



**Canadian Stress
Research Summit**

*Stress Across the Lifespan:
From Risk to Management*

2021 Conference Abstract Book

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Official Greetings from the Planning Committee

Dear Conference Delegates;

It is with great pleasure that we welcome you to the first meeting of the Canadian Stress Research Summit (CSRS)! This inaugural meeting is the first Canadian conference dedicated to the dissemination of stress research. Acknowledging that chronic perceived stress is an insidious phenomenon that may have adverse effects across the lifespan, the theme of the 2021 CSRS is “*Stress Across the Lifespan: From Risk to Management*”.

The universality of perceived stress has become especially clear in the last year as Canadians and people around the world continue to manage a global pandemic. Within a short period of time, the COVID-19 pandemic changed our lives as we know it, impacting the ways in which we engage with everyday life. In the last year, researchers have examined the impact that the pandemic has had on indices of health and wellbeing across the lifespan. Some of this research will be shared for the very first time during this conference.

Over the next three days, we will learn from researchers across Canada. Our objective is twofold: to foster collaboration and innovation among stakeholders who are committed to turning theory into practice; and to make science accessible to the general public, enhancing knowledge on the risk and management of stress.

We are honoured to welcome our two Keynote speakers, Dr. Sonia Lupien from Université de Montréal, and Dr. Matthew Hill from the University of Calgary. We are also honoured to welcome Kim Wheatley, Turtle Clan and Anishinaabe band member of the Shawanaga First Nation, and Dr. Nasreen Khatri from the Rotman Research Institute. Finally, it is with greater privilege that we welcome all presenters and conference delegates to the inaugural CSRS. We wish you a fruitful conference.

Sincerely,

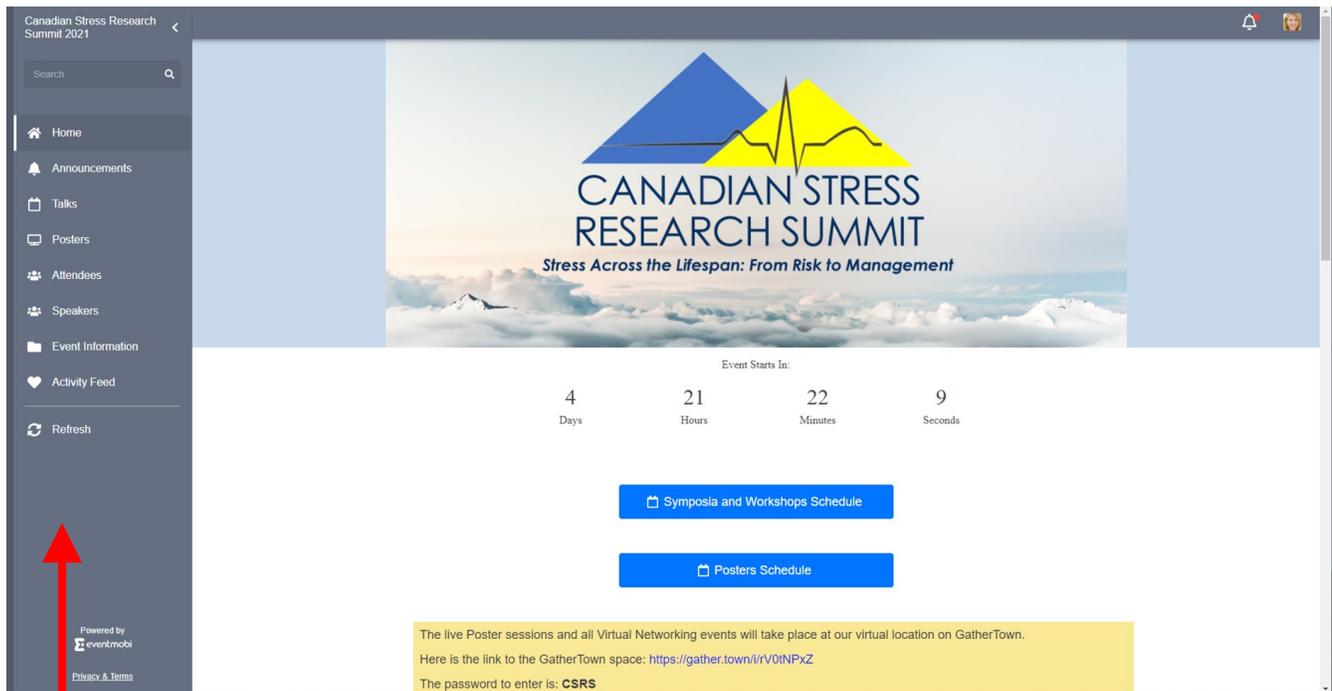
The CSRS Conference Planning Committee

Dr. Alexandra J. Fiocco (Chair), Carson Pun, Danielle D’Amico, Jessica Burdo, Rachel Goren, Sally Zheng, & Shruti Vyas

Conference Information

The 2021 CSRS is being hosted on a virtual conference platform by **EventMobi**. As a registered conference delegate, you have received access to the CSRS2021 platform on eventmobi.com

The welcome page (Home):



Talks: By clicking on the “Talks” tab, you will be able to access the Zoom links for each session block (i.e., each symposium session).

If you are a presenter at one of the eight symposium sessions, please ensure to join your session using the Zoom link that was sent to you via email.

Posters: By clicking on the “Posters” tab, you will be able to access all of the conference posters throughout the duration of the conference. You are invited to view each poster by clicking on the individual listed poster. When you click on an individual poster entry, you will be able to view the study abstract. To view the poster, you can click on the attached document located below the abstract. When viewing an individual poster, you may leave comments, questions, or feedback for the poster presenter in the Chat box. You may also speak with the poster presenters in real time during the scheduled Poster Session. To join the poster session, simply click on “Join Live May 6th 5:50pm—6:30pm” (note the password). This link will bring you to GatherTown, our virtual networking conference space.

Attendees: As a conference delegate, you are encouraged complete your profile. By clicking on the “Attendees” tab, you will be able to view all conference delegates. You may also “send a message” or “schedule a meeting” with a conference delegate.

***For technical assistance, contact Carson Pun on Eventmobi or email csrs@ryerson.ca

Join us in GatherTown!

GatherTown is a virtual space that will be available throughout the 3-day conference.

To facilitate networking during the 2021 CSRS, we encourage you to join GatherTown for the Poster Presentation Session and to engage in networking outside of the symposium sessions.

Visit our website for quick tips on GatherTown and how to create your CSRS Avatar: <https://www.ryerson.ca/canadian-srs/>

Once you have created your conference Avatar, begin your exploration using your keyboard arrows to maneuver across rooms:

The Poster Room:

Using your keyboard arrows to maneuver your Avatar, enjoy a stroll through Poster Room.

The Poster Room will be accessible throughout the entire conference; however, from 5:30pm to 6:30pm on May 6th, poster presenters will stand by their poster, ready to share their research findings.



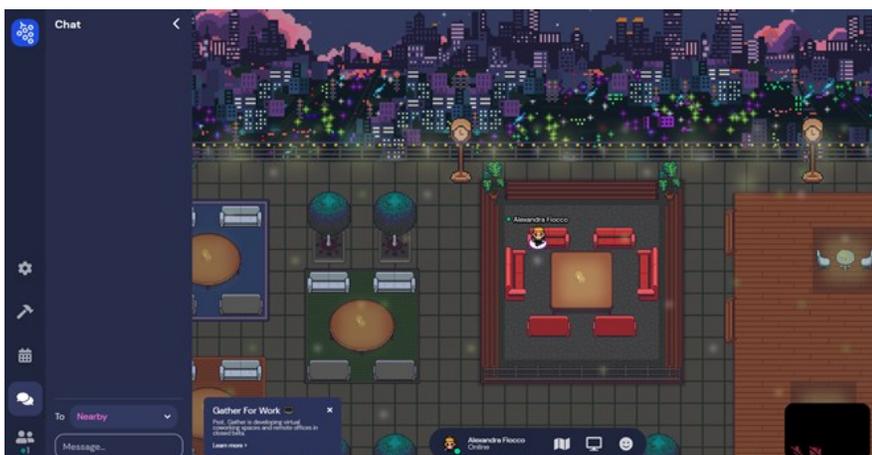
When your avatar is close to a poster, the poster will pop up at the bottom of your screen, in order to view the full poster, click the “x” on your keyboard.

If you get “boxed in” by a group of other avatars, press “g” on your keyboard.

The Roof Top Lounge:

Network with other conference delegates on our Roof Top Lounge throughout the conference.

Grab a drink, lunch, or a snack and come to the rooftop to reflect, collaborate, or have a friendly conversation—like the good old days of in-person conferencing!



A few Tips for Virtual Conferencing:

1. To make the most of your time at the 2021 CSRS, we invite you to become familiar with the online platform. Try to take an hour or two before the conference begins to play around with the Eventmobi platform and GatherTown. Check to ensure that your audio and video are working.
2. To be fully present during the conference, we invite you to block your time during the scheduled sessions, ensuring that you are free of multiple demands and are able to fully engage with the content.
3. Be okay with family and pet drop ins.
4. Use the scheduled Self-Care Breaks for self-care. Make sure to stand up and get your body moving in between sessions. Rest your eyes, get something to drink or eat, take a bio break. Do whatever you need to nurture your mind and body.
5. Have fun and network! Use the virtual space to meet up with your colleagues or attendees.

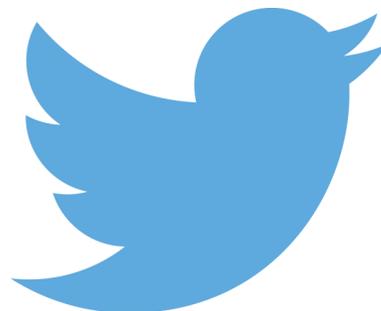


Stress Across the Lifespan: From Risk to Management

Share your experience with us on Twitter!!

@Canadian_SRS

#CSRS2021



Program at a Glance

Thursday, May 6th 2021

9:30 am to 10:00 am

Opening Remarks and Welcome

Alexandra J. Fiocco, CSRS Conference Chair

Leslie Atkinson, Chair of the Institute for Stress and Wellbeing Research

10:00 am to 11:00 am

Opening Keynote: From Neurotoxicity to Vulnerability: A Developmental Perspective of the Effects of Stress on the Brain

Moderator: Alexandra J. Fiocco

Sonia Lupien, Université de Montréal

11:00 am to 11:15 am

Self-Care Break

11:15 am to 12:30 pm

Symposium #1: Stress, Sex & Gender

Moderator: Alexandra J. Fiocco

Annie Duchesne, University of Northern British Columbia

Robert Paul Juster, Université de Montréal

Rosemary Bagot, McGill University

Natasha Drobotenko, Queen's University

12:30 pm to 2:30 pm

Lunch and Virtual Networking

Take a stroll through GatherTown

2:30 pm to 3:45 pm

Symposium #2: Stress & Indigenous Health: Teachings of Blood Memory and Epigenetics

Moderator: Alexandra J. Fiocco

Kim Wheatly, Shawanaga First Nation

Amy Bombay, Dalhousie University

Robyn McQuade, The Royal Institute of Mental Health Research

3:45 pm to 4:00 pm

Self-Care Break

4:00 pm to 5:15 pm

Symposium #3: Stress on the Job

Moderator: Danielle D'Amico

Simon Baldwin, Carleton University

Paula M. Di Nota, University of Toronto Mississauga

Tori Semple, Carleton University

Judith P. Andersen, University of Toronto Mississauga

5:30 pm to 6:30 pm

Poster Session and Virtual Networking

Visit the poster session on Gather Town

Friday, May 7th 2021

9:30 am to 10:00 am	Opening Remarks and Housekeeping
10:00 am to 11:00 am	Keynote: Stress and Endocannabinoids: From Rodents to Humans <i>Moderator: Alexandra J. Fiocco</i> <i>Matthew Hill, University of Calgary</i>
11:00 am to 11:15 am	Self-Care Break
11:15 am to 12:30 pm	Symposium #4: Stress Biomarkers and Mechanisms <i>Moderator: Sally Zheng</i> <i>Jean-Phillippe Gouin, Concordia University</i> <i>Kate Harkness, Queen's University</i> <i>Somkene Igboanugo, University of Waterloo</i> <i>Amanda Larosa, McGill University</i>
12:30 pm to 1:30 pm	Lunch and Virtual Networking <i>Grab lunch and meet your colleagues on GatherTown</i>
1:30 pm to 2:45 pm	Symposium #5: Stress Interventions and Resilience <i>Moderator: Alexandra J. Fiocco</i> <i>Jenny Liu, Toronto Western Hospital UHN</i> <i>Alanna Singer, Ryerson University</i> <i>Kathleen Walsh, University of Toronto Scarborough</i> <i>Frank Russo, Ryerson University</i>
2:45 pm to 3:00 pm	Self-Care Break
3:00 pm to 4:15 pm	Symposium #6: Stress and Development <i>Moderator: Rachel Goren</i> <i>Ryan Giuliano, University of Manitoba</i> <i>Leslie Roos, University of Manitoba</i> <i>Rafaela Martins, McMaster University</i> <i>Jessica Rowe, Queen's University</i>
4:15 pm to 4:30 pm	Self-Care Break
4:30 pm to 5:45 pm	Symposium #7: Stress and Clinical Outcomes <i>Moderator: Jessica Burdo</i> <i>Anne Wagner, Ryerson University</i> <i>Jeremy Stewart, Queen's University</i> <i>Nicole Racine, University of Calgary</i> <i>Jackson Smith, University of Waterloo</i>

Saturday, May 8th 2021

9:30 am to 10:00 am	Opening Remarks and Housekeeping
10:00 am to 11:00 am	CSRS General Public Presentation: Mental Health in 2021: The Echo Pandemic <i>Moderator: Alexandra J. Fiocco</i> <i>Nasreen Khatri, Rotman Research Institute</i>
11:00 am to 11:15 am	Self-Care Break
11:15 am to 12:30 pm	Symposium #8: The COVID-19 Pandemic <i>Moderator: Alexandra J. Fiocco</i> <i>Firoza Lussier, McGill University</i> <i>Andrew Daoust, Western University</i> <i>Emily Cyr, University of Waterloo</i> <i>Catherine Ouellet-Coutois, Concordia University</i>
12:30 pm to 1:30 pm	Lunch and Virtual Networking <i>Grab lunch and meet your colleagues on GatherTown</i>
1:30 pm to 2:55 pm	CSRS Student Spotlight: 5-Minute Flash Talks <i>Moderator: Danielle D'Amico</i> <i>Aditi Aggarwal, University of Toronto</i> <i>Saeideh Davari Dowlatabadi, University of Waterloo</i> <i>Ashley Dawn Ryan, Brock University</i> <i>Laura Colucci, University of Waterloo</i> <i>Miranda Too, York University</i> <i>Patrick Nicoll, University of Victoria</i> <i>Lior Torgeman, University of British Columbia</i> <i>Frances Sherratt, Carleton University</i> <i>Briana Renda, University of Guelph</i>
	10 min break before shifting to a workshop
3:05 pm to 4:15 pm	Community Workshop: Mindfulness for Wellbeing <i>Jeremy Finkelstein, Centre for Mindfulness Studies</i> Trainee Workshop: Establishing a Flourishing Relationship Between You and Your Mentor <i>Diana Brecher, Ryerson University</i>
4:15 pm to 4:30 pm	Self-Care Break
4:30 pm to 5:45 pm	Closing Remarks and Awards

Keynote Address Day 1

Dr. Sonia Lupien



Dr. Lupien is Founder and Scientific Director of the Centre for Studies on Human Stress (www.humanstress.ca), whose mission is to transfer scientifically validated knowledge on stress to the general public. Dr. Lupien holds a Canada Research Chair on *Human Stress* and is Full Professor in the Department of Psychiatry at Université de Montréal.

From Neurotoxicity to Vulnerability: A Developmental Perspective of the Effects of Stress on the Brain

For the last two decades, science has managed to delineate the mechanisms by which stress hormones, particularly glucocorticoids, can impact the human brain. Receptors for glucocorticoids are found in the hippocampus, amygdala and frontal cortex, three brain regions involved in memory processing and emotion regulation. Studies have shown that chronic exposure to stress is associated with reduced volume of the hippocampus and that acute and chronic stress can modulate volume of both the amygdala and the frontal cortex. Dr. Lupien will provide an overview of acute and chronic effects of stress hormones on the brain throughout the lifespan and will present new data from the laboratory measuring stress hormones in all members of a family in order to assess potential spillover effects of parental stress on children. Dr. Lupien's laboratory is now developing and studying the effects of various interventions aimed at decreasing stress hormone levels in children and teenagers in order to prevent the deleterious effects of chronic stress on brain development.

Keynote Address Day 2



Dr. Matthew Hill

Dr. Hill is an Associate Professor in the Departments of Cell Biology and Anatomy and Psychiatry at the Hotchkiss Brain Institute at the University of Calgary. Dr. Hill is also Executive Director for the Canadian Consortium for the Investigation of Cannabinoids.

Stress and Endocannabinoids: From Rodents to Humans

Endocannabinoid signaling has been well characterized as a modulator of the stress response, but divergent roles of anandamide (AEA) and 2-arachidonoylglycerol (2-AG) have been identified. Dr. Hill's work in rodent models show that stress results in a rapid induction of FAAH activity, which results in an attenuation of apparent "tonic" signaling at the CB1 receptor. This loss of AEA signaling, particularly within the amygdala, appears to contribute to the generation of a stress response as inhibition of FAAH can reverse a multitude of neurobehavioral and endocrine responses to stress. The relevance of FAAH and AEA signaling in humans has also been examined by characterizing the impact of a gene variant in the FAAH gene (C385A). Consistent with the rodent data, carriers of the C385A allele of the FAAH gene exhibit reduced anxiety and fear, dampened responses to stress and blunted activation of the amygdala in response to threatening stimuli. More recently, Dr. Hill has explored the impacts of pharmacological FAAH inhibition in humans to determine its impact on measures of fear and stress responsively as well. Together, these data provide a strong translational platform to indicate that AEA signaling may gate activation of the amygdala in response to stress and thus targeting FAAH may be a novel pharmacological approach to treating stress-related psychiatric disorders in humans.

General Public Presentation Day 3

Mental Health in 2021: The Echo Pandemic

Dr. Nasreen Khatri is an award-winning registered clinical psychologist, gerontologist, neuroscientist and educator at the Rotman Research Institute in Toronto. She is also a Scientific Officer of the Centre for Brain Health and Aging Innovation (CABHI) at Baycrest. Dr. Khatri studies how depression impacts the aging brain, the neural link between depression in mid-life and the subsequent onset of dementia and innovates non-drug treatments for depression and anxiety in older adults.

Dr. Khatri has completed over 400 presentations, including keynote addresses for the McGill Road to 200, Bell Let's Talk Day Workplace Wellness, The MaRS Discovery District, The Conference Board of Canada, Aging 2.0, CIBC, RBC and TD banks, Tiger21, CanWIT, The CIBC Women's Thought Leadership Series and The Toronto Public Library Thought Leadership Series.



