a very important concept affecting the interests of the team owners, the players and the fans. By examined the effects of salary caps on competitive balance in professional sports leagues in the United States (the NFL, NBA and NHL), I search to find evidence that suggests if salary caps actually improve competitive balance or not, measured by the variation in wins between the best and worst teams in a league in a given year, in any of the major sports leagues, with interest in building a model of the effects of salary caps versus other forms of competitive balancing in sports on win variation and other aspects of the business side of sports.

### **Tamar Kritzer**

#### *Investigation into the effect of ankle bracing on tissue exposure and neuromuscular mechanics during high biomechanical impact tasks.*

Ankle injuries are typically generated from external lateral force production, driving the body’s center of mass beyond the bounds of the base of support and exceeding tissue capabilities. Sudden large forces or repetitive stress loads such as ground reaction forces (GRF) during high-intensity sport specific tasks within an ankle joint exacerbate this risk, such as slippage during cutting movements. Local musculoskeletal architecture provides

protective ankle stiffness but is limited by neuromechanical stability delays, particularly in fatigued or deteriorated states. External bracing counter-acts this by reducing the magnitude and velocity of ankle inversion, providing neuromuscular protective mechanisms sufficient time to stabilize. The aim is to quantify ankle kinematics and kinetics of braced dynamic ankle movements during high biomechanical impact tasks. University-aged athletes will perform dynamic lower limb sport movements (e.g., lateral step, point rotation, lateral shuffle) in one of four external bracing conditions (no brace, ankle compression sleeve, ankle plastic brace, neoprene ankle stabilizing brace). Surface electromyography will measure activation of six lower leg muscles. Joint positioning will be quantified using a 10-camera Vicon motion capture system, and an AMTI force plate system will quantify GRFs. We hypothesize that external bracing will differentially improve local dynamic stability with the neoprene ankle stabilizing brace likely resulting in optimal stability metrics. The goal of this study is to reduce knowledge gap of understanding external bracing effects on local dynamic stability and ankle stiffness to improve the relationship between materials science and mechanical behaviour of the tissues being supported.

### **Shivani Mall**

#### *A Pilot Study Investigating the Effects of a Yoga Intervention on Health and Well-Being Among a Diverse Sample of Adults*

This pilot study will assess the feasibility of engaging in a supervised Hatha yoga intervention compared to a control group and examine the preliminary effectiveness of a yoga intervention on embodiment, self-objectification, and positive body image among a diverse sample. Approximately 50 adults ( $\geq 18$  years of age) will be recruited from community-based organizations in the Niagara region. Participants will be randomly assigned to either an intervention (yoga) or a

control group. The intervention group will engage in Hatha yoga which is comprised of one weekly 60-minute class for 10-weeks; each class will focus on a different dimension of positive body image. Participants randomized to the control group will be asked not to practice yoga for the duration of the study but to continue their regular physical activity. Demographic information will include age, gender, ethnicity, height, and weight. Body image and physical activity measures will be administered at baseline, 5-weeks, and at the program end (10-weeks). At program end, participants will be asked about their perceptions of the yoga intervention or control group. Study adherence, retention, and dropout rates will be measured to assess feasibility. A repeated measures multivariate analysis of variance will be conducted to examine group differences at baseline, 5-weeks, and 10-weeks, as well as changes in body image across time. This proposed study will help to gain insight into conducting a full randomized controlled trial and the effectiveness of a Hatha yoga intervention on embodiment, self-objectification and positive body image beyond young female samples that are typically investigated.

### **Steven McKinnon**

#### *Impact of Climate Change Policy on Alberta Oil Sands Investment*

I evaluate the impact carbon emissions on new oil sands projects. Using data from recent oil sands projects and estimates of both the social costs of carbon and carbon prices consistent with meeting global climate change targets. I estimate the potential impact of climate change policy on the economic viability of oil sands investments. Results indicate that oil sands are a marginal resource before they incur any carbon costs. Incorporating carbon and social costs, we find that the viability of oil sands depends on the coverage of carbon pricing across the life-cycle emissions from oil sands and on the impact of associated social costs. Finally, we explore the

potential for technological change to mitigate the impacts of carbon pricing on oil sands investment viability.

### **Alanna McNulty**

#### *Computational Intelligence Methods for Constrained Multi-Objective Optimization in Engineering and Science Applications*

Many real-world optimization problems by nature require trade-offs between multiple conflicting objectives which need to be optimized simultaneously. These problems are termed as multi-objective optimization problems (MOPs), while constrained MOPs (CMOPs) introduce additional problem constraints to MOPs, making CMOPs even more challenging to optimize by limiting where feasible candidate solutions can be found within the search space. CMOPs can be classified into four types, depending on whether the fitness landscape and/or problem constraints remain static or change over time. This research proposes a cooperative multi-swarm intelligence paradigm for solving different classes of constrained MOPs. In both static and dynamic environments. The study will include a comprehensive comparative empirical study of state-of-the-art computational intelligence approaches for CMOPs. Some of these approaches include swarm intelligence, genetic algorithms (GAs), differential evolution (DE), and decomposition-based multi-objective evolutionary algorithms (MOEAs). Both publicly available artificial test problems and real-world data in science and engineering applications such as mechanical design problems; chemical engineering problems; process design and synthesis problems; power electronics problems; and power system problems are employed.

### **Kaitlyn Michener**

#### *Volunteering for a Purpose: Making a Difference in the Snow Buddies Program*

Snow Buddies is a community-based volunteer program facilitated by Community Support Services of Niagara (CSSN), that pairs youth volunteers with older adult clients who need assistance clearing snow and ice from their walkways and driveways. A qualitative research design was applied to collect data through semi-structured in-depth interviews with volunteers, clients, and family members about their experience with the Snow Buddies program. Currently, 14 interviews have been conducted: 9 with volunteers, 4 with clients and 1 with a family member of a client. We utilized NVivo as a toolkit for data coding to conduct a reflexive thematic analysis of the interview transcripts. Preliminary findings indicate that this program creates a sense of community for both volunteers and clients; with volunteers feeling as though they became closer to the elderly population, specifically, that they are making a difference in the lives of the older adults in the community. The clients perceive a sense of safety that comes with having an ice and snow-free driveway, which allow them to get back into community and access the provisions and amenities they would otherwise go without. It was reported that youth and older adults tended to form an intergenerational connection through the brief interactions they had before and after the Snow Buddies services. A thorough analysis of why youth choose to volunteer in this program as well as an understanding of what they can gain from the experience may have implications as to how the CSSN, and similar organizations, recruit and retain volunteers.

## Alicia Miller

### *Intolerance of Uncertainty, Sensory Processing and the Relationship with Anxiety in Children 8-15 years: Pilot Study*

Intolerance of Uncertainty (IU) and Sensory Processing (SP) difficulties have been related to diverse mental health problems, however, the relationship between these possible transdiagnostic factors and psychopathology is not yet clear. This pilot study analyzed the effects of IU and SP in children ages 8-15 years ( $M=11.03$ ,  $SD=2.15$ ; 19 girls) who were experiencing mixed externalizing and internalizing behavioural problem. The data was collected from parents/caregivers of children who were receiving counseling in a local mental health agency. Parents completed the Intolerance of Uncertainty Scale for Children (IUCS), Sensory Profile 2, and Multidimensional Anxiety Scale for Children (MASC2). Bivariate correlations between IUCS and MASC2 Total Score (MASC2\_TS), Generalized Anxiety Index (MASC2\_GAD) and four Sensory Patterns yielded significant positive correlations between IUCS and MASC TS, MASC GAD, and Sensory Pattern. To predict total anxiety from IU and SP, hierarchical regressions were conducted. The results revealed that IU significantly predicted the MASC2\_TS ( $R^2 = .259$ ,  $p < .01$ ) and only Sensory Sensitivity explained an additional 14% in MASC2\_TS ( $p < .05$ ). Other types of SPs did not significantly predict MASC-TS in this sample. These preliminary results suggest that IU and SPs should be part of the assessment and intervention strategies in children with internalizing and externalizing behavioural difficulties. Due to the small sample size, these results should be interpreted with caution and the study will be replicated with a larger sample in the future.