Workshops Day 3



Establishing a Flourishing Relationship Between You and Your Mentor

Dr. Diana Brecher is a clinical psychologist who has been working with Ryerson University's Centre for Student Development and Counselling since 1991. She is an adjunct faculty member at OISE/University of Toronto in the Counselling Psychology Department and in the Department of Psychology at Ryerson University. Dr. Brecher is co-creator of the ThriveRU program.

Community Workshop: Mindfulness for Wellbeing

Jeremy Finkelstein is a Registered Psychotherapist and the founder of Mindful Living, a psychotherapeutic mindfulness-based meditation group for beginners and graduates of Mindfulness-based programs including Mindfulness-Based Cognitive Therapy (MBCT) and Mindfulness-Based Stress Reduction (MBSR). Jeremy is also a mindfulness-based facilitator for Mindfulness Everyday and The Centre for Mindfulness Studies. He has done facilitator training through the University of Massachusetts medical school and The Centre for Mindfulness Studies. At The Centre, Jeremy facilitates MBSR and leads silent retreats and introductory workshops. With Mindfulness Everyday, Jeremy facilitates The Mindful Edge: Stress Reduction and Life Strategies for Teens.



Symposium 1: Stress, Sex and Gender

1.1. Understanding the Relation Between Puberty and Stress in Girls from a Sex and Gender Perspective

Presenter: Annie Duchesne, University of Northern British Columbia

Abstract: Puberty is a developmental milestone characterized by the maturation of the reproductive system. To many, the onset of puberty also confers mental health risks, an effect mostly observed in girls. For instance, pubertal timing often corresponds with increased depressive and anxious symptomatology. While, models explaining the link between puberty and stress vulnerability in girls have mainly focused on biological factors, the integration of gendered variables have received less attention. This presentation aims to address this gap by first exploring how biological and gendered variables (variables related to being socially identified as a female) may generate a more stressful environment for maturing girls. Second, the presentation will focus on early pubertal timing as both a marker of previous stress exposure and a source of stress for girls. Finally, this presentation will be concluded by proposing future research inquiry & interventions to minimize the stressfulness of girls pubertal transition.

1.2. Studying Stress and Resilience with a Sex and Gender Lens

Presenter: Robert-Paul Juster, Université de Montréal

Abstract: Studying sex differences and gender diversity provides insights into individual differences in health and wellness. Whereas sex refers to a multi-dimensional construct that includes genes, anatomy, gonads, and hormones that collectively define us as male or female, gender refers to an array of socio-culturally constructed roles, orientations, and identities that further influence within-sex variations in stress and coping. Diverse sexual orientations and gender identities are also related to unique sets of exposures and experiences that correspond with health inequalities that are the focus of my research program and that of my laboratory, the Center on Sex*Gender, Allostasis, and Resilience (CERSAR). In this presentation, I will share my transdisciplinary research program that nuances sex, gender, and sexual identity in relation to stress biology and mental health. By applying a sex- and gender-based analysis that appreciates individual variation beyond sex binaries, I will demonstrate how one's sex, sex hormones, gender-roles, and sexual identity uniquely influence functioning of the stress hormone cortisol and multi-systemic physiological dysregulation known as allostatic load linked to physical and mental health. The take-home message of this decade's worth of integrative neuroscience research can be summarized as follows: when studying stress-related phenomena that appears to differ between the sexes, accounting for both biological factors like sex hormones and gender based factors like gender-roles and sexual orientation allows researchers to delineate inter-individual diversity more fully. This approach provides a powerful framework to help solve health problems that cannot be easily explained by focusing solely on binary sex differences.

1.3. Ventral hippocampal afferents to the nucleus accumbens encode both latent vulnerability and stress-induced susceptibility in male and female mice

Presenter: Rosemary Bagot, McGill University; **Co-authors:** Jessie Muir, Yiu-Chung Tse, Eshaan Iyer, Julia Biris, Vedrana Cvetkovska, & Joëlle Lopez

Abstract: Stress is a major risk factor for depression, but not everyone responds to stress the same way. Identifying why certain individuals are more susceptible is essential for targeted treatment and prevention. In rodents, nucleus accumbens (NAc) afferents from the ventral hippocampus (vHIP) are implicated in stress-induced susceptibility but little is known about how this pathway might encode future vulnerability or specific behavioral phenotypes. Using fiber photometry, we record in vivo activity in the vHIP-NAc pathway during tests of depressive and anxiety-like behavior in male and female mice, both before and after a sex-specific chronic variable stress (CVS) protocol to probe relationships between pre-stress neural activity and behavior and potential predictors of post-stress behavioral adaptation. Furthermore, we examine CVS-induced alterations in vHIP-NAc activity in vivo and use ex-vivo slice electrophysiology to identify the mechanism of this change. We identify behavioral specificity of the vHIP-NAc pathway to anxiety-like and social interaction behavior. We also show that this activity is broadly predictive of stress-induced susceptibility in both sexes while pre-stress behavior is only predictive of anxiety-like behavior. We observe a stress-induced increase in in vivo vHIP-NAc activity coincident with an increase in sEPSC frequency. We implicate vHIP-NAc in social interaction and anxiety-like behavior and identify common markers of vulnerability in this neural signal in both sexes with elevated pre-stress vHIP-NAc activity predicting increased susceptibility across behavioral domains. Our findings indicate that individual differences in neural activity and behavior play a role in pre-determining susceptibility to later stress, providing insight into mechanisms of vulnerability.

1.4. Testing Predictors of Change in Suicidal Ideation Among Transgender and Non-Binary People

Presenter: Natasha Drobotenko, Queen's University ; **Co-authors:** Geneva E. Mason, Caroline Pukall, & Jeremy G. Stewart

Abstract: Suicide is a pressing public health concern and rates of suicidal thoughts and behaviours (STBs) are elevated among transgender and non-binary (TGNB) individuals, even relative to cisgender sexual minorities. The lifetime prevalence estimates of suicide ideation and suicide attempts in TGNB samples are 55% and 29%, respectively. Previous research has demonstrated that childhood maltreatment, non-suicidal self-injury (NSSI), and later-life victimization (i.e., gender minority stress) are reliable correlates of suicidal ideation in cisgender individuals. However, these effects have not been tested prospectively in TGNB samples and in general, there is limited longitudinal research investigating predictors of STBs among TGNB people (i.e., 4.4%). To address this empirical gap, this study will examine whether these previously well-established risk factors of STBs predict change in suicide ideation over time among TGNB people. One-hundred and eighty-two TGNB individuals participated in an online study across two time-points that were 4-months apart. We will fit a serial mediation model wherein we tested whether the direct effect of childhood maltreatment on more frequent suicide ideation is mediated by increased rates of NSSI and more severe gender minority stress. In accordance with best practices of transparent science, our methods and hypotheses have been preregistered and are available on Open Science Framework (<https://osf.io/gp2a9>). Taken together, our results will advance understanding of how behavioural and psychosocial factors may contribute to escalating suicide risk among TGNB people and may inform more compassionate and tailored prevention.

Symposium 2: Stress and Indigenous Health

2.1. Stress and Indigenous Health: Blood Memory

Presenter: Kim Wheatley

BIO: “Blood Memory” is the notion that we carry ancient memories in the genetic code of our DNA, which can be awakened. Kim Wheatley is Turtle Clan and an Anishinaabe (Ojibway) band member of Shawanaga First Nation. Her spirit name is “Shkoden Neegaan Waawaaskonen” which translates to “Head/Leader of the Fireflower”. She is the Mother of 3 daughters and also a proud grandmother of 2 granddaughters & 1 grandson. Kim is a multi award-winning cultural consultant who utilizes Traditional stories, songs and teachings to generate meaningful relationships based on understanding & respect. Her most recent accomplishments include The Great Lakes Water Walk (2017), Masters Indigenous Games (2018) & Curator Fort York Indigenous Arts Festival (2019).

2.2. Title: Stress and Indigenous Health: Biological Pathways

Presenters: Robyn McQuaid, The Royal Institute of Mental Health Research & Amy Bombay, Dalhousie University

Abstract: It is widely acknowledged that the elimination of group-based health inequities requires a better understanding of the complex causes that can be acted upon to close these gaps. Indigenous peoples in Canada continue to experience higher rates of physical and mental health issues compared to the non-Indigenous population. A greater appreciation of biological processes involved in contributing to these inequities, and their interactions with the environment, has been called for as advances in fields within biology have led to optimism for the development of more effective prevention and intervention strategies. However, Indigenous peoples are less likely to engage in research with the collection of biological samples, a result of numerous factors that have led to mistrust in genetic and other biological health research. For this reason, our team of interdisciplinary researchers and First Nations community leaders, led by Thunderbird Partnership Foundation, has identified a need to create ethical space for community-led research on biological factors that integrates traditional Indigenous knowledge. Our team has been discussing the possible biological mechanisms involved in historical trauma and resiliency, with a focus on epigenetics, a western science concept of how our life experiences alter the expression of our genes. The interconnections between land, environment and DNA has long been known by Indigenous peoples, and it highlights that health inequities are not due to an ‘innate genetic vulnerability’, but rather that experiences of historical traumas have changed biological pathways. In order to address some of the barriers to First Nations-led biological health research, our team is developing an educational curriculum to provide communities with an opportunity to learn about how biological health research can help address their health priorities. The main goals of the proposed project are to carry out the foundational bioethical research that we view as being necessary for increasing First Nations-led biological health research in Canada, and create capacity and opportunities for First Nations communities, organizations, and researchers to lead and/or make informed decisions about participation in research projects that collect biological data.

Symposium 3: Stress on the Job

3.1. Stress-Activity Mapping: Physiological Responses During General Duty Police Encounters

Presenter: Simon Baldwin, Royal Canadian Mounted Police and Carleton University; **Co-authors:** Craig Bennell, Judith P. Anderson, Tori Semple, and Bryce Jenkins

Abstract: The current study examined autonomic stress responses experienced by 64 general duty police officers, across multiple shifts. This novel approach mapped heart rate to both the phase of a call (e.g., dispatch, enroute) and incident factors (e.g., call priority, use-of-force), utilizing GPS and detailed operational police records (e.g., police notes, dispatch records). Physical movement (i.e., location and inertia) was tracked and assisted in differentiating whether cardiovascular reactivity was due to physical or psychological stress. Individual variables, including an officer's years of service and training profiles, were examined to conduct a preliminary exploration of whether experience and relevant operational skills training impacted cardiovascular reactivity.

3.2. Police stress, learning, and memory: Implications for policy and practice

Presenter: Paula M. Di Nota, University of Toronto Mississauga and Justice Institute of British Columbia
Co-authors: Juha-Matti Huhta, Judith P. Andersen, & Gregory S. Anderson

Abstract: This talk will summarize physiological responses to stress, including the coordinated activation of autonomic and neuroendocrine systems. Next, evidence from animal, human, and applied police research will reveal how stress physiology impacts various stages of learning, memory, and performance in behavioural and cognitive domains. We will conclude with evidence-based recommendations for police practices surrounding training and critical incident debriefing that account for the influences of occupational stress.

3.3. The impact of stress on the use of de-escalation strategies

Presenter: Tori Semple, Carleton University; **Co-authors:** Bryce Jenkins, Simon Baldwin, Craig Bennell, & Judith P. Andersen

Abstract: Following several fatal interactions in Canada between persons in crisis and the police, the public has increasingly called on the police to emphasize the use of de-escalation. However, despite the high-intensity nature of these sorts of encounters, minimal research has examined the role that stress plays in police use of de-escalation strategies. Using a scenario-based encounter, we examined the relationship between stress, as measured by heart rate data, and the use of de-escalation in n=123 police officers. Results will be discussed in terms of their implications for training and practice. Future research directions will also be proposed.

3.4. Automatic Modulation Training (AMT) for Early Intervention and Treatment of Post-traumatic Stress Injury (PTSI)

Presenter: Judith P. Andersen, University of Toronto Mississauga; **Co-authors:** Joseph Arpaia

Abstract: AMT was developed over the course of 20 years in clinical practice with over 700 patients (Arpaia & Andersen, 2019; Andersen et al., 2018;). AMT works through the use real-time biological heart-rate-variability biofeedback (HRVBF) to rewire autonomic nervous system reflexes while individuals process current psychological and physical symptoms (Lehrer & Gevirtz, 2014; Lin et al., 2019). As individuals learn to modulate autonomic reflexes adaptively, they naturally learn more effective cognitive responses, increased emotion regulation, and build physiological capacity for recovering quickly from stress. Treatment efficacy is measured in two ways: self-reported improvements (i.e., reduction of PTSI symptoms, increased resilience), and biological evidence of capacity building through ANS rewiring (i.e., increased heart-rate variability at rest; capacity of heart to recover quickly from on-going strain as evidenced by faster heart-rate recovery).

Symposium 4: Stress Biomarkers and Mechanisms

4.1. Implicit affect inhibits unique associations with explicit measures of psychological stress and inflammation in the context of caregiving stress

Presenter: Jean-Phillippe Gouin, Concordia University; **Co-authors:** Sasha MacNeil & Jude Nachabe

Abstract: Although contemporary theories of affect highlight that conscious affective experiences include both an automatic, pre-reflective appraisal process as well as a reflective appraisal process, most stress research use explicit affect measures that assess only the reflective component of affective experiences and are subject to self-reporting biases. The goal of the current study was to examine the associations among implicit affect, explicit measures of psychological stress, and inflammation using a caregiving model of chronic stress, raising an adolescent with developmental disabilities. In this cross-sectional study, 217 middle-aged women raising either an adolescent with developmental disability or a typically developing adolescent completed a measure of implicit affect, the Implicit Positive And Negative Affect Test, a seven-day daily diary assessing daily stress, self-report questionnaires on exposure to early life adversity and current psychological and somatic distress, and provided a blood sample to assess inflammatory markers. Results indicated that greater implicit negative affect was associated with higher anxiety symptoms, $r = .19$, somatic symptoms, $r = .14$, childhood emotional abuse, $r = .18$, and inflammation, $r = .14$. Greater implicit positive affect was associated with lower perceived stress, $r = -.14$, and less depressive symptoms, $r = -.14$. Implicit affect was unrelated to sociodemographic characteristics, daily stressors, and caregiving status. Implicit affect remained an independent predictor of inflammation after adjusting for explicit measures of psychological stress. Although the effect sizes were small, these results suggest that implicit affect may capture aspects of the stress experience that is not accounted for by explicit affect measures.

4.2. Childhood Maltreatment Heightens the Generation of and Sensitivity to Future Stress

Presenter: Kate Harkness, Queen's University; **Co-authors:** Raegan Mazurka, Simone Cunningham, R. Michael Bagby, Roumen Milev, and Katherine Wynne-Edwards

Abstract: One in three Canadians report a childhood history of physical, sexual, and/or emotional maltreatment, and exposure to maltreatment is one of the strongest risk factors for psychopathology. We have provided evidence that childhood maltreatment raises risk for major depressive disorder by heightening the generation of, and sensitivity to, future, proximal stressful life events. In this talk we present data testing these hypothesized mechanisms across three case-comparison samples of adolescents, transitional-aged youth, and adults. In all samples, childhood maltreatment and proximal stressful life event exposures were assessed using contextual interviews with independent ratings. Stress reactivity was operationalized as total output of salivary cortisol across 8 assessments during the Trier Social Stress Test. Results replicated across all three developmental periods: Within the depressed groups only, in comparison to those without a history of severe childhood maltreatment, those with this history were significantly more likely to be re-victimized, and to generate higher levels of stressful events in their later interpersonal relationships. Further, they showed evidence of stress sensitization, such that they required a lower severity of proximal stressful life events to trigger their depression onset. History of childhood maltreatment in the context of depression was associated with lower total cortisol output in response to the TSST, suggestive of glucocorticoid receptor down-regulation. We discuss a psychobiological model that integrates these findings, as well as the intersection with gender as a significant moderator of the above effects.

4.3. Does Social Support Moderate the Relationship Between Psychosocial Stress and Allostatic Load in Firefighters?

Presenter: Somkene Igboanugo, University of Waterloo; **Co-authors:** John Mieke

Abstract: Chronic exposure to psychosocial workplace stress has been linked to increased risk of chronic diseases. Allostatic load (AL) is the cumulative measure of physiological wear-and-tear of the body and has been regarded as a possible biological pathway to which chronic stress exposure leads to adverse health outcomes. The purpose of this cross-sectional study was to explore the association between the psychosocial stress encountered by firefighters and their allostatic load, and whether the relationship between stress and its embedding (AL) may be moderated by social support. Participants were 63 active firefighters from the Waterloo Fire Service. Psychosocial stress was measured using the Sources of Occupational Stress scale, and AL measured using a 9-item index including anthropometric data, heart rate variability, hair cortisol, and blood samples based on predefined clinical cut-off values. Perceived social support was measured using the Social Support Scale for Firefighters. A substantial proportion of our sample reported high psychosocial stress, longer length of service was positively associated with psychosocial stress, and participants' age positively associated with AL. The multiple regression model showed a positive linear association between psychosocial stress and AL in our sample; however, the association was non-significant ($p=0.31$) following adjustments for potential confounders. Participants reported high social support; however, it had no significant moderating effect ($p=0.25$) on the psychosocial stress-AL relationship. Although we did not observe a significant association, higher psychosocial stress was associated with a higher AL and social support played no significant role in this relationship.

4.4. Disturbance of egocentric representations of aggressors in the dorsal CA1 of mice susceptible to chronic social defeat stress

Presenter: Amanda Larosa, McGill University; **Co-authors:** Xiong Long, Tian Rui Zhang, Alice S. Wong, Benjamin C.M. Fung, & Tak Pan Wong

Abstract: Susceptibility to chronic stress promotes depression and is associated with hyperactivity of the hippocampus, with the underlying mechanism remaining unclear. The dorsal CA1 (dCA1) region of the hippocampus encodes spatial information, including the location of a social target, leading us to ask whether representations of an aggressor are differentially encoded in animals that are susceptible or resilient to chronic social defeat stress (CSDS). The UCLA miniscope was used to image calcium activity of GCaMP6f-expressing dCA1 neurons from C57/BL6 male mice. Recordings were conducted the day before CSDS and after different defeat episodes, during cohousing with a C57 (controls) or aggressor (stressed). A cosine similarity index between calcium activity and the head distance to social targets was used to identify cells with increased activity when aggressors were either close (Near neurons) or distant (Far neurons). Near and Far neurons comprised ~12-20% of recorded dCA1 neurons. Near neuron activity was greater in resilient compared to control mice ($p=0.0362$). Examining neuronal activity when the aggressor was either close or distant revealed that susceptible mice showed higher Near neuron activity when the aggressor was distant than resilient mice ($p=0.0408$), along with lower Far neuron activity when the social target was near than controls ($p=0.0395$). Animals susceptible to chronic stress demonstrate a mismatch between the location of the aggressor and the activity of Near and Far neurons. The abnormal cognitive processing typical of depression may be related to this mismatch and inaccurate representation of the aggressor's location.