## Shealin Murray

### *Sex and age influence motivation for social reward in female and male Long-Evans rats*

Adolescents are reported to have a higher sensitivity to rewards than do adults, though little is known about the developmental trajectory of sensitivity to social rewards. Using an operant conditioning apparatus wherein ‘nose-poking’ in a port resulted in five seconds access to a peer, we found that irrespective of sex, rats in late-adolescence engaged with the social reward more than did rats at earlier or later ages. Additionally, irrespective of age, male rats engaged with the social reward more than did female rats. When tested using a progressive ratio of two (increasing task difficulty), mid-adolescent male rats had a reduced willingness to work for the social reward; a ceiling effect may have obscured other age differences. To address this ceiling effect, in the current work we compared female and male Long-Evans rats at three ages of adolescence (early, middle, late) and one adult age using the same operant conditioning apparatus as previously, but with increased difficulty in the tasks. During training (one thirty-minute test daily for three days; fixed ratio of one) we found that across days all rats, irrespective of age and sex, opened the social gate more than the non-social gate. With a progressive ratio of four, rats in late-adolescence completed more trials than did other ages, and irrespective of ages, female rats completed more trials than did male rats. The lack of a sex difference in the peak of social reward sensitivity is notable given the different timing of onset of puberty in females and males.

## Alexis Napper

### *Quantifying Vibration Effects on Forearm Exposures from Common Arborist Equipment*

Work-related musculoskeletal disorders (WMSDs) are closely associated with posture, force, repetition, and vibration requirements, with increased risk in forestry workers. Chainsaws decrease force requirements and repetitions but produce high-frequency vibrations and predispose individuals to hand-arm vibration and carpal tunnel syndromes. Vibration research typically involves whole-body vibrations or smaller power tools at a single intensity; little research exists examining localized vibrations in industrial-scale power tools. This study aims to quantify vibration effects on forearm exposures from common arborist equipment using muscular activation and fatigue characteristics. Surface electromyographic (sEMG), kinematic, and local accelerometry measures will quantify muscular activation and localized vibration damping. Participants will be active arborists with Ontario Chainsaw Certifications. sEMG will record activation levels in six wrist flexors and extensors, and an accelerometer will measure vibration during multiple stages between idle and full throttle with accelerometers on the chainsaw carburetor box and forearm. Joint angles will be recorded using an electrogoniometer. Participants will perform four typical chainsaw tasks and ratings of perceived exertion and a precision test battery will be performed between trials to examine longitudinal changes. We hypothesize that sustained or high intensity vibration will increase muscle activity and fatigue metrics, significant performance decreases in the precision test battery and increases in ratings of perceived exertion over the duration of the protocol. These findings will provide critical insight into vibration effects on localized muscle activation and fatigue in the distal upper extremity and provide greater knowledge regarding industrial workspaces

where hand tool vibration presents as an exposure risk factor.

## Silvana Nguyen

### *Investigating the effects of Pannexin Channels (PANX1) Between Active and Spironolactone on Soleus and Extensor Digitorum Longus Muscles*

Pannexin channels (PANX1) are transmembrane proteins that allow the flow of small ions and molecules (ATP etc.) to produce intercellular signals and communication between cells. PANX1 channels play a huge role in skeletal muscles in which it is activated by the generation of action potentials. From there, ATP in the intracellular matrix is travelled to the extracellular matrix where it produces second messengers and releases calcium from the sarcoplasmic reticulum activating signaling cascade on the muscle cells.

This study investigated two types of condition which are: active and spironolactone. Spironolactone was chosen as it is known to be an inhibitor for PANX1 channels. This study also used two types of muscle fiber which are soleus known to act as a slow-twitch muscle, and extensor digitorum longus (EDLs) known to act as a fast-twitch muscle. A total of n=4 muscles from each experimental condition, fiber type and sex were assigned. Each muscle was placed in-vitro contractile apparatus filled with either normal or spironolactone solution where length changes and stimulation were done. At 50% of the muscle force, the muscles were fired with stimulation creating a gradual increase of the muscle force.

The contractile experiment created various graphs that allowed us to calculate the muscle's power and work. The total muscle work showed an increase with active muscles indicating a high use of PANX1 channels, while there was a decrease in spironolactone muscles indicating a low use of PANX1 channels.

## **Nurunnahar Noushin**

### *A Time Series Analysis: Investigating The Influence of Tourism Revenue on Economic Growth in Bangladesh*

Tourism means not only traveling from one place to another place, it means all the activities that have been done by the tourists during the traveling. Tourist's activities can help a county to generate revenue. This sector is also known as the umbrella industry as it incorporates other industries like transportation, hotel, tour agencies, etc. This sector is currently growing rapidly in Bangladesh. Revenue that comes from this sector is increasing significantly every year and creating new jobs as well as reducing the unemployment problem of the country. To explore this circumstance, we imply Johansen co-integration, Vector Error Correction Model (VECM) and Granger Causality Wald test based on VECM to investigate the relationship between the tourism revenue and economic growth of Bangladesh, where other variables like per capita investment (LINV), exports (LEXP), exchange rate (LER) are also taken into investigation to make the study more accurate for the period from 1995 to 2016. This paper is expected to have a positive relation between tourism revenue and GDP in both short run and long run. Since a major portion of income is generated from this sector; with further enhancement, economic, social & environmental benefit can be ensured.

## **Nadine Ott-Peon**

### *Bioengineering Icewine Yeast to Explore the Role of Aldehyde Dehydrogenase*

This project's study subject is the influence Bioengineering Icewine yeast to explore the roles of the 5 aldehyde dehydrogenase proteins in acetic acid production. The high sugar environment of Icewine juice creates hyperosmotic stress to the yeast, causing water loss, and triggers glycerol production to act as osmolyte to draw water back in, creating an

NAD<sup>+</sup> redox imbalance. Icewine has significantly higher acetic acid in comparison to table wine, and it is thought acetic acid production is used to reduce NAD<sup>+</sup> to NADH via an NAD<sup>+</sup>-dependent aldehyde dehydrogenase (Aldp). Previous research focused on redox balance of NAD<sup>+</sup>/NADH and NADP<sup>+</sup>/NADPH cofactors and gene expression of ALD during Icewine fermentation, but there is a lack of understanding of enzyme activity of Aldps and the role each play in the higher acetic acid production in Icewine. There is less research on industry specific strains. Therefore, the objective of my project is to determine the roles of the 5 isoforms of the aldehyde dehydrogenase proteins in acetic acid production in both Icewine and table wine using deletion mutants of the ALD genes in an Icewine yeast used an industry strain. Both individual deletion mutants and combination deletions in wine yeast will be used to explore how these mutations will affect the biochemical and redox balance of fermentation pathways. Deletion mutates will be achieved using CRISPR/Cas9 technology. Ferments will occur with each mutated strain using Icewine juice at 40°Brix and juice diluted to 20°Brix. Regular sampling will be analysed throughout fermentation to give insight into the roles of each Ald protein.

## **Veronica Panchyshyn**

### *Intolerance of Uncertainty, Negative Affect, and Attentional Control Predictors of Anxiety in Emerging Adults*

Anxiety risks are complex and multifaceted, such that various risks may increase an individual's susceptibility of anxiety. Intolerance of Uncertainty is characterized by the inability to tolerate the unknown, and is a transdiagnostic risk of anxiety. Additional risks also include Negative Affect (NA), a negative temperament style characterized by low or negative mood and attentional control defined by one's ability to focus on task relevant information, and attentional switching. It is hypothesized that



high IU individuals will demonstrate heightened anxiety, and that this relationship will be further explained through NA. Further, it is hypothesized that the IU to anxiety pathway will be mediated through low attentional control. 74 undergraduate, emerging adults (50% female) between 18-24 years of age ( $M = 20.38$ ,  $SD = +/- 2.14$ ) were recruited. The Intolerance of Uncertainty Scale Short Form (IUS-12), Adult Temperament Questionnaire (ATQ), and the Beck Anxiety Inventory (BAI) were administered. Results of the mediation (model 4, PROCESS, SPSS 24) demonstrated a full mediation ( $B = 1.8$ ,  $SE = .51$ ,  $p < .01$  CIs [.78, 2.8]) of IU and anxiety through NA. Further, in an additional mediation model, (model 4, PROCESS, SPSS 24) a full mediation ( $B = -2.65$ ,  $SE = 1.1$ ,  $p < .05$  CIs [-4.9, -4.4]) of IU and anxiety through low attentional control was reported. Results suggest that high IU, high NA, and low attentional control are significant predictors of anxiety in an emerging adult sample.