Symposium 5: Stress Interventions and Resilience

5.1. Advancing Resilience: An Introduction to the Multi-System Model of Resilience and Its Applications

Presenter: Jenny J. W. Liu, Toronto Western Hospital University Health Network; **Co-author:** Maureen Reed

Abstract: Overcoming devastating trauma and other feats of accomplishment and perseverance despite challenging circumstances have inspired the examination of resilience in the social sciences. To date, much of the literature has documented the variability of resiliency following the occurrence of traumatic events. Yet, there is little consensus on what appropriately defines resilience as an outcome. The Multi-System Model of Resilience (MSMR) uniquely conceptualizes resilience as an evolving capacity sourced from different areas of our lives, including internally through our health and health-related behaviours, externally through our social identities and access to support, and through our coping behaviours and individual pursuits. The systems within the MSMR have been empirically validated across a number of sampled populations, including undergraduate students, adults from Canada, United States, and United Kingdom, and Canadian Immigrants from China using the MSMR-Inventory. Understanding resilience as an evolving capacity enables the examination of functioning as a fluid process across a continuum from vulnerability to resilience. This conceptualization sheds insights as to why individuals' observed resilience may differ across contexts, and delineate the circumstances in which resilience needs may deplete individual resilience capacities. The applications of the model and associated inventory are discussed, and current projects utilizing the MSMR and MSMR-I are outlined.

5.2. Evaluation of a School-Based Intervention for Stress Reduction in Students

Presenter: Alanna Singer, Ryerson University; **Co-authors:** Amy Beaudry, Sofija Lavrinsek, & David Day

Abstract: Stress is a prevalent issue among adolescents in Ontario, with 34.6% of students in grades 9–12 reporting elevated stress in the past month (Boak et al., 2016), and with stress increasing from middle to high school (Boak et al., 2016; TDSB, 2013). Although stress is a normal part of everyday life, too much stress, or not having sufficient coping strategies, can interfere with one's motivation, attention, perception, memory, and learning (Lupien et al., 2005). In response to these issues, the Strong Minds Strong Kids Foundation (2017) created Stress Lessons: Tools for Resiliency, an empirically informed and theoretically driven school-based program for adolescents in grades 9 to 12 on understanding and managing stress. A mixed methods evaluation of this program was conducted for the present study. The program was implemented in four grade 9 and 10 classrooms (N = 67 students), which were randomly assigned to a treatment group or a no treatment control group (n = 2 per group). Measures of stress and coping were administered to students prior to and upon completion of the Stress Lessons program. Interviews were also conducted with the program facilitators and a subset of students. Quantitative analyses indicated that students in the treatment group reported lower perceived stress relative to students in the control group, as well as greater affect control. Qualitative analyses indicated that students enjoyed participating in the program, learned about stress, and acquired new coping strategies. Overall, findings suggest that the Stress Lessons is a beneficial resource for students.

5.3. The Role of Psychological Distancing in Mitigating Distress During the COVID-19 Pandemic

Presenter: Kathleen Walsh, University of Toronto Scarborough; **Co-authors:** Zindel Segal & Norman Farb

Abstract: The physical distancing measures put in place to reduce the spread of the novel coronavirus COVID-19 have contributed to increases in psychological distress and decreases in psychological well-being. Taking a balanced perspective of a stressful situation, including both the costs and benefits, may lead to greater acceptance of perceived costs and improve well-being. This balanced perspective may be promoted through decentering, an ability that involves viewing experiences from a wider perspective. However, the efficacy of this perspective shift has yet to be investigated during a global pandemic. As such, participants recruited globally were asked to reflect on their current experiences every day for two weeks (1) from the perspective of an outside observer, (2) from the perspective of a different point in time, or (3) from a first-person perspective as the active control condition. We measured state well-being and decentering before and after each daily session and measured trait well-being at pre-training, post-training, and 1-month. At the end of each daily session, participants who reflected on their current experience from the perspective of an outside observer demonstrated an increase in state well-being and decentering. However, the immediate benefits of this perspective shift were not integrated into long-term improvements in well-being. Specifically, at the 2-week and 1-month follow-ups, participants in the decentering conditions demonstrated a decrease in trait well-being whereas participants in the control condition demonstrated an increase in trait well-being. This discrepancy between state and trait well-being as well as the implications of these results will be discussed.

5.4. Biopsychosocial Perspectives on Choral Singing and Stress

Presenter: Frank Russo, Ryerson University; **Co-authors:** Arla Good, Alexandra J. Fiocco, & Gunter Kreutz

Abstract: A number of studies conducted over the past two decades have supported long-standing anecdotal observations that older adults participating in choral singing experience short-term reductions in stress. Although the participants in these studies have tended to be high functioning older adults living without chronic health problems, findings have been generalized leading to widespread recommendations for singing participation regardless of health status. We report two studies on community-based choirs, Study 1 compared a choir of Parkinson patients (N = 14; mean age: 73.8 years) with a choir of healthy-aging older adults (N = 10; mean age 72.8 years) in a pre-post design (60-minute singing sessions). Study 2 compared two subgroups of participants drawn from the same mixed choir in a pre-post design (60-minute singing sessions). The two subgroups included older adults living with lung disease (N = 16 mean age = 72) and older adults living without chronic illness (N = 9; mean age: 74.3). Different sets of dependent measures were applied in each study including psychological and biological (salivary cortisol) measures of stress. Significant reductions in stress-related outcomes were found irrespective of individual health status. These findings replicate and extend previous work by suggesting similar beneficial effects of choral singing in older adults irrespective of health status as represented in psychological and biological changes.

Symposium 6: Stress and Development

6.1. Adapting Acute Stress Paradigms for Internet Delivery

Presenter: Ryan Giuliano, University of Manitoba; **Co-authors:** Leslie Roos

Abstract: We recently validated an acute psychosocial stress-induction for young children (3 to 6 y/o) during which repeated failures on a matching game are associated with increases in cortisol, activation of the sympathetic nervous system (SNS), and withdrawal of parasympathetic nervous system (PNS) activity. We adapted this task to better characterize recovery from the acute stressor, including measuring parent behaviours during a reunification period with their child after the stressor. The goal of the present study is to 1) develop an optimal method for quantifying the latency and extent of recovery to pre-stressor levels, and then 2) examine associations between observer-coded parenting sensitivity during the reunification period and children's PNS and SNS recovery. Eighty child-mother dyads will be recruited to participate in a laboratory assessment involving an acute stress induction (current N=30, 16 girls; mean age = 3.5 years). To quantify recovery, we will first identify those participants that show expected acute stress reactivity patterns, and then quantify the magnitude of recovery as the extent to which those participants return to pre-stressor baseline levels, along with the latency of recovery quantified as the timing by which they've returned to baseline. Finally, we will examine the relationship between observed parenting sensitivity post-stressor and the magnitude and latency of recovery. Results will be discussed in light of an on-going parenting skills intervention our lab is currently conducting along with broader implications of this work for prevention science.

6.2. Magnifying a Missing Link: The Promise of Maternal Social-Buffering for Promoting Child Resilience to Stress

Presenter: Leslie Roos, University of Manitoba; **Co-authors:** Ryan Giuliano, Marlee Salsbury, Shaelyn Stienwandt, Chantal Delaquis, & Lynette Bonin

Abstract: Substantial research demonstrates links between chronic stress and childhood deficits in cognitive function. This work highlights repetitive environmental stress as a pathway through which experience imprints on cognition. Missing however, is an examination of the impact of acute stress on cognitive function and individual differences in resilience. This presentation will bring together clinical observations and emerging experimental evidence for a theoretical model through which repeated experiences of acute stress accumulate to result in the long-term consequences on chronic stress. Building on findings in adults, we first demonstrate that acute psychosocial stress impairs young children's sustained attention, but not inhibitory control (n=58 stress, n=26 control). Post-stress, participants also exhibited exaggerated EEG power in parietal brain regions, possibly reflecting a shift away from top-down processing. Critically, higher maternal parenting stress predicts greater post-stressor attentional impairment and exaggerated sympathetic reactivity, suggesting that children exposed to ongoing stress are particularly vulnerable to the effects of acute stress. Next, we are examining micro-coded maternal-child interactions proximal to acute stress to identify caregiving behaviours that promote young children's physiological and emotional recovery. Data has been collected and we are completing video coding in two samples (n = ~80, age 18 – 24 months; n = ~30, age 3-5 years). It is expected that more sensitive caregiving behaviours that include physical touch will predict greater cortisol and sympathetic nervous system recovery. Results will be discussed through a translational neuroscience lens in which mechanistic findings are iteratively used to inform program development for families facing chronic stress.

6.3. The influence of parenting interventions on child and caregiver morning cortisol levels: Systematic review and meta-analysis

Presenter: Rafaela Martins, McMaster University & Federal University of Pelotas ; **Co-authors:** Cauane Blumenberg, Luciana Tovo-Rodrigues, Andrea Gonzalez, & Joseph Murray

Abstract: Nurturing care, engaging and stable environments may reduce child stress and improve HPA axis functioning. Hence, parent-training programs may have the potential to impact child cortisol levels, as well as behavioral, social and health endpoints. Objective: To conduct an up-to-date systematic review of the impact of parent-training interventions on children's and caregivers' cortisol levels, and meta-analyze the results. In December 2018, searches in PubMed, LILACS, ERIC, Web of Science, Scielo, Scopus, PsycNET and POPLINE databases were conducted, and two independent researchers screened the articles for eligibility: randomized trials assessing the impact of parent-training interventions on child or caregiver cortisol levels. Random effects were used to pool the estimates and funnel plot/Egger test were used to assess publication bias. 19 eligible studies were found, and 14 could be included in meta-analyses. 13 estimates were included in meta-analyses of child cortisol levels (12 in morning and one in the afternoon), and 5 estimates for caregiver morning cortisol levels. The pooled effect size (standardized mean difference) for child cortisol was 0.06 (95%CI: -0.13 to 0.24; I²: 56.3%), and for caregivers was 0.02 (95%CI: -0.24 to 0.27; I²: 0.0%). No evidence of publication bias was found (Egger test p-value >0.05). We found no impact of parental-training interventions on children or caregivers' morning cortisol levels. However, researchers are encouraged to adopt standardized protocols, to evaluate the effects of parent-training programs on cortisol mediated by parental practices, and also to use additional biomarkers for chronic stress that are less influenced by other variables.

6.4. Differential Associations Between Paternally- and Maternally-Perpetrated Maltreatment and Later Risk for Physical and Sexual Re-Victimization

Presenter: Jessica Rowe, Queen's University; **Co-authors:** Jasmine Chananna, Kate Harkness, & Simone Cunningham

Abstract: Over 1 billion children worldwide experience childhood maltreatment, including physical, sexual or emotional abuse and exposure to such adverse events has a wide range of negative consequences including increased risk for psychopathology and lower overall quality of life. One of the most devastating ways in which childhood maltreatment may exert its negative effects is by increasing the risk for later sexual and physical re-victimization across the lifetime. The overarching goal of the current study was to examine whether this association is driven more strongly by particular types of childhood maltreatment over others (i.e., sexual vs. physical vs. emotional maltreatment) while simultaneously differentiating between maternally- and paternally- perpetrated maltreatment. Participants included a community sample of 720 adult women who completed online questionnaires on their experiences related to childhood maltreatment, adult victimization, and current mental health. Consistent with previous research, higher levels of sexual maltreatment were broadly associated with later sexual and physical re-victimization. We also demonstrated the particularly novel findings that it is emotional maltreatment perpetrated by the father, that was differentially associated with later risk for sexual re-victimization and physical maltreatment perpetrated by the father was associated with later risk for both sexual and physical re-victimization. These results suggest that different forms and perpetrators of maltreatment have unique and enduring sequelae that affect interpersonal behaviour throughout the lifetime while providing an important foundation for examining the specific biological, psychological, and socio-environmental consequences of maltreatment that put women at a heightened risk for violence.

Symposium 7: Stress and Clinical Outcomes

7.1. Outcomes from a pilot trial of Cognitive-Behavioural Conjoint Therapy for PTSD with MDMA

Presenter: Anne C. Wagner, Ryerson University; **Co-authors:** Candice M. Monson, Rachel E. Liebman, Ann T. Mithoefer, & Michael C. Mithoefer

Abstract: While treatments with the strongest evidence for posttraumatic stress disorder (PTSD) produce substantial lasting change in 50-60% of individuals who receive them, additional treatment options are needed for broader gains. Cognitive-Behavioral Conjoint Therapy (CBCT) for PTSD is a protocol-based, dyadic treatment that targets both PTSD and relationship satisfaction. CBCT for PTSD has demonstrated decreased PTSD symptoms, improved relationship satisfaction, and improved outcomes for partners across controlled and uncontrolled trials. MDMA (3-4, methylenedioxymethamphetamine), a psychoactive substance with strong empathogenic effects, was used in combination with CBCT for PTSD in a pilot study with six dyads. The 2-month protocol included two MDMA-facilitated sessions and non-MDMA CBCT sessions. There were large pre-treatment to 6-month follow-up effect size improvements in PTSD outcomes on clinician, patient and partner-rated measures ($g = 2.24-3.28$). Both partners reported increases in relationship satisfaction and happiness ($g = 1.36-1.52$, and $1.55-2.13$). Reactions to research participation and long-term follow-up questionnaires demonstrated lasting perceived treatment benefits across multiple domains. Future planned studies to further investigate these pilot findings will be discussed.

7.2. Stress in Adolescents: Examining Links with Depression Risk and Suicide

Presenter: Jeremy Stewart, Queen's University

Co-authors: Rebecca Kremens, Melodi Begetis, Gabby Craddock, Megan Rowe, Diego Pizzagali, & Randy Auerbach

Abstract: Exposure to stressful life events (SLEs) is proximally linked to the onset of Major Depressive Disorder (MDD) in adults and youth. Nonetheless, the role SLEs may have in shaping early risk for depression and their potential link to clinical severity have not been thoroughly tested. Towards addressing these gaps, we examined relations between stress exposure and (a) familial risk for MDD (Study 1) and (b) suicidal behaviours (Study 2). Study 1 included healthy low- ($n=19$) and high-risk ($n=24$) adolescents ($M_{age}=12.88$, $SD_{age}=0.79$)—by virtue of a maternal history of MDD—with no lifetime mental disorders. Study 2 enrolled 81 adolescents ($M_{age}=15.53$, $SD_{age}=1.86$), including healthy controls (HCs; $n=30$), depressed youth reporting suicide ideation but no lifetime attempts (SI; $n=31$) and depressed suicide attempters (SA; $n=20$). Both samples were administered the Life Events and Difficulties Schedule (Bifulco et al., 1989), a semi-structured interview and contextual rating system, to capture SLE severity. In Study 1, we found a significant Group (high-risk, low-risk) by SLE Domain (interpersonal, non-interpersonal, independent) interaction, $F(2, 82)=4.39$, $p=0.015$, $\eta^2=0.10$. Relative to low-risk adolescents ($M=0.50$, $SEM=0.36$), high-risk adolescents reported more severe independent SLEs ($M=2.16$, $SEM=0.41$). In Study 2, there was also a Group (HC, SI, SA) by Domain interaction, $F(3.96, 140.71)=3.80$, $p=0.006$, $\eta^2=0.10$. Simple effects analyses showed that the SA group experienced more severe interpersonal stress than the HC or SI groups, $F(2, 71)=4.13$, $p=0.020$, $\eta^2=0.10$. These findings shed light on stress domains that may be most relevant to the development of MDD and its associated features in adolescence.

7.3. Disentangling Adversity Timing and Type: Contrasting Theories in the Context of Maternal Postpartum Physical and Mental Health using Formative Models

Presenter: Nicole Racine, University of Calgary; **Co-authors:** Andre Plamondon, Suzanne Tough, & Sheri Madigan

Abstract: Background: Research on the deleterious effects of adversity has led to mounting interest in examining its role across the life course, and measuring the differential impact as a function of its timing and type. Accordingly, the current study used formative latent models to test whether adversity over time and across types is best accounted for by a cumulative model with regards to its influence on maternal postpartum health. Methods: Women from a prospective pregnancy cohort ($N=3,388$) reported retrospectively on their experiences of adversity (i.e., neglect, physical, sexual, and emotional abuse) in childhood, adolescence, and adulthood. At 12 months postpartum measures of overall health, stress, anxiety, and depression were gathered. Results: First, formative latent models were generally supported, consistent with a cumulative risk model of adversity. Second, results supported models where the strength of the effect of adversity did not vary across subtypes of abuse at different developmental timing. That is, in childhood, adolescence, or adulthood, the subtype of adversity (neglect, physical, sexual, or emotional abuse) exerted a similar effect on maternal postpartum outcomes. There was one exception for the timing of sexual abuse, whereby adversity experienced in adulthood, but not childhood or adolescence, had a significant effect on postpartum health outcomes. Conclusions: Results suggest that we may more adequately predict maternal postpartum outcomes by assessing adversity across the lifespan rather than focusing solely on early adverse experiences. Our novel methodological approach may also be used to advance our understanding of the consequences of adversity if combined with a prospective design.

7.4. Identifying p-Factor in Developmental Trauma Symptomatology Among Children Involved in Child Welfare

Presenter: Jackson Smith, University of Waterloo; **Co-authors:** Mark Wade, Duane Durham, & Dillon Browne

Abstract: Childhood trauma is associated with a wide array of neurodevelopmental, physiological, psychosocial, and emotional challenges beyond those captured by posttraumatic stress disorder (PTSD), especially in instances of multiple and/or repeated traumas and traumas that occur in the context of a caregiving relationship. As a result, children who have experienced complex developmental trauma often receive multiple diagnoses concurrently and across their lifespan. Indeed, childhood trauma has been identified as an important transdiagnostic risk factor in the etiology of numerous mental disorders and in research examining the structure of psychopathology, whereby childhood trauma is associated with increased levels of general liability to psychopathology, as measured by a general psychopathology factor (p-factor) (Caspi et al., 2014). However, recent criticisms of p-factor modeling have questioned the interpretation and cross-study comparability of this research, calling for a more theory-driven approach to defining the general factor. One line of inquiry is to examine emotion dysregulation as the general factor, as it mediates the relationship between childhood trauma and the transdiagnostic risk of psychopathology. However, emotion dysregulation has not yet been tested as a reference domain for the p-factor, nor has the structure of psychopathology been tested within a Developmental Trauma Disorder (DTD) framework. This study attempted to address these gaps in a sample of (N = 555) children involved in the Ontario child welfare system with substantiated cases of maltreatment. First, we coded the items of the Assessment Checklist for Children (ACC) to the proposed DTD diagnostic criteria. Second, we tested the factorial structure of DTD symptoms using Confirmatory Factor Analysis, including a single factor, correlated factors, second order, fully symmetrical bifactor, and bifactor(S-1) model with emotion dysregulation as the general factor reference domain. The results identify gaps in the ACC when applied to the DTD framework and suggest that the bifactor(S-1) model fits the data best and provides the most interpretable results with meaningful implications for clinical research and practice.

Symposium 8: Stress and COVID-19

8.1. Tau-PET is associated with knowledge of COVID-19, COVID-19-related distress, and change in sleep quality during the pandemic

Presenter: Firoza Lussier, McGill University; **Co-authors:** Stijn Servaes, Min Su Kang, Gleb Bezgin, Mira Chamoun, Jenna Stevenson, Nesrine Rahmouni, Alyssa Stevenson, Tharick Ali Pascoal, Suzanne King, Guillaume Elgebilli, Danilo Bzdok, Serge Gauthier, & Pedro Rosa-Neto

Abstract: Background: The effects of social isolation resulting from the COVID-19 pandemic on elderly individuals and their association with Alzheimer's disease biomarkers remains an open question. Here, we investigate whether knowledge of COVID-19, pandemic-related distress, and changes in sleep quality were associated with in vivo tau deposition in an AD-enriched cohort. Methods: Telephone COVID-19 clinical and neuropsychiatric assessments were conducted in N=292 individuals of the TRI-AD cohort in April-July 2020. Structural MRI and [18F]MK6240 tau-PET were acquired before the pandemic. [18F]MK6240 standardized uptake value ratio (SUVR) were calculated using cerebellar grey matter as the reference region. Voxel-based regression analyses examined the associations between [18F]MK6240 SUVR and knowledge of COVID-19, distress related to COVID-19, and change in sleep quality since the pandemic. Results: Higher tau-PET SUVR in the cuneus, cingulate and superior temporal regions was associated with less knowledge of COVID-19 (N=210). Tau-PET was similarly associated with lower COVID-19-related distress in the isthmus and rostral anterior cingulate (N=201). Tau-PET tracer uptake was significantly associated with increases in sleep quality as assessed by rate of change in Pittsburgh Sleep Quality Index before and during the pandemic (N=176). All results survived correction for multiple comparisons. Conclusion: Our results suggest that those with increased tau deposition may have a weaker understanding of COVID-19 symptoms and prevention and lower levels of pandemic-related distress. Individuals with higher tau may also experience improved sleep quality during the pandemic. These observations may suggest that public health information about COVID-19 is less accessible to the aging, preclinical population.

8.2. Pre-pandemic cortisol reactivity predicts youths' trajectories of internalizing symptoms during the COVID-19 pandemic

Presenter: Andrew Daoust, Western University; **Co-authors:** Haley Green, Matthew Vandermeer, Kasey Stanton, Kate Harkness, & Elizabeth Hayden

Abstract: While the COVID-19 pandemic has a widespread and pervasive impact on Canadians, individual differences in sensitivity to stress are well established. Past research shows that acute stress reactivity may mark youths' vulnerability to internalizing problems in the context of stress. Studying youths' symptom development over the course of COVID-19 provides an opportunity to examine how individuals with differing sensitivity to acute stress adjust in the context of a universal and chronic stressor. In 2017, 94 adolescents (42 girls; M = 11.10 years old) from a longitudinal study of children's emotional development completed a social stress task to elicit cortisol reactivity. These adolescents are currently completing biweekly self-reports of internalizing symptoms during the COVID-19 pandemic (N = 81; 37 girls; M = 14.28 years old). Structural equation modeling showed that girls with elevated cortisol stress reactivity reported more symptoms of anxiety when COVID-19 restrictions were first implemented in Ontario ($b = 11.092$, $p = .028$) and also had more stable depressive symptoms over time; in contrast, depressive symptoms in all other youth declined over time ($b = .678$, $p = .006$). Implications for theory, prevention, and early intervention will be discussed.

8.3. The Stress Test: Early Identification of Student COVID Stress to Prevent Grade Inequities

Presenter: Emily Cyr, University of Waterloo; **Co-authors:** Jacklyn Koyama

Abstract: Beyond infection-related fears, there are pervasive mental health consequences indirectly linked to the COVID-19 pandemic. We pre-registered links between heightened psychological stress and historic and pandemic-related inequalities (e.g., demographic, ideological), hypothesizing consequently widening educational gaps. We longitudinally tracked a first-year undergraduate class (N = 512) to test these directional hypotheses; tracing group-based stress differences over time and demonstrating consistent links to worse academic grades. Baseline stress differences. Naturalistic variation in COVID-19 stress broadly aligned with our hypotheses. Most critically, historically marginalized groups (women, non-whites) as well as many of those experiencing economic/educational barriers (e.g., low SES), and (surprisingly) those reporting religious affiliations, had higher COVID-19 stress. Changes over time. The majority of groups reporting higher baseline stress experienced the same trajectory of COVID-19 stress over the term. Specifically, most higher-stress groups tended to exhibit concave quadratic and positive linear trends; initial stress increases which then plateaued (or reduced). We discuss how these patterns map onto group-based resiliency during the pandemic. Stress and academic grades. Finally, as hypothesized, COVID-19 stress was associated with worse academic grades overall. Looking at our identified higher-stress groups, we see particularly strong relationships between stress and lower grades - for those groups disadvantaged vis à vis COVID-19 stress, academic grades are especially fragile. Implications. We discuss potential future interventions tailoring stress-reduction strategies to those groups experiencing above-average mental health consequences as a result of the COVID-19 pandemic. Further, we provide recommendations for how to forestall stress-related grade consequences for visible (vs. hidden) marginalized groups.

8.4. Relationship Dissatisfaction Predicts Emotional Eating at the Onset of the COVID-19 Pandemic

Presenter: Catherine Ouellet-Coutois, Concordia University; **Co-authors:** Emily Carrese-Chacra & Jean-Phillippe Gouin

Abstract: Emotional eating (EE) occurs when individuals resort to eating in order to cope with negative emotions, and is associated with a higher body mass index (BMI), binge eating, weight gain, and mental health problems such as depression. Several studies have examined the role of romantic relationships in problematic eating behavior and have suggested that some individuals overeat in order to cope with negative emotions in their relationship and to avoid conflict. The current study aimed to test the hypothesis that depression, anxiety, BMI, gender and relationship satisfaction would be significant predictors of EE as a coping response at the onset of the COVID-19 pandemic in Quebec. The total sample involved 288 individuals living in Quebec and reporting being in a romantic relationship (N = 288). One week after shutdown was declared in Quebec, participants completed online questionnaires and reported on their symptoms of depression, COVID-19-related anxiety, relationship satisfaction, and BMI. One month later, participants self-reported on their EE. Hierarchical linear regressions indicated that a model including COVID-19-related anxiety, BMI, gender and relationship satisfaction as predictors accounted for 23.6 % of the variance in EE, $F(5, 159) = 9.53, p < .001$. Notably, relationship satisfaction came out as a significant negative predictor ($\beta = -.20, p = .012$) of EE, above and beyond anxiety, gender and BMI. These findings suggest that relationship dissatisfaction may be a vulnerability factor implicated in EE in response to stressful life events. This investigation highlights the relevance of couple-based approaches for treating problematic eating behaviors.

Student Spotlight: 5-Minute Flash Talks

SP1. Effect of Thermal Stress on the Intracellular Localization of Constitutively Expressed Heat Shock Protein A8 (Hsc70) in Cultured Human Neuronal Cells

Presenter: Aditi Aggarwal, University of Toronto; **Co-authors:** Ian R. Brown

Abstract: Heat shock protein A8 (HSPA8), also known as Hsc70, is a constitutively expressed member of the Hsp70 multigene family that is abundantly expressed in unstressed neurons. Our previous studies suggest HSPA8 may play an important role in the pre-protection of neurons from cellular stress. In comparison to the widely studied stress-inducible Hsp70 which has been a focus in cellular repair mechanisms and as a potential beneficial strategy for combating neurodegenerative diseases, constitutively expressed HSPA8 has been overlooked. This study highlights the importance of HSPA8 and its role as a fast responder to cellular stress in differentiated human SH-SY5Y neuronal cells. The effect of heat shock on the intracellular localization of HSPA8 was compared in differentiated and undifferentiated human SH-SY5Y neuronal cells. HSPA8 rapidly translocated into the nucleus of differentiated neuronal cells after heat shock but not in undifferentiated cells. Members of the protein disaggregation/ refolding machine, namely DNAJB1 (Hsp40) and HSPH1 (Hsp105 α), co-localized with HSPA8 at stress-sensitive sites at the periphery of the nuclear speckles where transcription takes place. The rapid targeting of constitutively expressed HSPA8 to nuclear sites suggests that differentiated human neurons are able to assemble a protein disaggregation/ refolding machine after cellular stress without the time lag needed to induce stress-inducible Hsp70.

SP2. Chronic Early-Life Social Isolation Enhances Spatial Memory in Male and Female Rats

Presenter: Saeideh Davari Dowlatabadi, University of Waterloo; **Co-authors:** Nicole Teresa D'Costa & John G. Mielke

Abstract: Objective: Chronic early-life social isolation (CELSI) has been reported to affect learning and memory, however, few studies have examined whether such a developmental stressor similarly affects male and female animals. Methods: Upon weaning, male and female siblings from 15 Sprague-Dawley rat litters were stratified by sex and then randomly assigned to either the group housed (3 animals/ cage), or the social isolation (1 animal/cage) condition for 7 weeks. Spatial learning and memory were then tested over 5 days using the Morris water maze. Next, the animals were euthanised, and a variety of biometrics, such as plasma corticosterone levels, were gathered. Finally, to determine whether CELSI affected neural cell density, the expression of key neuronal and glial proteins was assessed in isolated hippocampal tissue using Western blotting. Results: Socially isolated male and female rats displayed improved spatial memory compared to their group housed counterparts. In contrast, there were no statistically significant effects of housing condition on either stress-sensitive biometrics, or the hippocampal expression of PSD-95 and GFAP. Conclusions: Taken together, the results suggest an effect of CELSI with regards to hippocampal-dependent behaviour that occurs in the absence of a change in the density of either excitatory synapses, or astrocytes.

SP3. Stereotype-threat and Memory in Older Adults: An Exploration of Cortisol and Explicit Memory in Older Men and Women

Presenter: Ashley Dawn Ryan, Brock University; **Co-authors:** Karen Campbell

Abstract: Stereotype-threat (STT) is characterised by underperformance on a task following exposure to a negative, relevant stereotype. There is a widely-held belief that older adults (OA) have poor memory. While aging and memory literature supports age-related memory decline, research has shown that reminding OA of aging stereotype can exacerbate performance errors, leading to poorer memory performance. Related research has shown that testing OA in a youth-favouring testing environment evokes a stress response, evidenced by an increase in salivary cortisol and steeper rate of forgetting. To explore these phenomena, we had OA complete an incidental encoding task, followed by STT manipulation. Half of the participants read an article in agreement with aging stereotypes while the other half read an article against such stereotypes. Implicit (word stem completion) and explicit (free recall) memory tests were given. Saliva samples were taken upon arrival and after memory testing. STT had no effect on implicit or explicit memory. STT also had no effect on cortisol levels. However, there was a negative correlation between average cortisol and the number of words correctly recalled. We suggest that the laboratory testing environment itself may be stressful to OA, overshadowing any effect of STT.

SP4. How Does Disadvantage Shape Family Processes? A Systematic Test of the Family Stress Model

Presenter: Laura Colucci, University of Waterloo; **Co-authors:** Nina Sokolovic, Jennifer Jenkins, & Dillon Browne

Abstract: Introduction: Given the inherent complexity of family interactions, disentangling sources of variance in family relationships and related outcomes is critical for conceptualizing family functioning. This includes assessing how disadvantage impacts the family system at different levels of analysis. Methods: Canadian families from Toronto and Hamilton, Ontario (n=224) were observed interacting in a round-robin design. Families included 4 members, each with 2 children (ages 5-9 and 9-13 years). Participants completed a co-operative Lego-building task for 5 minutes and interactions were coded for expressed positivity. Confirmatory factor analysis was utilized to test the Social Relations Model (SRM; with individual, dyadic and whole family analyses) and its relation to economic pressure and family mental health outcomes, within several nested models. Results: Acceptable model fit was achieved for all models. Significant variance in family positivity was found at the individual, dyadic and whole-family level. It was also found that the impact of economic pressure may compromise family dynamics in individual members and specific relationships, by negatively impacting mental health. Conclusions: These results advance previous literature analyzing family functioning with the SRM and explore how family interactions may be influenced by contextual factors and individual-specific mental health outcomes. Implications for clinical practice are discussed.

SP5. Economic Stress and Mental Health: The Role of Worry

Presenter: Miranda Too, York University; **Co-authors:** Esther Greenglass & Lisa Fiksenbaum

Abstract: For young people in Canada, economic factors are a growing concern. Not only are youth unemployment rates persistently higher than their older counterparts, they are also often the first to experience job loss in an economic downturn. This can be especially stressful, given that many carry a substantial educational debt. These factors culminate in a fearful, anxious uncertainty about one's financial situation, known as "financial threat". Previous research has found financial threat to be exacerbated by both situational factors (e.g., job loss), and dispositional factors (e.g., low self-efficacy). A tendency to worry has been historically related to poor mental health outcomes. The present study examined the interaction of economic stress and worry on mental health in a sample of Canadian undergraduate students (n=285). An online survey was used to measure financial threat, economic hardship, worry, and states of mental health (i.e., suicide ideation, anxiety, and depression). Preliminary results showed that heightened financial threat had strong associations with poor states of mental health. Additionally, those with a tendency to worry were more likely to be experiencing poor mental health. Regression analysis revealed a significant interaction between tendency to worry and financial threat on suicide ideation. Those with high perceived financial threat experienced greater suicide ideation when they were also high in worry. These results suggest that tendency to worry is an important dispositional factor to address when coping with financial stress. Future research should explore economic stress interventions to manage worry in youth, as they continue to face uncertain economic prospects.

SP6. Perceived Growth Following Experiences in Isolated, Confined, and Extreme Environments: A Systematic Review.

Presenter: Patrick Nicoll, University of Victoria; **Co-authors:** Jordan I. Ali, Kristen Silveira, & Colette M. Smart

Abstract: Background: The environmental and psychosocial adversity presented by remote polar locales has historically been framed in pathological terms. However, a burgeoning body of evidence suggests that stressful conditions across isolated, confined, and extreme (ICE) environments may elicit positive growth outcomes as well. A deeper understanding of post-expedition growth in ICE environments – as well as promotive factors that strengthen positive outcomes – could inform the development of countermeasures to mitigate risks inherent in known and novel endeavors requiring ICE exposure. Objectives: The purpose of this systematic review is 1.) to assess the scope of literature that examines post-expedition growth in polar expeditioners; 2.) to investigate positive change based on five specific personal growth indicators – 'new opportunities', 'relating to others', 'personal strength', 'spiritual change', and 'appreciation of life' – among expeditioners; and 3.) to examine individual and group promotive factors that may contribute to post-expedition growth outcomes in ICE contexts. Methods: A systematic review will be conducted according to the PRISMA guidelines. A search of multiple electronic databases, including PubMed, Embase, and PsychINFO will be used to find articles written in English with no restriction on publication year. Search terms will be selected to target positive psychological growth in remote polar environments. Anticipated Results: These results will illuminate knowledge gaps for future ICE research, as well as help identify potential countermeasures for individuals and groups faced with comparable adversity factors in their immediate environments. The application of these principles to broader and novel ICE contexts (e.g., manned space flight) will be explored.

SP7. The Stress Regulating Effect of Observing Others' Communal Strategies

Presenter: Lior Torgeman, University of British Columbia; **Co-authors:** Jayani Mehta, Yingchi Guo, Yeeun Lee, & Frances Chen

Abstract: The Covid-19 pandemic has exposed individuals to numerous stressors, from primary threat of infection to secondary stressors including social isolation, financial insecurity and occupational difficulties. These stressors trigger different coping strategies. Some people may choose to engage in communal strategies, where they turn to their relationships with others and prioritize the community. Others may engage in self-focused strategies, where they prioritize their own needs over those of the community. Our experimental study aims to assess the potential effects of merely observing others engage in communal strategies versus self-focused strategies in response to the pandemic. 491 participants first wrote about their pandemic-related struggles and rated their subjective stress levels. They were then randomly assigned into two conditions, requiring them to watch a 3-minute video from the news. The communal video condition involved watching news depicting others engaging in communal strategies (e.g., volunteering). The self-focused video condition involved watching news depicting individuals engaging in self-focused strategies (e.g., stockpiling). Participants then rated their stress levels once again. We hypothesized that participants in the communal video condition would show larger reductions in the stress responses assessed. Our data showed significant results supporting the hypothesis, as participants in the communal video condition showed greater reductions in stress, anxiety and feelings of upset about their own pandemic-related stressors. These findings suggest that communal strategies not only benefit those giving or receiving the support, but impacts the stress regulation of those observing the behaviours as well.

SP8. Coping with the COVID-19 pandemic: Examining gender differences in stress and mental health among university students

Presenter: Frances Sherratt, Carleton University; **Co-authors:** Rebecca Prowse, Alfonso Abizaid, Rob Gabrys, Zachary Patterson, Robyn McQuaid, & Kim Hellemans

Abstract: University students are particularly vulnerable to stress and mental health disorders. This susceptibility to stress arises in part because of the academic, social, and personal demands of navigating higher education. The COVID-19 pandemic has introduced a wide variety of additional and unprecedented challenges, but precisely how COVID has impacted Canadian University students and how the challenges have differentially affected male and female students has yet to be determined. Accordingly, we conducted an online survey of Canadian undergraduate students ($n = 366$) to examine the impact of the COVID-19 pandemic on their academic and mental well-being, as well as the nature and extent of coping strategies endorsed to cope with COVID-19. As expected, more females relative to males indicated that the COVID-19 pandemic has had a negative impact on their academics, feelings of isolation, stress levels, and mental health compared to male counterparts. For females, the frequent use of social media as a coping mechanism was associated with greater negative impacts on academic, stress, and mental health outcomes, compared to males. While there were no differences between genders on the use of substances to cope, for males the use of cannabis was associated with greater negative impacts on academic outcomes, stress, and mental health compared to females. These findings highlight the need for adequate student support services across the post-secondary sector and point to the importance of gender informed interventions to address the impacts of the COVID-19 pandemic.

SP9. Combined adolescent nicotine and footshock stress exposure augments adult nicotine self-administration without affecting adult baseline anxiety-like behaviour or corticosterone response to nicotine or footshock stress

Presenter: Briana Renda, University of Guelph; **Co-authors:** Allyson Andrade, Adia Stone, Rita El Azali, Michael Sharivker, Jibrán Khokhar, & Jennifer Murray

Abstract: Though adolescent cigarette smoking has steadily declined over the past decade, the use of nicotine has been dramatically increasing via the use of e-cigarettes. The current study sought to assess the long-lasting behavioural and neurochemical effects of adolescent nicotine and footshock stress exposure. **Method.** Adolescent male Sprague-Dawley rats were randomly assigned to one of five groups: CS+ or CS— (nicotine—shock); Shock (no nicotine); Nicotine (no shock); Saline (no shock/nicotine). During adolescence (P28-56), depending on group assignment, rats received either 1.0 mg/kg nicotine or 1.0 ml/kg saline, SC, 5 min before a 20-min session in an operant box either paired (CS+), unpaired (CS—), or never experienced (Nicotine) with eight random presentations of shock (0.8mA;0.5-sec). Saline rats received neither nicotine nor shock. Rats were assessed in adulthood (P70-72) on nicotine self-administration (0.03mg/kg/infusion, IV) or anxiety-like behaviour in an open field test (OFT) in a drug-free state followed by corticosterone (CORT) response to nicotine (1mg/kg, SC) or shock (2-min test with 4 shocks;0.8mA). **Results.** While intermittent exposure to a high dose of nicotine or footshock stress alone throughout adolescence did not significantly affect adult nicotine self-administration relative to saline controls, the combination of these experiences potentiated nicotine self-administration and drug-seeking when nicotine became unavailable during extinction sessions. While nicotine self-administration differed across groups, anxiety-like behaviour and CORT response to nicotine or shock in adulthood did not. **Conclusions.** Nicotine and stress exposure in adolescence produces long-lasting alterations in behaviour that may underlie enhanced vulnerability to adult nicotine use.