### Shamae Quinquito

#### *Impact of long duration bed rest on cardiac autonomic function in males and females*

Long-term bed rest and heart rate variability (HRV) analysis have been widely used to assess the modulation of parasympathetic and sympathetic activity on cardiovascular function. This study investigated the effects of long-term bed rest on cardiac autonomic function by analyzing HRV measurements in males and females. A retrospective analysis of previously collected electrocardiogram (ECG) recordings were used which included male ( $n = 14$ ) and female ( $n = 9$ ) participants from previously published 60-day head-down bed rest (HDBR) studies. ECG recordings of pre- and post-HDBR were analyzed at baseline for HRV measurements such as RMSSD and pRR50. The RMSSD of males post-HDBR was observed to be significantly lower than the pre-HDBR RMSSD (44.13 ms vs. 28.04 ms,  $P \approx 0.01$ ). Likewise,

the pRR50 values of males were significantly reduced post-HDBR (24.24% vs. 8.97%,  $P \approx 0.01$ ). Conversely, there was no significant difference in the means of female RMSSD and pRR50 measurements pre- and post-HDBR (39.45 ms vs 37.21 ms, 20.28% vs. 17.08%,  $P > 0.6$ ). Although the results from males were different than that of females, analysis of variance suggested that there was no significance in gender differences ( $P > 0.8$ ) and that there was no significant interaction between sex and intervention ( $P \approx 0.4$ ). In conclusion, the study emphasizes the importance of monitoring HRV to assess cardiac autonomic function in individuals who undergo long-term bed rest. The results further suggested that long duration bed rest may have a more detrimental effect on the HRV of males as compared to females.

### MD ATA E Rabbi

#### *Innovation and Bankruptcy Prediction*

Using Video Prompting with Embedded Safety Checks to Teach Prospective Parents and Caregivers Correct Installation of Child Passenger Safety Restraints In North America, motor vehicle collisions are the leading cause of unintended injury-related deaths among children under the age of 14. The primary cause of these deaths is the improper use of child passenger safety restraints (CPSR). Correctly installed CPSRs can decrease the risk of death by 71-82%. To date, no study has (a) used video prompting as an individual intervention to teach correct CPSR installation or (b) examined the use of embedded safety checks within the task analysis of a CPSR installation. We used a concurrent multiple baseline across participants design to evaluate the effectiveness of a video prompting procedure with embedded safety checks to teach prospective parents and caregivers to correctly install CPSRs; both installation of a car seat in a rear-facing position using the Universal Anchorage System and harnessing of an infant-sized doll. The results of this study provide

empirical support for the use of video prompting with embedded safety checks with minimal researcher participation to increase correct CPSR installation.

### Matthew Rollins

#### *Examining the Bilingual Mental Lexicon Through Associative Priming*

Research examining associations between words in the monolingual versus bilingual mind has employed various models to examine differences in lexical organization, with varying degrees of success. This study was created to address these questions: “Do bilinguals organize word associations in the same ways as monolinguals? Can this be measured using an online semantically primed lexical decision task (LDT)?” Primes were presented for 100ms, then masked, followed by a target letter-string, with participants indicating by keypress whether it was a legitimate word in English. Priming was by syntagmatic and paradigmatic associates (phrasal context versus word categories associates, respectively). Syntagmatic associations develop first in first-language (L1) acquisition, but the order is unclear in second-language (L2) acquisition. We measured the difference in LD response time for targets for each associate type and for targets primed by unrelated-word primes. Participants (N=259): English monolinguals, English L1 bilinguals, and English L2 bilinguals. Lexical decisions were faster for true words than nonwords ( $p < .04$ ). Semantic facilitation was found in all groups: paradigmatic priming in English L2 speakers ( $p < .01$ ) and syntagmatic in L2 ( $p = .01$ ) and L1 bilinguals ( $p = .05$ ), but the two types of primes were not significantly different. Accuracy and demographics were unrelated to the degree of semantic facilitation. Absolute priming effects were smaller than anticipated, although statistically reliable. The presentation will include discussion on the pros and cons of online data collection. The method and the software provide

a new avenue for continued research of the bilingual mental lexicon.

### Wenting Rong

#### *Mindfulness for obese children*

This study will focus on how the mindfulness-based program reduces childhood obesity. Being overweight and obesity in childhood is known to have significant impacts on both physical and psychological health (Sahoo, 2015). In Canada, obesity rates among children and youth have nearly tripled in the last 30 years (Public Health Agency of Canada, 2017).

Mindfulness is often defined as the state of being engaged in the present moment (Bishop et al., 2004; Kabat-Zinn, 2003; Lu, 2012). It advises us to accept our here and now experience without assessment or judgment; keep aware of our feelings, thoughts, and experiences; and take all without bias. Mindfulness can be regarded as a philosophy or skill to foster body-mind oneness and, ultimately, to achieve true health (Lu, 2012).

Childhood obesity is a complex problem. This study will explore how mindfulness-based programs would help reduce childhood obesity.

## Ruchika Suri

### *A Cross-Cultural Analysis of the Global Perspectives on Children's Rights*

The United Nations Convention on the Rights of the Child (herein, UNCRC, 1989) has been ratified by 197 nations to protect and provide for all children and young people. The 54 Articles within this Convention create a global standard to assess how children are treated and whether their fundamental rights are being fulfilled. There is responsibility placed on adults and governments of all levels in each State Party to ensure that children's rights are being implemented and respected; thus, children depend on adults to make rights accessible to them (UNCRC, 1989). Although this Convention is expected to be applied equally to every State Party, discrepancies in its application occur based on how State Parties value and respect these rights. The cultural, political, historical, and economic circumstances of those State Parties result in children having unique experiences with their rights. To understand why these differences occur and how they impact children, different perspectives surrounding children's rights must be acknowledged. Utilizing cross-cultural surveys and interviews from State Parties belonging to the Global South, Nordic Regions, and North America, this research aims to recognize the different experiences that young people have with their rights using the following research question "What perspectives of children's rights do young people and adults across the world hold?" This question explains how rights are valued across different State Parties and children's experiences in accessing their rights. The purpose is to bring forth the different types of barriers that young people face concerning their rights, to better address them.

## Diana Tosato

### *The influence of cover crops in the vegetation community of a vineyard*

Vineyards are heavily managed agroecosystems of high economic importance globally. The province of Ontario has more than 17000 acres of harvested area of grapes with concentration of them in the Niagara region. Among the diverse alternative agricultural techniques, cover cropping is one of the main used in vineyards and their presence influences the local vegetation community. The objective of this study was to analyze how the presence of planted cover crops would affect the vegetation community in an organic vineyard in the Niagara region during two seasons. Vegetation surveys were collected two times (June and September) in blocks with 6 different cover crop treatments – crimson clover, hairy vetch, pearl millet, mix, rye grass, and spontaneous (control). All the plant species were counted, identified, and cataloged. There is a big change in the vegetation community between the collections. In June, the most abundant species in all treatments was bindweed, while it was almost absent in the September collection. On the other hand, in September the most abundant species was birdsfoot trefoil, while it was not present in the June collection. The surveys also show that the cover crops growth varied between species. Rye grass and hairy vetch had good growth performance, while pearl millet did not show in any survey. In addition, rye grass is the species that appear in every treatment, including the spontaneous, with higher abundance during the June collection.

## Khanh Ngoc (Nina) Tran

### *The Role of Information Technology in Repurposing and Leveraging Existing Resources to Drive Innovations in Times of Crisis*

The Covid-19 pandemic has led to a flood of innovations across nearly every professional sector, prompting a debate within practitioner circles about the preferred approach to innovation in times of crisis. The paper examines two comparative instances - the UK's approach to developing a contact-tracing app and Ireland's approach - and highlights the notable distinctions in the approaches adopted by the respective nodal agencies. The paper emphasizes the need to better understand how organizations can innovate in ways that effectively answer the unique challenges of a crisis, such as high uncertainty, very limited time to respond, and extreme constraints on available resources. As such, this research proposes to examine innovation in the face of crisis by repurposing existing resources and pivoting the customer base. The focus group method utilized by the research will engage professionals and executives to solicit their experience and opinions regarding the innovation process that their organizations took in response to crisis situations. Furthermore, the research aims to investigate how the urgency to innovate as well as information technology constituents influence innovation by repurposing, and whether it affects the success of the innovation strategy. The findings of this study will contribute to the existing literature on crisis management and innovation, providing insights on how organizations can effectively innovate in response to crisis situations.