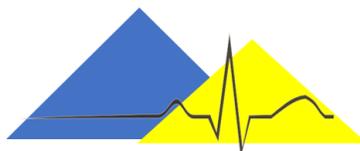
Flash-5 presentations will be adjudicated for the

“Best 5-Flash Five Award”

Student Poster Presentations will be adjudicated for the

“Best Poster Award”

Results will be announced on May 8th during the closing remarks



Poster Presentations

P01: Mandatory Homeschooling During the Pandemic: The Consequences on Mothers' and Fathers' Work-Family Conflict and Alcohol Use Behavior

Presenter: Danika DesRoches, Dalhousie University; **Co-authors:** Sherry H. Stewart, Lindsey Rodriguez, S. H el ene Deacon, Mariam Elgendi, Fiona E. King, Simon B. Sherry, Raquel Nogueira-Arjona, Sandra Meier, & Allan Abbass

Abstract: To control COVID-19 spread, schools and workplaces were closed, leaving parents to home-school their children while adjusting to working-from-home. Parents are left juggling the new role of teacher, adding more parenting responsibilities, which may increase conflict between work and family demands. We conducted a survey with 758 couples focusing on homeschooling, conflict between work and family demands, and alcohol use in April 2020. The 211 homeschooling couples reported more work-family conflict than the non-homeschooling couples; homeschooling effects on family-interference with work were particularly strong in women. The number of hours spent homeschooling was associated with greater partner drinking. Mothers' homeschooling hours was associated with greater drinking frequency by both parents. Interestingly, men's hours homeschooling was not associated with their own drinking frequency but was associated with lower drinking frequency in their female partners. Increased work-family conflict in couples that are homeschooling is particularly worrisome given its link to increased stress and poor mental health outcomes. Moreover, women's increased drinking in response to their own homeschooling may impede their ability to support their families during the pandemic. Men's increased drinking in response to partner homeschooling could put homeschooling mothers at risk for escalating conflict/domestic violence given links of male drinking to IPV. Finally, the protective partner effects of males' homeschooling hours on female drinking frequency suggests that more egalitarian division of mandatory homeschooling labor can have protective spillover effects in preventing frequent drinking among women during the pandemic.

P02: Parenting During COVID-19: Emotional Distress And Coping-Related Substance Use Among Homeschooling Parents

Presenter: Mariam Elgendi, Dalhousie University; **Co-authors:** S. H el ene Deacon, Lindsey Rodriguez, Fiona E. King, Simon B. Sherry, Raquel Nogueira-Arjona, Sandra Meier, Allan Abbass, & Sherry H. Stewart

Abstract: In attempts to control spread of COVID-19, schools and workplaces were closed, leaving families sheltering-in-place and parents taking on homeschooling their children while many also adjusted to working-from-home. Little is known about the impact of mandatory homeschooling during lock-down on parents' emotional health and substance use. **Methods:** We conducted a Qualtrics Panel survey with 758 Canadian couples; in June 2020, participants retrospectively reported on the month of April 2020, close to when schools were first closed. **Results:** In Actor-Partner Interdependence Models (APIMs) controlling for respondent age, the 211 couples homeschooling children reported significantly more cannabis use to cope with both depression and anxiety and marginally more alcohol use to cope with anxiety. Among homeschooling couples, more hours spent homeschooling was associated with greater anxiety, depression, COVID-related traumatic stress and socioeconomic worries in the individual, and more frequent alcohol use to cope with both depression and anxiety in the partner. More hours spent homeschooling was also marginally associated with greater COVID-related traumatic stress in the partner. **Conclusion:** These findings are of grave concern given that increased emotional distress and coping-related substance use among homeschooling parents is likely to impede their ability to support their families during these challenging times.

P03: The role of parent stress on children's screen time use and behavioural outcomes during the second wave of the pandemic

Presenter: Amira Hmidan, Western University; **Co-authors:** Diane Seguin, Bruce J. Morton, & Emma G. Duerden

Abstract: In the 2020-2021 pandemic school year, Ontario families have grappled with changing educational, recreational, and public health policies. Higher levels of parental stress (PS) paired with increased screen time (ST) in children may negatively impact children's behavioural outcomes. This survey study sought to examine how PS, parenting styles, and prolonged ST impact behavioural outcomes in school aged children. Two objectives were addressed: To determine the factors associated with ST use in children; and to determine if PS and parenting styles are associated with adverse behavioural outcomes in children. Parents (n = 60) completed survey measures on their parenting styles, PS and their children's behaviours. The average age was 35 years (SD = 7.17) and 8 years (SD = 1.92) for parents and children respectively. Two generalized linear models were performed. With ST as the dependent variable, higher PS (B = 4.22, p = .027) and lower parental involvement (B = -13.64, p = .021) were associated with higher levels of ST in children. A second model included children's Peer Problems and Internalizing Behaviours as dependent variables. Increased PS was positively associated with children's peer relationship problems (B = .04, p = .003) and internalizing behaviours (B = .07, p = .005). Findings indicate that PS and parenting styles are key risk factors for children's behavioural outcomes during the pandemic. Family mental health should be taken into consideration during lockdowns and our research indicates the need for supportive interventions for parents.

P04: Correlates of psychological distress in older adults during COVID-19: A longitudinal study of older adults in Quebec

Presenter: Sara Matovic, Concordia University; **Co-authors:** Florence Jauvin, Sébastien Grenier, Helen-Maria Vasiliadis, & Jean-Philippe Gouin

Abstract: In response to the COVID-19 pandemic, the Quebec government imposed several physical distancing and confinement measures to curb the spread of the SARS-CoV-2 virus. While these measures are important to limit propagation of the virus, there may be collateral consequences such as increased loneliness and distress, especially in older adults who are already at risk of social isolation. The purpose of this study was to examine the prevalence and correlates of psychological distress in older adults across three time points of COVID-19 confinement. Our sample included 577 older adults with a mean age of 79.11 (SD = 5.43). Participants completed three telephone-based interviews: T1 between April and June 2020, T2 between July and August 2020, and T3 between September and December 2020. At each assessment, participants completed the Kessler Psychological Distress Scale (K-10) to evaluate psychological distress. They also provided information on sociodemographic characteristics, lifestyle behaviours, quality of life, social support and interaction with others, loneliness, and COVID-19 related restrictions. At T1, about 21.0% scored above the clinical cut-off score. There was no significant fixed effect of time, but a random effect was detected, suggesting some individuals showed increased distress and others decreased over time. At time 1, predictors of psychological distress included feelings of loneliness, insomnia symptoms, decreased quality of life, having less access to food, medication and physical services, and having reduced help from others. Time 1 predictors of sustained distress at time 3 included insomnia symptoms, decreased tangible and emotional support from others, and reduced help from others. These findings identify areas for potential intervention to relieve psychological distress in older adults during COVID-19 confinement.

P05: Associations among Dispositional Optimism, Coping, and COVID-19-related Stress

Presenter: Amanda Marlandis, Concordia University; **Co-authors:** Erin T. Barker

Abstract: Dispositional optimism is a personality trait that reflects one's expectancy for positive future outcomes. Individuals who expect positive future outcomes may employ different coping strategies compared to those who expect negative future outcomes. There is limited research on the link between dispositional optimism and context-specific coping. The current study examines associations of optimism and coping with COVID-19 related stress in a sample of 307 emerging adults attending a large urban Canadian university. We hypothesized that students with higher levels of optimism would exhibit more adaptive coping strategies and have lower levels of COVID-19 related stress and that the association between optimism and stress would be mediated by coping. Participants completed the Life Orientation Test-Revised (Scheier et al., 1994), the Brief COPE (Carver, 1997), and the Fear of the Coronavirus Measure (Mertens et al., 2020). Preliminary correlational analyses demonstrated a significant association between optimism and COVID-19 related stress ($r = -.14$). A preliminary mediation analysis testing the indirect effect of self-blame on the relation between optimism and COVID-19 related stress found that the indirect effect was statistically significant [Effect = $-.08$, 95% C.I. ($-.1483, -.0103$)]. Additional analyses will explore pathways with other coping strategies. Determining what coping strategies are effective in dealing with COVID-19 related stress could help inform and encourage public health initiatives.

P06: Psychological Consequences of COVID-19 in Canadian Adults

Presenter: Gillian Shoychet, Ryerson University; **Co-authors:** Ariella P. Lenton-Brym, & Martin M. Antony

Abstract: COVID-19 anxiety ("coronaphobia") describes dysfunctional anxiety about the coronavirus (e.g., fear of contracting or spreading the virus). Past research has demonstrated associations between heightened COVID-19 anxiety and reduced psychological outcomes (including quality of life [QoL] and daily functioning [DF]). Further research aimed at investigating potential moderators of the relationship between (1) COVID-19 anxiety and QoL, and (2) COVID-19 anxiety and DF, is necessary to determine which individuals are more susceptible to these consequences. Studies have found that both intolerance of uncertainty (IU) and locus of control (LOC) have been associated with varying negative mental health outcomes (e.g., depression and anxiety) during the pandemic. Thus, the current study will examine whether IU and health-specific LOC (HS-LOC) moderate the relationship between the proposed study variables. This study will recruit 150 Canadian adults via Amazon Mechanical Turk (MTurk). Participants will complete online questionnaires assessing demographics and the constructs of interest. It is predicted that there will be a negative relationship between (1) COVID-19 anxiety and DF, and (2) COVID-19 anxiety and QoL. Moreover, it is hypothesized that these associations will be significantly moderated by IU and HS-LOC, such that these relationships will be stronger for participants with higher (1) IU and (2) external HS-LOC. Regression analyses will be conducted to analyze the proposed relationships. These findings may help identify individual risk factors that contribute to greater pandemic-related mental health challenges. A more comprehensive understanding of the relationship between these variables may also enable clinicians to better support their clients during this unpredictable time.

P07: Early perceived stress sets the 'tone' for mental health across the COVID-19 pandemic

Presenter: Samuel Fynes-Clinton, Rotman Research Institute, Baycrest; **Co-authors:** Ziming Cheng, Faryn Starrs, & Donna Rose Addis

Abstract: The COVID-19 pandemic has caused prolonged and stressful changes to daily life. We investigated whether high perceived stress early in the pandemic predicted ongoing higher perceived stress across the pandemic. Further, given stress is related to both greater depressive symptoms and a more restricted view of the future, we investigated associations between perceived stress, depressive symptoms and future time perspective over time. Longitudinal online survey data were collected from 433 participants; N=237 completed all five surveys (May, June, July, October and December 2020). Consistent with the global time-course of the pandemic, perceived stress decreased from June to July (spans end of wave 1) and increased from July to October (spans start of wave 2). Multiple regression analyses revealed that high perceived stress in May was a significant unique predictor of higher perceived stress at all four subsequent time points, over and above other predictors such as age and perceived threat (which predicted stress in June and October only) and social isolation (which predicted stress in June and December only). A mediation analysis on change scores between the first (May/June) and second waves (October/December) revealed that increasing depressive symptoms predicted decreasing future time perspective via increasing perceived stress. Together, these findings suggest that perceived stress early in the pandemic is an important predictor for mental health outcomes into the second wave. Research on promoting resilience to stress during the pandemic should consider how changes in the factors associated with perceived stress across waves may impact the sustained effectiveness of stress-reduction strategies.

P08: Loneliness and sleep quality during the COVID-19 pandemic: A longitudinal study

Presenter: Jude Nachabe, Concordia University; **Co-authors:** LaBarron Hill, Emily Carrese, & Jean-Philippe Gouin

Abstract: Although social distancing directives are important public health measures to reduce the spread of SARS-cov-2, they can contribute to negative emotional outcomes such as loneliness due to the isolation. Furthermore, individuals have been reporting poorer sleep quality since the beginning of the COVID-19 pandemic. The aim of this study is to investigate the association between loneliness and sleep quality during the COVID-19 confinement. About 136 female participants (Mage = 50.55, SD = 6.0) completed Loneliness Scale, Pittsburg Sleep Quality Index, and a homemade measure of COVID-related worries one week and one month after the confinement measures were established in Quebec, and during the deconfinement period following the first wave of the epidemic. During the first week of confinement, loneliness explained a significant proportion of variance in sleep quality scores, $R^2=.11$, $F(4,131)=3.97$, $p<.01$ when controlled for age, chronic health condition, and financial worry due to the pandemic. Sleep quality increased by .215 standard deviations for each standard deviation unit increase in loneliness above and beyond the other variables. However, loneliness did not predict change in sleep quality over time. Therefore, increased loneliness is associated with poorer sleep quality early in the pandemic. The results suggest that increasing social connectedness during periods of confinement may improve sleep quality.

P09: Monitoring Outcomes of Northern Students' Resilience in Isolated and Secluded Environments

Presenter: Cheiyenne Fontanilla, University of Victoria; **Co-authors:** Patrick Nicoll, & Colette Smart

Abstract: The COVID-19 pandemic has led many communities around the globe to enter into periods of involuntary social isolation and confinement. For individuals living in Canada's Northern Territories (i.e., Yukon Territory, The Northwest Territories, and Nunavut), where communities may already be more sparse and geographically distributed, may have unique experiences of isolation that provide some form of inoculation from the psychological stressors of COVID-19 related isolation. In this study, we aim to investigate the cognitive and emotional impact of students from the North staying in isolated and Northern communities compared with returning to Southern urban areas for the 2020-21 Spring academic term, with respect to the broader context of COVID-19. A sample of N Northern post-secondary students (aged 19-25) enrolled at Canadian institutions completed self-report questionnaires and objective measures of cognitive function. Utilizing qualitative methods, N participants also completed an optional secure video-conference interview that explored individuals' accounts of their experiences in the Northern Territories. We hypothesize that (1) scores in cognitive performance will significantly differ between the two environmental conditions (North versus South), (2) persons staying in isolated and secluded environments will report lower levels of perceived social isolation and psychological distress, and (3) experiences in isolated and secluded environments will reduce individuals' perceived ability to cope with COVID-19 related stress. Results of this study may provide a contribution to the awareness of diversity within this geographic area and point towards opportunities for future Northern-based research.

P10: Mental Training for Academic Success during the Pandemic

Presenter: Yiyi Wang, University of Toronto; **Co-authors:** Norman Farb

Abstract: Background and Objectives: The COVID-19 pandemic has been a highly stressful period where conventional university education moved to online formats. However, there is limited research on how to support the mental health of students during this time. The aim of the current study was to compare online mental training interventions to support undergraduate students' psychological well-being and provide alternative coping strategies for students to better adapt to unavoidable stressors, inherent in their academic careers. Design: The study employed a mixed-model, multilevel randomized control trial. Methods: 183 undergraduate students were randomly assigned to a stress mindset (SM) condition, a standard mindfulness (MM) condition, or a mindfulness with choice (MC) condition. Mental health and coping skill data were assessed and analyzed at three levels: across the study period, across sessions, and within sessions. Results: Across the study, use of positive coping and decentering increased and negative coping decreased across all 3 groups. The SM condition uniquely enhanced stress mindset. Across sessions, decentering improved across all 3 conditions. Positive affect degraded significantly in the MM condition but was protected in the SM and MC conditions. Within training sessions, stress and negative affect were reduced while decentering, motivation and positive affect improved across all 3 conditions; however, positive affect improved most in the MC condition. Conclusions: This study supported students through the implementation of brief online mental health interventions that were both tolerable to students and helpful for improving their stress management skills and overall well-being.

P11: Mental health outcomes during COVID-19: A scoping review & recommendations for geriatrics research

Presenter: Serena Thaper, University of Toronto; **Co-authors:** Linda Mah

Abstract: In addition to being at a greater risk for severe illness during infectious outbreaks, older adults are also vulnerable to mental and physical health consequences of increased stress. Recent reviews of mental health during COVID-19 have not considered the geriatric population. The present review provides a scope of the literature on the prevalence of psychiatric symptoms in the general population, with a geriatric lens. The PRISMA Extension for Scoping Reviews Checklist was used as the methodological framework. A review of the literature was conducted through searches of PubMed and <https://www.medrxiv.org/> from January 1st, 2020 to June 1st, 2020. Results pooled across the 56 included studies indicated that 1 in 3 individuals across all age groups endorses post-traumatic stress symptoms, while 30% experience overall stress. Effects of age on mental health outcomes are mixed. Several studies show that the risk or severity of psychiatric symptoms may be lower in older adults, while others show the opposite pattern or no effect of age. Overall, nearly 1 in 3 individuals have experienced negative effects on mental health during COVID-19, a figure that exceeds rates reported in healthcare workers. Future studies must employ a broader range of survey methods to adequately sample the older adult population and incorporate longitudinal study designs to reach more definitive conclusions regarding the pandemic's impact on mental health in the geriatric population.

P12: Personality traits of neuroticism and extraversion predict the effects of the COVID-19 on the mental health of Canadians

Presenter: Anahita Shokrkon, University of Alberta; **Co-authors:** Elena Nicoladis

Abstract: The COVID-19 pandemic began in December 2019 and spread to other countries fast. The COVID-19 pandemic impacted the psychological wellbeing of all people around the world and have had adverse mental health consequences. Individual differences such as personality could contribute to people's behaviors during a pandemic. In the current study, we examine how personality traits of neuroticism and extraversion (using the Five-Factor Model as our framework) are related to the mental health of Canadians during the COVID-19 pandemic. Using data from an online survey with 1096 responses, this study performed multiple regression analysis to explore how personality traits of neuroticism and extraversion predict the effects of COVID-19 on the mental health of Canadians. The results showed that personality traits of neuroticism and extraversion are associated with the current mental health of Canadians during COVID-19 pandemic, with extraversion positively related to mental health and neuroticism negatively related to it. Results contribute to the management of individual responses to the COVID-19 pandemic and could help public health services provide personality-appropriate mental health services during this pandemic.

P13: Piece of Cake: Coping with COVID-19

Presenter: Nikita K. Koziel Ly, Carleton University; **Co-authors:** Ladan Mohamud, Hymie Anisman, Kimberly Matheson, & Melissa J Chee

Abstract: Background: Lockdown orders to minimize coronavirus disease 2019 (COVID-19) infection has inflicted widespread stress and lifestyle changes. In this context individuals may adopt counter-productive coping methods, particularly increased unhealthy high carbohydrate snacking. We identified COVID-19 factors impacting stress and food choices and are tracking whether shifts in coping strategies and/or food choices will reverse amid pandemic recovery. Methods: Adults (N = 680) living in Canada or the United States completed an online survey assessing COVID-19 experiences, mood, coping, and food choices at pandemic onset and will be assessed again upon pandemic recovery. We used hierarchical regression analyses to model how particular COVID factors were associated with stress appraisals, coping, mood, and food choices. Anticipated Results: Employment change, including job loss or reduced work hours, was a prominent COVID-19 stressor. When employment change was appraised as stressful, it was associated with avoidant- and emotion-focused coping and negative mood; negative mood in turn predicted greater consumption of salty or sweet snacks as individuals coped by eating. However, appraising the situation as controllable was associated with problem-focused coping, positive mood, and wholesome eating. A follow-up phase will assess if employment recovery will be accompanied by improved mental state and weaken the association between stress and unhealthy snacking. Conclusion: Our study revealed that COVID-19 stressors and negative mood was associated with eating to cope and unhealthy food choices. Our planned follow-up survey may reveal the persistence of COVID-19 stressors. Funding: CU COVID-19 Rapid Response Research Grant.

P14: Opportunity study of mental health and stress reactivity before and after the onset of the COVID-19 pandemic

Presenter: Laurence Dumont, Université de Montréal; **Co-authors:** Charlotte Longpré, Claudia Sauvageau, Audrey-Ann Journault, Sandrine Charbonneau, Rebecca Cernik, & Sonia Lupien

Abstract: Given the unexpected nature of the COVID-19 pandemic, many research initiatives on stress and mental health lack baseline measures. In this context, we designed an opportunity study in which participants from two research projects (P1 and P2) conducted before the pandemic were contacted for an online data collection in April 2020 in Québec, Canada. Data collected on a total of 90 participants allowed us to assess if salivary cortisol reactivity and recovery to the Trier Social Stress Test (TSST) before the pandemic are significant predictors of changes in depressive symptoms (Beck Depression Inventory – BDI-II) during the COVID-19 crisis. We also quantified how scores on the BDI-II and emotion control questionnaires (ECQ) changed between these two data collection periods. Neither TSST reactivity nor recovery could significantly predict change in BDI-II score ($p > .314$). When comparing BDI-II scores before and during the pandemic for both projects, there was an interaction effect ($p = .009$) and no main effects ($p > .098$). 95% confidence intervals show scores increased after the pandemic for P1 but not for P2. As for the subscales of the ECQ, there was no time ($p = .149$) or interaction effect ($p = .329$). Participants from P1 displayed lower inhibition scores than from P2 ($p = .017$). Our results are in line with current reviews of the literature showing no or negligible changes in mental health indicators in the general population during the first months of the pandemic.

P15: Modelling emotional experiences as they relate to interoception, alexithymia, and stress

Presenter: Lauren K. Qualls; **Co-authors:** Andrea Kasian, Daniel Geselbracht, Jonathan Rush & Collette M. Smart

Abstract: Background. Under certain conditions, interoception—the perception of bodily cues—can aid in affective processing. Conversely, stress is theorized to disrupt interoception, which may explain why some distressed individuals experience somatic symptoms more readily than psychological ones. A marker of poor interoceptive ability is alexithymia—difficulty describing feelings. Existing research shows that emotions correspond to distinct bodily states measured using body sensation maps (BSMs), which relate to interoception and alexithymia. As such, it may be possible that individuals can be trained to pay attention to their body, which in turn could promote emotional differentiation and the ability to report on one’s own emotional experience. Objectives. To explore whether repeated introspection on day-to-day fluctuations in body awareness in turn promotes increased emotional awareness. Methods. Participants were undergraduate students (N = 48), between 19 and 54 years old, mostly female (77%) and Caucasian (75%). Interoception was measured using the Multidimensional Assessment of Interoceptive Awareness, alexithymia using the Toronto Alexithymia Scale, and stress using the Perceived Stress Scale. Using an ESM smartphone app, “EmbodimentMe” (Smart, 2014) for seven days, a subset of these participants (n = 29) completed daily introspection of their body awareness via BSMs and emotional experiences via the Positive and Negative Affect Schedules (PANAS). Planned Analyses. With multilevel modelling, we plan to predict BSMs and PANAS scores using baseline interoception, alexithymia, and stress. We also plan to explore possible moderators, such as age and gender.

P16: Examining the Effect of Social Media Use on Psychological Well-being of Older Adults in the COVID-19 Pandemic

Presenters: Mariah Lecompte & Alexandra Katsiris, Ryerson University; **Co-authors:** Linying (Lin) Dong, Lixia Yang, & Cassandra Skrotzki

Abstract: Fulfilling social needs such as building and maintaining social relationships is essential for older adults’ psychological well-being. While social media have been heralded as an effective and low-cost solution for older adults to build and maintain social connections, the extant literature has not yet reached a convergent clear-cut conclusion on the impacts of social media use on older adults’ psychological well-being. What is more, the effects of social media use on older adults’ psychological well-being during the pandemic remains unexplored. Drawing on the literature on social capital (i.e., intangible benefits gained through social interactions), we develop a conceptual model for the mechanisms through which social media use influences psychological well-being of older adults. Through a sample of 190 older adults (aged 65 and over) who resided in Canada during the COVID-19 pandemic, our research reveals that social media use does not directly affect anxiety. Rather, social media use significantly contributes to bridging (e.g., the connection of individuals from different backgrounds) and bonding social capital (e.g., the connection of individuals with strong relationships), which in return cast a differential impact on older adults’ obsession with social media. In addition, lack of social trust and obsession with social media are two significant predictors of anxiety experienced by older adults during the COVID-19 pandemic. Our research findings contribute to the literature on social media use and well-being of older adults by revealing social media use as a double-edged sword for the well-being of older adults.

P17: Longitudinal Changes in Traumatic Stress Symptoms During the COVID-19 Pandemic and the Moderating Effects of High-Frequency Heart Rate Variability

Presenter: Lorelie Roderbourg, Concordia University; **Co-authors:** Sasha MacNeil, & Jean-Philippe Gouin

Abstract: Introduction This study aims to assess the prevalence and change in traumatic stress symptoms during the first wave of COVID-19 pandemic in Quebec, Canada. In addition, high-frequency heart-rate variability (HF-HRV), a marker of cardiac vagal control, was evaluated as a potential moderator of these changes. Methods The sample included 234 women recruited from an ongoing research cohort. Participants' resting HF-HRV measures were taken up to 3 years prior to the pandemic. Participants completed the PTSD Checklist for DSM-IV (PCL) one week after the beginning of the lockdown restrictions (T1, end of march), one month later (T2, end of April), and at the end of the strict confinement measures during the first wave of the epidemic (T3, end of June). Results The results show a significant quadratic change in PTSD symptoms over time ($F=4.134$, $p < 0.05$). Specifically, there was a significant increase from T1 to T2, and a significant decrease from T2 to T3. Indeed, 34.8% of participants met a cut-off score of 35 for the PCL at T1, while 45.8% met this cut-off score at T2, with this proportion decreasing at T3 (36.2%). Resting HF-HRV was not a significant predictor of change in PTSD symptoms over time. Discussion Overall, participants demonstrated a pattern of acute traumatic stress symptoms in the first month of the confinement, followed by adaptation to this stressor over subsequent weeks. This pattern was observed regardless of HF-HRV.

P18: Deliberate Self-Harm in Adolescents During COVID-19: The Roles of Pandemic-Related Stress, Emotion Regulation Difficulties, and Social Distancing

Presenter: Christina Robillard, University of Victoria; **Co-authors:** Brianna Turner, Megan Ames, & Stephanie Craig

Abstract: The COVID-19 pandemic resulted in unparalleled public health responses (e.g., social distancing, school closures, stay-at-home orders) that elevated stress and mental health difficulties among adolescents. However, no research has investigated the association between COVID-19-related stress and deliberate self-harm (DSH), a class of behaviors that involve intentional, self-inflicted, and non-fatal harm to one's body. Etiological models conceptualize DSH as maladaptive emotion regulation (ER) strategy to reduce distress triggered by stress. Accordingly, the objective of this study was to conduct an ecologically valid test of etiological models of DSH in adolescents during the pandemic by investigating: (1) the association between COVID-19-related stress and DSH, (2) whether ER difficulties moderate/mediate this association, and (3) whether the moderating/mediating effects of ER difficulties are stronger for socially distanced youth. 809 Canadian adolescents completed online surveys of COVID-19-related stress (Statistics Canada COVID-19 Stress Scale), ER difficulties (Difficulties in Emotion Regulation Scale), social distancing (average of three items developed for this study), and DSH (single item from the Ontario Child Healthy Study Scales). Results revealed that COVID-19-related stress predicted recent DSH. ER difficulties did not moderate this association, but lack of emotional clarity, nonacceptance of emotional responses, and limited access to ER strategies mediated this association. The indirect effect through limited access to ER strategies was stronger for socially distanced youth. Overall, these findings align with etiological models proposing central roles for stress and ER difficulties in DSH. Findings underscore a need to support youth, particularly those with reduced in-person interactions, in adaptively coping with pandemic-related stress.

P19: Mental Health Status of Chinese Immigrants in Canada during the COVID-19 Pandemic

Presenter: Linke Yu, Ryerson University; **Co-authors:** Lixia Yang, Peizhong Wang, Weiguo Zhang, & Xiaolin Wei

Abstract: The widespread of the COVID19 disease has raised concerns about people's mental health condition. It has been reported that at the peak of the pandemic in Mainland China, moderate or severe ratings were made by 16.5% of Chinese respondents on depression, 28.8% on anxiety; and 8.1% on stress (Wang et al., 2020). The current study sought to examine the mental health condition of Chinese immigrants in light of the COVID-19. A total number of 471 Chinese immigrants aged 18 and above were recruited from Chinese communities through Chinese social media and internet to complete an online survey at the initial outbreak of the COVID-19 pandemic from April 25 to June 10, 2020. Same as Wang et al (2020), the mental health status was indexed by self-reported ratings on the Depression, Anxiety and Stress Scale (DASS-21). To identify major demographic predictors, all the demographic variables were entered into regression models for depression, anxiety, and stress, separately. The results indicated that 11.3% of the respondents indicated moderate to severe levels of depression ($n = 53$), 10.8% reported moderate to severe levels of anxiety ($n = 51$), and 8.1% reported moderate to severe levels of stress ($n = 24$). Among all demographic variables, employment status was identified as a main predictor for mental health condition of Chinese immigrants during the COVID-19 pandemic. Individuals who were unemployed reported a differentially higher level of depression, anxiety, and stress.

P20: Mood and cognitive impairment after COVID-19 infection occurs independently of pandemic-related stress

Presenter: Steven Lamontange, Queen's University; **Co-authors:** Makaila Winters, Diego A. Pizzagalli, & Mary C. Olmstead

Abstract: Background. Acute health consequences associated with COVID-19 infection have been thoroughly characterized; however, long-term impacts are not yet understood. Post-acute sequelae of COVID-19 (PASC), also known as Long COVID syndrome, is the persistence of COVID-19 symptoms long after viral infection. Among physical symptoms, those with PASC experience changes in mental health, but few studies have empirically examined these effects. The current study investigated stress perception, as well as depression and cognitive control, in individuals who have recovered from COVID-19 infection. Methods. We recruited 100 male and female adults ($M=28$ years old) with no history of mood or cognitive impairment prior to the COVID-19 pandemic (Jan. 2020). Half of subjects were healthy controls (i.e., no prior COVID-19 infection) and half had received a past COVID-19 diagnosis (PCR or antibody test) but were no longer infectious. Participants completed self-reported measures of stress, depression, and anhedonia, as well as the Attention Network Task (ANT), a behavioural measure of cognitive control. Results. There were no group differences in pandemic-related experiences with respect to isolation, social distancing, quarantine, or time spent consuming COVID-related news. However, the past-COVID group scored significantly higher on perceived stress. Depression, anxiety, and anhedonia were also significantly higher in the past-COVID group, as well as cognitive control impairment in the ANT. Each of these effects were most pronounced in those diagnosed 1-4 months prior to assessment. Surprisingly, childhood unpredictability was positively correlated with depression and anhedonia in the control, but not past-COVID, group. Conclusion. Despite self-reports of similar pandemic-related experiences, those who recovered from COVID-19 appraise life situations as more stressful than controls. Furthermore, disruptions in mood and cognitive functioning are most pronounced 1 to 4 months following a COVID-19 diagnosis compared to immediate (14-28 day) or long-term (4+ month) deficits. These effects are not mediated by early life adversity, suggesting COVID-specific mechanisms

P21: Early childhood behavioral inhibition predicts adolescent internalizing symptoms during the COVID-19 pandemic

Presenter: Haley Green, Western University; **Co-authors:** Andrew Daoust, Matthew Vandermeer, Pan Liu, Kasey Stanton, Kate Harkness, & Elizabeth Hayden

Abstract: The COVID-19 pandemic is a global stressor with the potential to increase rates of internalizing disorders in adolescents. In particular, youth high in behavioral inhibition (BI; the tendency toward reticence in response to novel social and other stimuli) are at risk for internalizing disorders (Clauss & Blackford, 2012), and youth with stable BI across early childhood are at particularly elevated risk of later internalizing disorders (Chronis-Tuscano et. al, 2009). We examined internalizing symptoms assessed every other week in a community sample of 14-year-old youth (average $n = 191$), finding that early BI (assessed at ages 3 and 5) interacted to predict within-person variation in internalizing symptoms during the pandemic, such that for youth with high BI at age 3, age 5 BI predicted increased symptom variability throughout the pandemic from March 2020 to January 2021 ($t(256) = 2.10$, $p = .04$). Youth with stable early BI may be especially likely to experience greater symptom variability across the pandemic, perhaps due to the changing nature of COVID-19-related restrictions and varying amounts of novel stimuli, particularly social stimuli, to which youth are exposed. Developing more nuanced models to identify those most vulnerable to stress may ultimately inform treatment and prevention.

P22: Emotional Well-being Across Ontario Post-Secondary Campuses and Campus Greenspace Before and During the Pandemic

Presenter: Sara Stretton, Wilfred Laurier University; **Co-authors:** Hannah McGuinness, & Ketan Shankardass

Abstract: Post-secondary students are an important demographic to target for resilience building given their relatively young age and significant academic, economic and social stressors. This community experiences relatively high rates of substance use and mental illness. As green spaces (e.g., parks, forests) have been shown to aid in restoration and recovery from mental fatigue, thereby helping individuals cope with stress. The objectives of this research are to: (1) measure variation in emotional stress and resilience on social media (Twitter) at the student and campus levels across eight post-secondary campuses in Ontario; (2) examine the relationship between stress and resilience with amount and quality of greenspace on campuses; and (3) examine how these factors co-vary across pre-pandemic and peri-pandemic periods, seasons, examination periods, holiday periods, and time of day. A database of geo-located tweets related to study campuses from the pre-pandemic period (2017-2018) and the peri-pandemic period (2020) were included. Tweets had to be generated from a location on within 200m of campus boundaries. Emotion scores were calculated using EMOTIVE software (<https://emotive.systems/>). Normalized Difference Vegetation Index (NDVI) was used to indicate greenspace within and around each campus boundary based on Landsat time series data for 2017, 2018 and 2020. ArcGIS and SPSS were used to conduct analyses. Preliminary results indicate that students on some campuses are emoting more negatively on social media in green spaces, and more positively in other parts of campus. Implications for targeting resilience building and greenspace interventions across post-secondary campuses in Ontario will be discussed.

P23: COVID-19 related stress: the mediating effect of social support

Presenter: Lara Kojok, McGill University; **Co-authors:** Ram Prasad Sapkota, Roubina Kasparian, & Alain Brunet

Abstract: The novel coronavirus (COVID-19) has been proliferating worldwide since its outbreak. Preventative measures implemented to decrease the rapid spread of the virus have led to significant adverse mental health outcomes. Previous studies have suggested that social support may act as a buffer to the negative effects of COVID-19 related stressors on mental health. However, only a few studies have examined the role of social support in the context of the COVID-19 pandemic. We aim to examine whether specific types of social support (i.e., family, friends, professional, social media) mediate the effects of COVID-19 stressors on trauma- and stressor-related symptoms (TSRS). An international sample of 5 913 adults took part in a web-based survey. Self-report questions related to exposure to COVID-19 stressors and social support were administered. Trauma- and stress-related symptoms were measured using the Impact of Event Scale – Revised. Path analysis was used to investigate the hypothesis that various types of social support mediate the effect of different COVID-19 stressors on trauma- and stress-related symptoms. We expect to find that social support mediates the effect of COVID-19 stressors on trauma- and stress-related symptoms and that support from friends, family and a professional will have the most significant impact in buffering the effects of COVID-19 stress. This study could provide insights for policy makers into the kind of support that is beneficial to people amid the COVID-19 crises.

P24: The Role of Social Support in the Mental Health of Medically Vulnerable Canadians During COVID-19

Presenter: Jennifer T. H. Reeves, University of Victoria; **Co-authors:** Jamie-Lee Barden, Brianna J. Turner, & Theone S. E. Paterson

Abstract: Background: During COVID-19, the mental health of Canadians has worsened. Individuals who are medically vulnerable are likely to experience more stress due to greater worries about infection, and less contact with their social support systems to reduce their risk. As social support has been shown to buffer the effects of stress on our psychological well-being (Cohen & Wills, 1985), this study examines the role of social support in the mental health outcomes of medically vulnerable Canadian adults. Methods: Drawing from a large, representative online survey of Canadians (N=6,629), we examined 1,862 adults who reported heightened vulnerability to COVID-19 due to either a medical condition (n=1041) or advanced age over 70 years (n=821). This survey assessed COVID-19 related worries, perceived social support, anxiety, and depression. Results: An initial mediation analysis indicated that perceived social support partially mediated the relationship between COVID-19 related worries and both anxiety and depression. Subsequently, a parallel multiple mediation model was analyzed to assess three sources of social support: friends, family, and significant others. This model found that only support from family mediated the relationship between COVID-19 related worries and mental health outcomes. Conclusion: We found that having more COVID-19 related worries predicts more social support from family, which in turn predicts greater anxiety and depression. These findings suggest that during COVID-19, social support may not be an effective coping mechanism. Future research should examine differences between in-person and online social support to investigate if social support without COVID-19 exposure has better efficacy for supporting mental health.

P25: Examining resiliency and susceptibility factors in chronic stress-induced reward dysfunction

Presenter: Steven Lamontagne, Queen's University; **Co-authors:** Olena Kourko, Katrina Gee, & Mary C. Olmstead

Abstract: Background. Anhedonia, “a loss of interest or pleasure”, is often preceded by chronic stress. Notably, stress does not invariably lead to deficits in reward processing, suggesting some individuals are resilient to its effects. Interactions between stress reactivity and inflammation might contribute to susceptibility, but these systems are not completely understood. Using a chronic mild stress (CMS) paradigm, we examined stress-induced physiological changes in the periphery, as well as relationships between these measures and reward learning. Methods. Thirty-six adult male rats were exposed to a 21-day CMS regime and 24 rats were left undisturbed (no-stress control). Following CMS, all rats were tested in the probabilistic reward task (PRT), which measures an animal’s propensity to favour one of two stimuli with a higher probability of reward distribution. Then, plasma interleukin-6 (IL-6) concentration was quantified and adrenal gland, thymus gland and spleen weights were recorded. Results. Relative to controls, CMS animals showed significantly higher adrenal and lower thymus gland weight, which is indicative of hypertrophy and involution, respectively. In the CMS group, there was a strong inverse relationship between these organ weights. There were no group differences in plasma IL-6 concentration; however, elevated IL-6 was significantly associated with higher adrenal and lower thymus gland weight in the CMS group. Finally, there was a significant inverse relationship between adrenal weight and reward learning following CMS, such that animals with higher adrenal weight showed lower reward sensitivity. Conclusions. Stress-induced adrenal hypertrophy is uniquely associated with impaired reward learning. CMS animals with normal adrenal weight showed normal reward responsiveness, pointing to this organ as a marker for stress resiliency. IL-6 concentration was not associated with reward learning, but its strong relationship with adrenal weight suggests inflammation likely contributed to adrenal dysregulation.