## Vanessa Turchio

### *The influence of reputation on children's moral evaluations of truths and lies*

Children's moral evaluations of truths and lies have been found to vary based on the intention of the speaker (to help or to harm), as well as the context in which the truths and lies are told. One factor that may influence the perceived intention of the speaker is their reputation. Given that honesty is a key factor for building and maintaining friendships, it is important to understand whether a child's reputation influences how other children perceive their truth- and lie-telling behaviour. The present study examined the influence of a child's reputation on 7- to 12-year-olds' (N = 150) moral evaluations of the child's blunt truths and prosocial lies (i.e., lies told to protect another's feelings). Children were read aloud a series of vignettes in which a child protagonist described as smart, kind, or clean (control) either told a prosocial lie or the blunt truth to their friend. Results revealed that the reputation of the child protagonist significantly influenced children's moral evaluations. Moreover, older children rated truths and lies more positively than younger children, suggesting that with age, children begin to understand that telling both truths and lies to benefit others have positive value. Overall, our findings suggest that the reputation of a child can influence others' perceptions of the moral value of their truths and lies.

## Melody Rebecca Van Massenhoven

### *Multi-Level Governance in the Niagara Region: A Case Study of Lyons Creek East*

Portions of the sediment of Lyons Creek East, a Provincially Significant Wetland located in Welland, Ontario, are contaminated with historical sources of Polychlorinated Biphenyls (PCBs). Through public and stakeholder consultation, Monitored Natural Recovery with administrative controls was selected as the best approach to manage the contaminated sediment. In 2011, The Lyons Creek Administrative Controls Protocol (LCACP) was established to guide the key agencies and ensure the recovery process. Agencies include Niagara Peninsula Conservation Authority (NPCA), Environment and Climate Change Canada, Fisheries and Oceans Canada, Ontario Ministry of the Environment, Ontario Ministry of Natural Resources & Forestry, the City of Welland, Niagara Region, and the St. Lawrence Seaway Management Corporation. All parties recognize the NPCA as the coordinating agency related to the decision-making and involvement of other agencies as established in LCACP.

This proposed study asks, “how have recent legislative and regulatory changes by upper-tier jurisdictions and organizational changes across the various agencies impacted the NPCA’s ability to implement the LCACP?” The proposed research will use the lens of multilevel governance to understand and elucidate changes initiated by upper-tiered governments and key agencies and assess the impacts of these changes on implementing the LCACP. A combination of archival and interview data collection methods will be employed to develop a thick understanding of the various changes and their impacts. This research will contribute to understandings multilevel governance within the context of Canadian federalism, local environmental policy, and research surrounding the Great Lakes Water Quality Agreement and the Niagara River Remedial Action Plan.

## Kailey Webster

### *Addressing The Student Mental Health Crisis: Connecting Post-Secondary Students to Campus-Based Blue Space*

Psychiatrists have recently identified a mental health crisis among Canadian university students. Students and clinicians have expressed concern and frustration toward limited mental health support on campus. With more students presenting to campus health centres for mental distress, the available support services fail to meet the increasing demand. This ‘crisis’ is leading practitioners to explore nature-based solutions for individuals suffering from poor mental health, as “not every student needs individual therapy, but many need opportunities to increase their resilience, build new skills, and connect with one another.” (Abrams, 2022, p.63). In the last decade, research has found that blue spaces (outdoor environments featuring water) promote healthy psychological well-being. Blue space offers an environment that promotes physical activity and social interaction and could decrease student life’s negative mental health effects. However, research has yet to understand social, structural, and contextual factors that promote and impede the mental health benefits of blue spaces.

This study will follow participatory action research methodology to enhance the health-promoting potential of campus-based blue spaces for students at Brock University. Within this study, there are three phases; the first phase will include interviews to evaluate the current mental health resources offered by Brock and better understand current access to and relationships with campus-based blue spaces. Phase two includes implementing interventions informed by phase one to connect university students to campus blue space. Phase three will collect data to evaluate the impacts of the interventions and re-evaluate the experiences, connections, and meaning of blue spaces to students.