P26: Tackling critical illness stress: From theory to empirical data and integrative interventions

Presenter: Elizabeth Papathanasoglou, University of Alberta; **Co-authors:** Meropi Mpouzika, & Maria Hadjibalassi

Abstract: BACKGROUND: Critical illness is a state of uncompensated stress. A prolonged and aberrant neuro-endocrine stimulation sets the stage for the development of systemic sequelae, which may determine patient outcomes and survival. However, in critical care, the effects of stress have received little attention. AIM: To provide an overview of a line of investigation that seeks to understand the physiological effects of emotional stress in critically patients. We present a theoretical framework underlying the effects of stress, coupled with empirical data and findings on the effects of relaxation-inducing integrative interventions on critically ill patients’ outcomes. FINDINGS: A theoretical framework addressing stress neuropeptide levels in critical illness and their involvement in processes such as immunity, endothelial response and oxidative stress is presented. We summarize our observations of altered stress neuropeptides levels, including substance P and neuropeptide Y in critically subjects compared to matched non-critically ill controls, and associations with apoptotic markers (FasL) and lymphocyte and B and T cell numbers. We note associations between perceived stress and pain and lymphocyte apoptosis in critically subjects. Moreover, we present data from randomized controlled studies showing alterations of these markers and improvements in pain, anxiety, sleep and delirium by integrative interventions, including touch, music listening and guided imagery. CONCLUSION: The psychological stress of critical illness appears to mediate adverse patient outcomes. Relaxation-inducing integrative interventions, involving music, touch and relaxation, appear to be effective in improving patient outcomes.

P27: The stress of critical illness: An insight from a qualitative meta-ethnography

Presenter: Elizabeth Kusi-Appiah, University of Alberta; **Co-authors:** Maria Karanikola, Usha Pant, Megan Kennedy, & Elizabeth Papathanassoglou

Abstract: Background: Experiencing an uncertain future and adjusting to unsettling events in the intensive care unit (ICU) are critical moments in the lives of patients receiving care in the ICU. Research evidence suggests that most patients experience adverse psychological responses while in the ICU. **Aim:** To systematically identify the psychological responses of ICU patients based on a systematic literature review, including patients' coping mechanisms towards mitigating ICU-related stress, and factors alleviating the effects of stress. **Method:** A meta-ethnography based on literature searches in CINAHL, MEDLINE, EMBASE, PsycINFO, Scopus, Dissertations and Theses Global and Google Scholar databases was conducted using predefined eligibility criteria. Data synthesis was based on Noblit and Hare's approach and the eMERGe framework. Quality of included articles was assessed by the Critical Appraisal Skills Program. **Findings:** We synthesized evidence from seventeen primary studies. ICU hospitalization elicited negative psychological responses such as depressive feelings, fear, anxiety, panic, agony, pessimism, emotional pain, perceived torment, acute existential distress, feeling of powerlessness and dehumanization. Professional support, family presence, continued tailored education on what to expect, development of hope and optimism were found to reduce these negative emotions. **Conclusion:** The evidence of poor psychological adjustment among patients confirms that negative emotions shape patients' perceptions of disease trajectory and care pathways and could worsen patients' condition. ICU clinicians need to hone their interpersonal skills to facilitate patients' hope and optimism towards recovery. Actions such as maintaining a close physical contact, therapeutic touch, therapeutic silence could be effective in mitigating psychological distress in patients.

P28: Suicide Risk Among Active Retired Canadian Forces

Presenter: Lara Kojok, McGill University; **Co-authors:** Eva Monson, & Alain Brunet

Abstract: Objective: To examine the relationship between posttraumatic stress disorder (PTSD) and risk of suicide among active and retired Canadian soldiers. **Method:** Data were drawn from the Canadian Community Health Survey: mental health and well-being—Canadian Forces Supplement which included a representative sample (N = 8841) of active Canadian Forces members. Adjusted odds ratios were run to examine the relationships between (1) lifetime and deployment-related PTSD and (2) lifetime and past year prevalence of suicidal ideations and attempts. **Results:** During their lifetime, 15.4% of the Canadian Armed Forces (CAF) members report some suicidal ideations, and 2.3% report having made at least 1 suicide attempt. These numbers are multiplied by 4.8 and 4.7, for suicidal ideations and attempts respectively, among CAF members who report a diagnosis of PTSD during their lifetime and by 11.5 and 31.6, respectively, among CAF members who report a diagnosis of PTSD during the past year. **Conclusions:** PTSD increases suicidality, irrespective of whether the PTSD was developed as part of a military deployment or otherwise. Military deployment is traumatogenic, and PTSD is suicidogenic.

P29: Sex, Stress, and Emotion Regulation Strategies: A Comparison of University Students

Presenter: Jennifer T. H. Reeves, University of Victoria; **Co-authors:** Theone S. E. Paterson

Abstract: Background: While completing a university degree, students encounter many stressors. This stress may vary according to sex and year of study. Previous research indicates that females typically report higher levels of stress, and students often report different stress levels and sources of stress depending on their year of study. This study aims to examine the potential mediating role of emotion regulation strategies (ERS) on the relationship between sex and stress in each year of study. Methods: University students in Canada (freshmen; n=325, sophomores; n=320, juniors; n=287, seniors; n=260) took part in an online survey, and completed various measures including scales to assess ERS and stress. Results: Initial descriptive statistics indicated that ERS is significantly correlated with stress for all years of study. Four mediation models were analyzed with 1000 bias-corrected bootstrapped samples, with one model for each year of study. In sophomores and seniors, sex had a significant direct effect and ERS was found to have a significant mediation effect. However, for freshman students no direct or indirect relationship amongst the variables was found, and an indirect-only mediation was found in juniors. Conclusions: Our results indicate that sex and ERS play different roles in stress depending on the year of study. Overall, ERS had an important role in the students' stress levels, suggesting that ERS may be targeted for intervention among students. Further research should examine why there is no sex difference in stress during the freshman and junior year, and could investigate other potential coping mechanisms.

P30: Identification of depression and anxiety by analyzing feature asymmetry in the electroencephalography (EEG) signal based on psychological test scores

Presenter: Laura Minkowski, Ryerson University; **Co-authors:** Kristiina Mai, & Dharmendra Gurve

Abstract: Biomarkers in neurophysiological signals can be analyzed to determine indicators of mood disorders for diagnosis. Electroencephalography (EEG) signals were analyzed from a public database of 119 subjects ages 18 to 24 performing a probabilistic learning task requiring subjects to pair Japanese characters correctly. 45 subjects had moderate to severe anxiety and/or depression and the remaining 74 subjects had minimal or none. A subject was classified as depressed if the Beck's Depression Inventory II (BDI) test score was greater than 13. A subject was classified as having anxiety if the Spielberger Trait Anxiety Inventory (TAI) test score was greater than 38. Data were preprocessed and separated into frequency bands: beta (12-30 Hz), alpha (8-12 Hz), theta (4-8 Hz) and delta (0.5-4 Hz). Features were extracted including Higuchi fractal dimension, correlation dimension, approximate entropy, Lyapunov exponent and detrended fluctuation. Similarities and asymmetry can be examined between the left and right brain hemispheres as well as the prefrontal cortex channels. Classification of subjects as high scoring and low scoring with anxiety and depression was performed using known subject psychological test scores. ANOVA II analysis showed significant difference ($p < 0.05$) for topographical region comparisons of several features between the affected and unaffected subjects. The results will demonstrate physiological differences between high scoring subjects indicating a mood disorder and low scoring subjects, and provide an indicator of illness. Understanding the complexities of how depression and anxiety are manifested physiologically including its comorbidities, is critical for accurate mood disorder diagnosis.

P31: An examination of the relationships between adverse childhood experiences, protective factors, and examination score in undergraduate emerging adults

Presenter: Sarah York, University of Victoria; **Co-authors:** Louise Chim, Patrick Nicoll, Jeremy M. Viczko, & Colette M. Smart

Abstract: Introduction: Adverse childhood experiences (ACEs) have been linked to a plethora of negative physical and mental health effects into adulthood. The potential impacts of ACEs are not commonly investigated during emerging adulthood (EA), a sensitive developmental period that may predict future well-being. As ACEs impact the developing brain, they could impact students' academic performance. First-Generation (FG) undergraduate students may be especially susceptible to the negative effects of ACEs. Objective: To understand how ACEs impact exam performance, and how this relationship is related to mediating variables of attention control and resilience. Methods: Undergraduates between 18-25 years of age were recruited from first-year Psychology classes (N = 488). We administered self-report measures of attentional control and resilience. Demographics were gathered, including generation status and ACEs, with ACEs classified based on ACE burden (categorized as No, Moderate, and High ACEs) and also ACE type (Household vs. Maltreatment). The first Psychology examination score utilized as a measure of academic success. Results: Results indicate a difference in ACE Type, with greater frequency of Household exposure. ACE Burden differed across the sample, as well as between FG and non-FG, with the majority (65%) of undergraduates reporting at least one ACE. We found a quadratic relationship between ACE Burden and level of resilience, with lower levels of resilience correlating with Moderate ACE Burden. Examination scores positively correlated with attentional control, but not resilience or ACEs. Discussion: Implications for inclusive and trauma-informed education practices will be discussed.

P32: Influence of Life Events on the Stress Response in Healthy Children and Adolescents

Presenter: Danielle Figueiredo, University of Ottawa; **Co-authors:** Jacques Bradwejn, Catherine Bielajew, & Diana Koszycki

Abstract: A life event is an occurrence that involves a subsequent change in the life pattern of an individual (Holmes & Rahe, 1967), and can range from mild to severe forms of stressors. A key structure that is implicated in the stress response is the hypothalamic-pituitary-adrenocortical (HPA) axis. Children exposed to life events exhibit dysregulation of the HPA axis, however, research on the nature of the stress response is limited and findings are inconsistent. The current study investigated whether exposure to life events over the past year influenced HPA axis function in healthy children and adolescents. The sample included 147 healthy children and adolescents aged 7 to 18 years. Participants were administered the Coddington's Life EventsScale (CLES) and salivary cortisol was collected for determination of the cortisol awakening response (CAR) and diurnal cortisol. Participants also completed a stress test (impromptu speech) and salivary cortisol was measured at baseline and 15, 30, 45, and 60 minutes post-test. Linear regression models revealed that life events significantly predicted total CAR output, diurnal cortisol response, and cortisol reactivity to the stress test. Moreover, participants with high versus low stress exposure displayed different patterns of cortisol secretion. Overall, study findings confirm that life events influence the HPA axis in healthy children and adolescents.

P33: Prenatal stress modulates GABA synapses in the dorsomedial hypothalamus in male and female rat offspring

Presenter: Karen Crosby, Mount Allison University; **Co-authors:** Tenea M Welsh, Maggie Hildebrand, & Veronica Pond

Abstract: Exposure to stressors during the gestational period in rodents and humans has numerous consequences in offspring including enhanced appetite and weight gain, but the underlying mechanisms are not fully understood. In rats, the dorsomedial hypothalamus (DMH) is important in integrating stress signals and regulating appetite and body weight, but the effect of prenatal stress on synaptic physiology in the DMH remains unexplored. We hypothesized that prenatal stress affects the plasticity of synapses in the DMH of male and female offspring. We subjected pregnant female Sprague Dawley rats to a variable stress paradigm during the third (final) week of gestation. Male and female offspring were weaned at postnatal day 21 (P21), brains were removed between P21-35, and whole cell recordings from DMH neurons were obtained before and after high frequency stimulation (HFS) of afferents. We report that the plasticity of DMH GABA synapses in offspring is modulated by prenatal stress. Specifically, our data suggests that GABA synapses in male offspring from naïve dams undergo activity-dependent depression in response to HFS, and this shifts to long-term potentiation in male offspring from stressed dams. In contrast, GABA synapses in female offspring from naïve dams did not change following HFS, but a slight activity-dependent depression was observed in the female prenatal stress counterparts. No effects on the plasticity of glutamate synapses in male and female offspring from naïve or stressed dams were observed. Overall, these data could represent a potential mechanism by which prenatal stress leads to metabolic disruptions in the offspring.

P34: Sex Differences in Response to Chronic Social Defeat Stress

Presenter: Andrea Smith, Carleton University; **Co-authors:** Lindsay Hyland, Bethany Watts, Hiyam Al Ansari, Miski Dahir, Aleyna Akgun, & Alfonso Abizaid

Abstract: The chronic social defeat stress paradigm is commonly used to study the physiological and behavioral effects of psychosocial stressors in rodents. This model is particularly relevant as it recapitulates many stress-induced pathologies observed in humans, including metabolic and behavioral disturbances. This paradigm is limited by its sex-specific design, as males only exhibit territorial aggression towards other males, creating a barrier to studying the effects of stress in females. To investigate how females respond to social defeat we used a new model known as the non-discriminatory social defeat stress paradigm. In this protocol, a male and a female C57 mouse are introduced to a territorial CD-1 mouse. The presence of a C57 intruding male into the CD-1 territory provokes aggressive behaviors towards both C57 mice. Males and females were exposed to the social defeat stressor for 21-days while being given access to standard chow and a high fat diet ad libitum. Both males and females display similar metabolic phenotypes in response to this social stressor. This reduces their weight gain while increasing their caloric intake of the standard chow, rich in carbohydrates. Females, unlike males, exhibited an increase in pro-social behaviors during the social interaction test. These results highlight the sex specific differences exhibited by females in response to social stressors and the need for further investigation of these differences.

P35: Determinants of anxiety: moderating effects of adversity and dietary factors on gut microbes and inflammatory factors

Presenter: Ana Santos, The Royal Institute of Mental Health Research; **Co-authors:** Sabrina Paterniti, Kellsey Collimore, Hymie Anisman, & Marie-Claude Audet

Abstract: Disturbances along the gut microbiota-immune-brain axis may play a key role in promoting symptom severity, and vulnerability to anxiety disorders. In addition to adversity experienced across the lifespan, dietary patterns may modulate gut microbial and inflammatory patterns and could potentially influence the development of mental health outcomes. Our main objective is to examine how childhood adversity and dietary patterns can modulate gut microbes and inflammatory activity in the context of anxiety. Individuals with a current diagnosis of generalized anxiety disorder and healthy controls with sub clinical anxiety symptoms are being asked to complete questionnaires assessing dietary patterns as well as severity of anxiety symptoms and childhood adversity. Participants are also providing stool and blood samples to determine gut microbiota and inflammatory patterns. We hypothesize that fecal abundance of pro-inflammatory bacteria and circulating levels of pro-inflammatory factors will be positively correlated with anxiety severity. In addition, a low quality diet as well as a history of childhood adversity will moderate the relationships between microbiota/inflammatory patterns and anxiety severity. Our findings will contribute to a better understanding of the influences on gut microbial and inflammatory patterns in the context of anxiety, and may assist in the identification of microbiota-based biomarkers to be used in the development of personalized treatment approaches for this disorder.

P36: Examining the Effects of Videos on Physiological and Subjective Responses to Stress

Presenter: Scarlett Lavan, Ryerson University; **Co-authors:** Kristin Vickers

Abstract: Research has found that the presence of live animals can reduce physiological and subjective responses to stress. However, live animals are not always permitted in public areas. Visual representations of animals, such as photos and videos, may serve as an alternative intervention to the physical presence of live animals. The current study seeks to compare four videos in order to determine which is most effective at reducing physiological and subjective responses to stress following exposure to a stressor. The Mental Arithmetic Task (MAT) will be used to induce a stress response. Approximately 200 participants will be randomly assigned to one of four conditions: video of an active unfamiliar dog, video of an active unfamiliar puppy, video of active nature, or video of a blank screen. Participants will be recruited from Introductory Psychology courses through a research participant pool at Ryerson University. It is hypothesized that watching a video of an unfamiliar puppy will be the most effective at reducing stress reactivity compared to the other conditions. This study could have practical implications with regards to reducing stress in public settings (e.g., hospital, work place) where animals are often not permitted. Data collection will be completed by April 2021.

P37: Autonomously Adaptive Soundscapes for Reducing Stress in Critically-Ill Patients

Presenter: Michael Frishkopf, University of Alberta; **Co-authors:** Elisavet Papathanasoglou, & Martha Steenstrup

Abstract: Although advances in care have greatly improved survival, the ICU experience remains exceptionally stressful. More than half of ICU survivors report mental health symptoms after discharge, and up to 75% experience delirium in the ICU. Progress managing ICU stress has been minimal; use of sedatives is largely ineffective and laden with side effects. Music and sound therapies are low-cost, non-invasive, effective approaches to stress reduction. Ideally the patient's sonic environment should be continuously adjusted via feedback, like room temperature. Yet music therapists cannot be continuously available. An autonomous system is indicated. Autonomous Adaptive Soundscapes (AAS) is a bio-algorithmic feedback control system selecting therapeutic soundscapes for ICU patients, combining machine learning, biosignals, and a library of soundscapes—steady-state sonic tapestries, mixing natural, musical, and synthetic sounds. Our objective is a system that is always available, minimally intrusive, and low risk. Initially, a promising set of soundscapes is selected from the library based on patient profile. Patient stress is detected through biosignals. A learning agent selects soundscapes, using a bandit-style algorithm to learn the therapeutic value of each, using biosignals. In “training mode” the agent explores all the soundscapes. In ‘therapeutic’ mode, by contrast, exploration is minimized: the agent selects soundscapes that have elicited maximum stress reduction, sticking with a soundscape as long as it remains efficacious, and otherwise selecting the best alternative. Our developed prototype will be tested first on healthy subjects, then post-ICU survivors, and ICU caregivers. Results will guide further development prior to experimentation on critically ill patients themselves.

P38: Do body-based practices promote adaptive interoceptive awareness and self-regulation?

Presenter: Brynn Tucker, University of Victoria; **Co-authors:** Lauren K. Qualls & Colette M. Smart

Abstracts: Objectives. The current study investigates whether body-based practice predicts individual differences in interoceptive awareness as well as positive outcomes on variables associated with self-regulation (HRV, interoceptive awareness, and anxiety sensitivity). Methods. We collected multi-method data from psychology undergraduate students (N = 48, Mage = 21.81, 77% female sex, 75% Caucasian) at the University of Victoria. The sample was split into two groups: those with regular body-based practices and those without. Analyses. MANOVA, T-test and Mann-Whitney U tests were conducted to analyze if/how body-based practice predicts HRV, interoceptive awareness, and anxiety sensitivity. Results. Significant differences in interoceptive awareness were identified between the body-based practice and no-body-based practice groups, while no significant differences in anxiety sensitivity or HRV were identified between the two groups. Better understanding of the relationship between body-based practice and interoceptive awareness could provide insights into the ‘plasticity’ of interoception. This could lead to potential therapeutic uses of body-based practices in individuals with low or maladaptive interoceptive awareness, given that impaired interoception is implicated in various forms of psychopathology.

P39: I'll Be Back: Examining Preoperative Patient Adherence to a Brief Mindfulness Meditation Intervention

Presenter: Niana Lavallee, Queen's University; **Co-authors:** Sarah McGee, Holly Coutts, Steve Mann, Murray Tough, Davide Bardana, Aaron Campbell, Gavin Wood, Dean Tripp, & Madelaine Gierc

Abstract: Background: Mindfulness meditation is an evidence-based therapy increasingly applied to chronic disease management. Limited research has investigated factors associated with adherence to meditation programs. Purpose: To evaluate adherence to a brief mindfulness meditation intervention for surgical waitlist patients (SWLPs). Methods: This pilot study followed a mixed-methods, single arm design. SWLPs were invited to complete a 10-session mindfulness program. Measures included sociodemographic items, self-efficacy, program and homework adherence (number completed, completing 80% or more). Qualitative feedback was elicited on outcomes and engagement. Results: Of 12 participants who started the program, 58.3% were adherent and 33.3% completed all 10 sessions. After accounting for attrition, the sample reported high (90.9%) homework adherence. Self-efficacy to meditate at intake was associated with program adherence, $ds = 0.17-0.80$. Participants discussed interest in sustaining a mindfulness practice, and how they incorporated mindfulness into their daily lives. Conclusions: SWLPs exhibited moderate adherence to the mindfulness meditation intervention program, and reported interest in sustaining mindfulness. Future research should investigate the role of self-efficacy as a predictive factor for mindfulness engagement.

P40: Incorporating mismatch into reconsolidation therapy with propranolol to treat adjustment disorder stemming from romantic betrayal: A pilot study

Presenter: Sereena Pigeon, McGill University; **Co-authors:** Gloria Leblond-Baccichet, Michelle Lonergan, Daniel Saumier, & Alain Brunet

Abstract: Disrupting the reconsolidation of emotional memories with the beta-blocker propranolol (e.g., reconsolidation therapy; RT) is becoming an increasingly promising treatment for psychiatric disorders rooted in stressful or traumatic life events, such as posttraumatic stress disorder and adjustment disorder. However, reconsolidation, the process of memory destabilization and restabilization following retrieval, does not always occur, particularly if no new learning is involved. Recent evidence suggests that a prediction error, or a mismatch, between what is expected to occur and what actually occurs is required for a memory to destabilize and enter the reconsolidation phase following retrieval. The current pilot study examines whether incorporating mismatch to RT could improve its effectiveness for the treatment of adjustment disorder. Method: In a single-blind open-label clinical trial, participants were randomly allocated to receive 4-6 weekly sessions of standard RT ($n = 4$) or RT with mismatch ($n = 7$). Event-related stress was measured before and after treatment using the Impact of Event Scale Revised. Results: Participants who received RT with mismatch demonstrated greater improvements in event-related stress symptoms (pre-to-post treatment Cohen's $d = 2.4$) compared to participants who received standard RT (pre-to-post treatment Cohen's $d = 1.5$; between-groups Cohen's $d = 1.1$). Conclusion: RT with mismatch appears to yield greater symptom improvements than standard RT. Results from this study should be interpreted considering their pilot nature; it should also be noted that recruitment is ongoing. Findings are discussed in light of theoretical, practical, and clinical implications.

P41: Postpartum corticosterone treatment upregulated the neurotoxic branch of the kynurenine pathway, SSRI treatment had limited efficacy to correct this

Presenter: Wansu Qiu, University of British Columbia; **Co-authors:** Kimberly A. Go, Yvonne Lamers, & Liisa, A.M. Galea

Abstracts: Perinatal depression (PND) affects 15% of mothers. Selective serotonin reuptake inhibitors (SSRIs) are currently the first-line of treatment for PND. However, the efficacy and safety of perinatal SSRI treatment has been questioned. Previously, we found significant reductions in plasma tryptophan concentrations and higher hippocampal proinflammatory cytokine, IL-1 levels, due to maternal SSRI treatment. In patients with major depressive disorder, elevation of IL-1 with SSRI treatment is seen only in patients who are non-responders. Furthermore, reductions in tryptophan are associated with depression. Higher proinflammatory cytokines such as IL-1b increase tryptophan metabolism through the tryptophan-kynurenine metabolic pathway (KP). KP is divided into a neuroprotective and a neurotoxic branch. Higher activation of the neurotoxic branch has been associated with depression onset and implicated in SSRI efficacy. Here, we predict higher neurotoxic metabolites in KP will be seen in our model of postpartum depression (PPD). Furthermore, we hypothesize that the SSRI, fluoxetine (FLX), has limited efficacy to reduce neurotoxic metabolites. To simulate PPD, dams were administered corticosterone (CORT) (40mg/kg, s.c.) and/or FLX (10mg/kg, s.c.), during the postpartum for 22 days. Plasma KP metabolite concentrations were quantified on the last day of treatment. Preliminary data indicates lower plasma xanthurenic acid concentrations due maternal FLX treatment. Maternal CORT treatment elevated various neurotoxic metabolites, shifting the balance of towards the neurotoxic branch, which is associated with depression. Maternal FLX treatment showed limited efficacy to influence KP metabolites, which may correspond to its limited efficacy to treat depressive-like endophenotypes in our model of de novo PPD.

P42: The moderating role of positive coping strategies in the association between depressive symptoms and emotional eating

Presenter: Maya Amestoy, Ryerson University; **Co-authors:** Danielle D'Amico, & Alexandra J. Fiocco

Abstract: Previous research suggests an association between depressive symptoms and an increased tendency to engage in emotional eating, defined as eating in response to stress or negative affect. This behaviour may result in negative health outcomes, such as obesity, and research is needed to investigate potential effect-modifiers in this association. Coping, or the way in which people regulate their behaviour and emotions while under stress may be one underlying factor that influences this association. In particular, utilizing positive coping strategies, such as reframing or reappraisal, may reduce the tendency to engage in emotional eating in response to negative affect. Thus, the current study aimed to investigate whether positive coping moderates the relationship between depressive symptoms and emotional eating in a sample of post-secondary students. A total of 98 students (mean age = 20.24 years, 82.7% female) completed self-report questionnaires measuring emotional eating, depressive symptoms, and frequency of engagement in positive coping strategies. Moderation analyses revealed a significant depressive symptoms x positive coping interaction ($b = -.138$, $p = .008$). Simple slopes showed that there was a significant effect of emotional eating on depressive symptoms at low ($p < .001$) and moderate ($p = .03$), but not at high levels of positive coping ($p = .61$). These findings suggest that by implementing positive coping strategies when stressed, the relationship between depressive symptoms and emotional eating may diminish. Further, this study adds to the growing body of literature on the importance of targeting effective coping strategies in stress management interventions across post-secondary institutions.

P43: Anxiety Symptoms Moderate Response to Social Stress in Depression

Presenter: Laura Kinsman, University of Toronto; **Co-authors:** Amanda L. Shablau, & Kate L. Harkness

Abstract: Individuals with depression generally show a heightened psychological response to social rejection exposure. However, null findings have been reported suggesting the possibility of moderating factors. A promising candidate for moderation is anxiety as depression and anxiety show high comorbidity and individuals with anxiety disorders also display heightened sensitivity to social rejection. We hypothesized that anxiety symptoms would moderate the association between depression and response to social rejection, such that this relation would hold only at moderate to high levels of anxiety symptoms. All participants (N = 63; n= 36 with current depression; n= 27 non-depressed) were exposed to social rejection during an online ball-tossing Cyberball task, following which participants completed the Need Threat Scale (NTS), a measure of stress response, with lower scores indicating greater threat to one's fundamental needs. We found evidence that anxiety symptoms, as measured with the Beck Anxiety Inventory, significantly moderated the association between depression and stress response, $b = .05 (.03)$, $p = .041$. Specifically, at moderate (mean) and high levels (+1SD) of anxiety, depressed individuals showed significantly lower NTS scores compared to non-depressed individuals, $b = 0.99 (.38)$, $p = .012$, and $b = 1.83 (.72)$, $p = .014$, respectively. In contrast, at low levels of anxiety (-1SD) there was no significant difference between depressed and non-depressed individuals on NTS scores, $b = .15 (.30)$, $p = .623$. These findings suggest that anxiety symptoms are important in understanding the relation between depression and a heightened psychological response to social stress exposure.

P44: Tunnel Vision: A novel Investigation of the Effect of Depression on Field View

Presenter: Lisa Bolshin, Fielding Graduate University; **Co-authors:** Nasreen Khatri, & Jennifer Ryan

Abstract: This study examined the effects of depression on field of view and memory as it relates to cognitive remittance of depression. Depressed individuals possess a negativity bias producing a narrowed field of view, attentional bias, and enhanced memory for negative emotional information. The central conceptual question investigated whether formerly depressed (remitted) individuals are truly cognitively remitted and display the same emotional and attention inhibitions and memory as depressed individuals, specifically under a negatively mood induced state. Female participants aged 39-85 were grouped into non-depressed (healthy) and previously depressed (remitted) categories via diagnostic interview and questionnaires. The study followed a 3-day testing procedure which included the diagnostic verification on the first day, and eye-tracking methods on the second and third day. On the second day of testing participants saw a series of scenes and were asked to rate their emotional valence, and later recognize the scenes after a delay. After one week, participants returned for a third testing session which followed the same procedure with new stimuli. Results suggested that formerly depressed individuals possess a narrower field of view, especially when subjected to a negative mood induction. Furthermore, a negative mood induction resulted in greater visual exploration (attention) to negatively valenced information for formerly depressed individuals. Results failed to support the third hypothesis regarding recognition accuracy, yet formerly depressed individuals continued to demonstrate significantly different viewing patterns to emotionally valenced information under a negative mood induction. Results from the current research illustrated that individuals who are remitted from depression do in fact process information in the environment differently than someone who has never been depressed. Specifically, they focus more on a narrow aspect of the environment, typically negative information, which negatively impacts their ability to efficiently encode information. Taken together, the results of the study support the idea that formerly depressed individuals experience a perceptual and cognitive tunnel vision that elaborates on their inhibited negative cognitive schemas and puts them at risk for relapse into further episodes of depression.

P45: Spatial Processing and Neural Integrity in Post-Traumatic Stress Disorder

Presenter: Hannah Marlatte, Rotman Research Institute, Baycrest; **Co-authors:** Derek Beaton, Sarah Adler-Luzon, & Asaf Gilboa

Abstract: Post-traumatic stress disorder (PTSD) is often associated with structural and functional hippocampal (HPC) impairments. This may underlie the fragmented nature of flashback memories of the traumatic event. We investigated whether spatial processing, which relies on the HPC, is impaired in PTSD patients. **Methods:** Twenty-six trauma survivors, half diagnosed with PTSD, performed two spatial tasks: (i) scene construction, which requires conjuring-up spatially coherent multimodal scenarios, and (ii) navigating a virtual environment. Participants also underwent structural T1/T2 and diffusion-tensor MRI to quantify gray and white matter integrity. We examined the relationship between spatial processing, neural integrity and symptom severity in a multiple factor analysis. **Results:** Scenes constructed by PTSD patients had fewer scene details, reduced spatial coherence between details, and reduced scene quality. Patients also made more errors during virtual navigation. The first two components of the multiple factor analysis captured group differences. The first component explained 25% of the shared variance: participants that constructed less spatially coherent scenes also made more navigation errors and had reduced integrity to long association tracts and tracts connecting the HPC, thalamus, and cingulate. The second component explained 20% of the variance: participants who generated fewer scene details, with less spatial coherence between them, had smaller HPC and isthmus cingulate volumes. **Conclusions:** Our results suggest that PTSD patients are impaired at imagining spatially coherent scenes and navigating through a complex spatial environment. Patients that showed reduced spatial processing more broadly had reduced HPC volume and reduced white matter integrity to tracts implicated in multisensory integration.

P46: Associations between Objective and Perception-based Neighbourhood Stressors and Chronic Disease Multimorbidity in Toronto, Ontario, Canada

Presenter: Sabrina Chiodo, Wilfred Laurier University; **Co-authors:** Ketan Shankardass

Abstract: Growing evidence links chronic stress to the onset of multiple chronic disease outcomes. Stressful neighbourhood social environments can lead to chronic stress and thereby chronic disease comorbidity. We conducted an ecological analysis of 140 neighbourhoods in Toronto, Ontario, Canada to examine if stressful neighbourhood characteristics were associated with higher levels of emotional stress on social media, and higher rates of chronic disease multimorbidity. Data from Ontario Health Profiles were used to describe the prevalence of 2+ and 4+ chronic conditions across neighbourhoods. Geo-located Tweet content generated from Toronto neighbourhoods were analyzed for indications of emotional stress using EMOTIVE software and aggregated at the neighbourhood-level. Neighbourhood-level data about social disorder, crime, and housing unaffordability were obtained from the Neighbourhood Effects on Health and Well-being study, Toronto Police Service Public Safety Data Portal, and the National Household Survey, respectively. Pearson's correlation coefficients were examined for indicators of neighbourhood stressors, emotional stress on social media and co-morbidity rates. Preliminary results indicates that neighbourhood crime has moderate to strong positive correlations ($r=0.31 - 0.51$) with rates of 2+ and 4+ multimorbidity, while weaker positive correlations were found between neighbourhood housing unaffordability and multimorbidity. Strong positive correlations ($0.43 - 0.63$) were found between levels of emotional stress on social media and 2+ multimorbidity. There was no clear relationship between neighbourhood stressors and emotional stress on social media alone. Neighbourhood stressors and emotional stress on social media are both positively correlated with chronic disease multimorbidity in Toronto. Implications for addressing health disparities across neighbourhoods will be discussed.

P47: Examining the Relationship Between Stress and Sexual Desire

Presenter: Kiara Bubar, Mount Allison University; **Co-authors:** Lisa Dawn Hamilton

Abstract: Stress affects many aspects of our health, including sexual health. Stress is often cited as a cause of low sexual desire; however there is little research other than surveys on the relationship between stress and sexual desire. In the present study, we examined how stress may affect attention to erotic cues using the Dot Probe task. Two hundred participants completed an online study where they completed surveys on daily hassles, perceived stress, and sexual desire. They also were run through the Dot Probe task where they were presented with neutral, erotic, or threat stimuli (angry faces). We predicted that higher levels of stress would be associated with lower sexual desire, and this relationship would be mediated by attention to erotic and threat stimuli. Preliminary results showed that sexual desire measures were negatively correlated with stress. Participants respond faster to erotic stimuli when paired with neutral stimuli than when paired with threat stimuli, and participants respond faster to threat stimuli when paired with neutral stimuli than when paired with erotic stimuli. However, there was no significant relationship between stress scores and reaction time. This study supports past research showing the negative relationship stress and sexual arousal. Although there were differences in response times to erotic and threat stimuli, these differences did not correspond with levels of stress or sexual desire.

P48: The Effects of Visual Displays on Self Reported and Physiological Indexes of Stress

Presenter: Julia Gervasio, Ryerson University; **Co-authors:** Jenny J. W. Liu, Julia Gervasio, Kenneth Fung, & Kristin Vickers

Abstract: Wearable technologies have become increasingly integrated into daily life and are often used to inform health and health related behaviors. The current study examined whether or not the visibility of a display of physiological output readings affected self-reported and physiological responses to an acute stressor. Participants were randomly assigned to one of two conditions: (a) seated in view of display monitor with physiological outputs, or (b) seated facing away from the display monitor. Participants completed a 30-minute laboratory study which included the modified Trier Social Stress Test (involving a public speaking task and a mental arithmetic task). Measures of heart rate and blood pressure, as well as subjective stress were collected. Results showed little relationship between physiological measures and subjective appraisals of stress. While no group differences in self-reported stress were observed, participants in the visible condition displayed elevated physiological arousal during the stressor. Findings from this study provide considerations for methodological variations in stress measurement and methodology.

P49: Differences in Suicidal Outcomes across Minority Groups during COVID-19

Presenter: Emilia Sherifi, Queen's University; **Co-authors:** Anjalika Khanna Roy, Grace Okusanya, Ilana Gratch, Christine Cha, & Jeremy Stewart

Abstracts: Relative to cisgender white people, minority groups experience heightened stressors because of discrimination, systemic racism, and generational trauma. Further, the COVID-19 pandemic, coupled with increased sociopolitical tensions continues to disproportionately affect the mental wellbeing of minorities. Life stress is a critical component of leading ideation-to-action theories of suicide. Thus, the aim of this study is to explore the association between stress burden during the COVID-19 pandemic and suicidal thoughts and behaviours (STBs), and how the strength of this association varies as a function of minority status. The data is being collected as part of a multi-site collaboration led by Dr. Lauren Hallion at the University of Pittsburgh. Adult participants (~n=1000) will complete online questionnaires related to mental health outcomes. An overall stress score (Stress Burden; Troxel et al. 2013) will be computed using indicators of stress including COVID-19 risk and exposure (self and loved ones), experiences of discrimination, economic hardship, and social isolation. Logistic regression models will be fitted including stress burden as a predictor variable, current anxiety and depression symptoms as covariates, and minority status as a moderator. We hypothesize that greater stress burden during the COVID-19 pandemic will be associated with the presence of STBs, as well as increased suicidal ideation severity. Further, we predict that this association will be stronger for those who identify as minorities. Recognizing the varying experiences of different minoritized individuals, and how these experiences may contribute to suicidal outcomes allows for more culturally sensitive theoretical models and, ultimately prevention and treatment approaches.

P50: Eukaryotic initiation factor 4E-binding proteins mediate the antidepressant response to ketamine in mice exposed to chronic variable stress

Presenter: Emily Arsenault, Carleton University; **Co-authors:** Ayeila Daneshmend, Molly Zhang, Edna Matta-Camacho, & Argel Aguilar-Valles

Abstract: Ketamine rapidly reduces depressive symptoms in treatment-resistant major depressive disorder (MDD). Previously, we demonstrated in naïve mice, that ketamine exerts antidepressant-like behavioural effects through inactivation of negative regulators of mRNA translation, eukaryotic initiation factor 4E binding proteins 1 and 2 (4E-BP1/2), and that ketamine-induced hippocampal plasticity is dependent on 4E-BP1/2. Absence of 4E-BP1/2 increases the rate of mRNA translation, as ketamine does, therefore we sought to investigate whether this would also induce resilience to chronic stress, a major risk factor for MDD. We tested how male mice lacking 4E-BP1 and 4E-BP2 (Eif4ebp1/2 double knock out [DKO]) responded to 5 weeks of chronic variable stress (CVS). After CVS, mice received either a saline or ketamine (IP, 10 mg/kg) injection, and were tested in the splash and forced swim tests (FST). We found that in wild type mice, CVS reduced grooming time in the splash test and increased immobility in the FST. In contrast, in Eif4ebp1/2DKO mice, grooming in the splash test and immobility time in the FST were not changed by CVS. Additionally, hippocampal tissue was analysed for synaptic markers using Western Blot. We found that CVS reduced levels of AMPA receptor subunit 1 (GluA1), NMDA receptor subunit 1 (GluN1), which were reversed by ketamine in wildtype but not Eif4ebp1/2 DKO mice, indicating that 4E-BP1/2 are required for the molecular effects of both CVS and ketamine. These results suggest that 4E-BPs are factors in determining the responses to CVS and are critical to the antidepressant effects of ketamine.

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Ryerson University

Dr. Leslie Atkinson

Ryerson University

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We look forward to seeing you next time!