## Breyer Woodland

### *Optimized Proteome Reduction for Integrative Top-Down Proteomics*

Integrative top-down proteomics is currently the only analytical approach that fully addresses the depth needed for effective, routine assessments of native proteomes due to its well-established capacity to resolve and identify thousands of intact proteoforms. Nonetheless, any such assessments also require a rigorous review of methodology to ensure the deepest possible quantitative proteome analyses. An optimized general protocol for proteome extracts was established to improve the reduction of proteoforms and, thus, resolution in two-dimensional electrophoresis (2DE). Dithiothreitol (DTT), tributylphosphine (TBP), and 2-hydroxyethyl disulfide (HED), combined and alone, were tested in one-dimensional SDS-PAGE (1DE), prior to implementation into a full 2DE protocol. Prior to sample rehydration, reduction with 100 mM DTT + 5 mM TBP yielded increased spot counts, total signal, and spot circularity (i.e., decreased streaking) compared to other conditions and reduction protocols reported in the literature. The data indicate that many widely implemented protocols are significantly 'under-powered' in terms of proteoform reduction and thus, limit the quality and depth of routine top-down proteomic analyses. Optimizing the concentration and combination of reducing reagents significantly improves integrative 2DE-based top-down proteome analyses (and likely analyses by other methods as well).

## Umar Yousufy

### *What is the Association Between Injury History and Lower Extremity Joint Injury in Canada Games competitions from 2009-2019?*

**Purpose:** To determine the association between injury history and incidence of lower extremity joint injury during Canada Games competitions.

**Methods:** Data from 2009 – 2019 Canada Games (8710 male and 8391 female athletes) competitions were de-identified by Canada Games Council for analysis. Injury data were categorized for previous injury and injury type and location. Injury history included concussion (CON), major surgical procedure (SUR), neck and back (N/B), trauma to joint and bone (J/B) and trauma to ligament and tendon (L/T). Injuries were categorized to include ankle, knee, hip, and patellofemoral joint injuries. IBM SPSS (Version 26) was used for statistical analysis ( $p$ -value < 0.05).




**Results:** 475 ankle, 503 knee, 253 hip, and 94 patellofemoral joint injuries were reported during 10 years of Canada Games competitions. There were significant associations between history of N/B injuries and ankle injuries ( $\chi^2 = 5.793$ ;  $p = .016$ ;  $LR = 5.509$ ;  $p = .019$ ), history of J/B with hip injuries ( $\chi^2 = 4.410$ ;  $p = .036$ ;  $LR = 4.700$ ;  $p = .030$ ), history of N/B injuries with knee injuries ( $\chi^2 = 5.595$ ;  $p = .018$ ;  $LR = 6.182$ ;  $p = .013$ ), and history of J/B with patellofemoral joint injuries ( $\chi^2 = 10.693$ ;  $p = .001$ ;  $LR = 9.237$ ;  $p = .002$ ). There were significant associations between history of SUR and meniscus injuries ( $\chi^2 = 5.941$ ;  $p = .015$ ;  $LR = 4.660$ ;  $p = .031$ ), and patellar femoral pain syndrome ( $\chi^2 = 3.933$ ;  $p = .047$ ;  $LR = 3.242$ ;  $p = .072$ ), history of J/B and contusions ( $\chi^2 = 4.026$ ;  $p = .045$ ;  $LR = 4.493$ ;  $p = .034$ ), and tendinopathy ( $\chi^2 = 4.053$ ;  $p = .044$ ;  $LR = 3.697$ ;  $p = .054$ ), history of J/B and patellar femoral pain syndrome ( $\chi^2 = 9.585$ ;  $p = .002$ ;  $LR = 8.215$ ;  $p = .004$ ), and history of L/T and sprains ( $\chi^2 = 4.366$ ;  $p = .037$ ;  $LR = 4.287$ ;  $p = .038$ ).

Conclusion: History of N/B, SUR, L/T and J/B injuries were associated with lower extremity joint injury. These findings literature suggesting that injury history is related to future injury. financial and ranking state of IT companies. various resource planning strategies and make informed decisions to improve patient healthcare experiences. importance and polarity of these factors and financial and ranking state of IT companies.

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