31st Annual Research Day
MOHAWK COLLEGE
FENNELL CAMPUS
McINTYRE PERFORMING ARTS CENTRE

THE INTERSECTION BETWEEN MENTAL HEALTH, RESEARCH AND PUBLIC POLICY

FULL DAY PROGRAM
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We are delighted to welcome you to what promises to be an exciting and stimulating Research Day hosted by Drs. Margaret McKinnon and Iris Balodis, with the assistance of Tea Rosic and Paul links. We are fortunate to have with us today an impressive group of speakers who will each be discussing how research and scholarship can drive changes in public policy at the local, provincial, national and international levels. Drawing of the speakers’ expertise, we will hear real-life examples of how research and scholarship can have a transformative effect on society, challenging existing paradigms, and transforming practice and policy.

For this year’s Research Day, we have again received a very large volume of poster submissions – a reflection of the enthusiasm for both the Day and for Research in the Department!

We are grateful to Iris, Paul, and Tea, as well as to Claudia Castellanos and Nicole Sloss from the Department Research Office, who have all set the stage for a wonderful day to hear about research, to network, and to catch up with colleagues. We hope you enjoy our 31st Annual Research Day!
This year’s Research Day focus is on the intersection between mental health, research and public policy. Public policies can promote mental health by strengthening the environment and supporting individual capacities.

But how can our research influence policy?

Today we have presentations from researchers and analysts dedicated to informing policy and practice on mental illness. Research can play multiple roles in guiding policy: from monitoring mental health trends, raising awareness of a problem, to evaluating policy itself. The presentations today will emphasize the role of the environment, including the availability of information, products or programs. For example, Dr. Terry Bennett will talk about prevention programs holding promise for children and families with specific mental health needs. Dr. Jim Dunn will provide a practical overview of the challenges researchers face transforming research and scholarship to action,

The role of the environment also includes the legal or political climate or pervasive stigma that often results in a lack of attention from the government and from the public. Dr. Scott Kim will discuss current Canadian law around Assistance in Dying in Individuals with Mental Health Conditions.

The afternoon presentations will further delve into policy around substance use and risky behaviours. These talks will identify other agencies and stakeholders including the cannabis, gambling and food industries in creating specific environments to consume their products and raise issues of accountability and governance. We will hear about lessons from alcohol and tobacco regulation that may hint at what may occur with cannabis policy. We will see examples of how neuroscience is being used to improve identification of the dangers of gambling products. Finally, we will also hear about health policy implications around the controversial notion of food addiction.

Research can and should have a direct impact on policy. All of us working in the area of mental health play a key role in increasing awareness of mental health, as well as developing, supporting and implementing well-informed mental health policies.

Welcome to Research Day 2019!
RESEARCH DAY SCHEDULE

8:15 - 9:00  REGISTRATION/LIGHT BREAKFAST

9:00 - 9:15  OPENING REMARKS
Dr. Nick Kates
Department Chair

9:00 - 9:15  WELCOME AND AGENDA OVERVIEW
Drs. Margaret McKinnon & Iris Balodis
Research Day Co-hosts

9:15 - 10:15  CHILD HEALTH POLICY RESEARCH
Health Research and Engagement With Policy: A Cynically Optimistic Perspective
Adjusting Our Sails: Clinician Scientist Work During a Time of Radical Policy Change

Dr. Jim Dunn
Professor, Department of Health, Aging & Society
Director, McMaster Institute for Environment & Health

Dr. Terry Bennett
Assistant Professor, Psychiatry and Behavioural Neurosciences, McMaster University

10:15 - 11:30  REFRESHMENT BREAK

11:30 - 12:30  KEYNOTE SPEAKER
Medical Assistance in Dying (MAID) in Individuals with Mental Health Conditions: Public Policy and Psychiatry

Dr. Scott Kim
Senior Investigator, Department of Bioethics, National Health Institutes, USA

12:30 - 1:30  LUNCHEON

1:30 - 3:00  ADDICTIONS POLICY RESEARCH
Cannabis Legalization: Lessons from Alcohol, Tobacco and Pharma
Who Cares About Gambling?
Can (and Do) Food Policies Change How We Eat?

Mr. Michael DeVillaer
Assistant Professor, Psychiatry and Behavioural Neurosciences, McMaster University

Dr. Iris Balodis
Assistant Professor, Psychiatry and Behavioural Neurosciences, McMaster University

Dr. Katherine Naish
Post-Doctoral Fellow, Peter Boris Centre for Addictions Research, McMaster University

3:00 - 3:15  AWARDS PRESENTATION

3:15 - 3:30  CLOSING REMARKS
Dr. Karen Saperson
Associate Chair, Education

Dr. Margaret McKinnon
Associate Chair, Research
Associate Co-chairs, Research
James R. Dunn, Ph.D. (Jim) is Professor and Chair of the Department of Health, Aging and Society at McMaster University and a Scientist at the Centre for Urban Health Solutions at St. Michael’s Hospital in Toronto. He was recently named Senator William McMaster Chair in Urban Health Equity at McMaster University. He is the Director of the McMaster Institute for Healthier Environments and in 2011-12 he was the William Lyon Mackenzie King Visiting Chair in Canadian Studies at Harvard University. Trained in urban health geography and social epidemiology, he has published widely in geography, public health, urban planning and epidemiology journals over his career, and co-edited *Rethinking Social Epidemiology: Towards a Science of Change* (Springer) with Patricia O’Campo in 2012. Since 2011, he has been the Co-Editor-in-Chief of the *Journal of Epidemiology & Community Health*, and also sits on the Editorial Board of *Housing, Theory & Society*.

His research program focuses on the social determinants of health and the influence of economic and social policies, especially urban policies, on inequalities in health and child development, concentrating on urban housing and neighbourhoods. Specifically, his work includes projects on the health and social impacts of public housing redevelopment, the impact of neighbourhood redevelopment initiatives on health and child development, and the development of cross-sectoral (between public health and urban planning) policy implementation solutions for urban health problems. From 2017-2018, he was Co-Principal Investigator for the evaluation of the Ontario Basic Income Pilot, a bold study of the impact of guaranteed annual income (or ‘basic income’) on poverty, health, and community outcomes among 6,000 participants in three communities in Ontario.

Dr. Dunn’s presentation will be on *Health Research and Engagement with Policy: A Cynically Optimistic Perspective*. 
Teresa (Terry) Bennett is a child and adolescent psychiatrist in the McMaster Children’s Hospital Child and Youth Mental Health Program, core member of the Offord Centre for Child Studies and assistant professor in the Department of Psychiatry and Behavioural Neurosciences at McMaster. She is the lead investigator for “Family Check-Up Canada”, a team of researchers, clinicians and educators working to implement and evaluate a brief, ecological intervention aimed at decreasing the burden of emotional and behavioural problems among children and families at high risk of mental health and developmental impairment. Her clinical and research interests include preschool mental health, neurodevelopmental disability and autism spectrum disorder and evidence-based models of prevention and timely intervention.

Dr. Bennett’s presentation will be on Adjusting Our Sails: Clinician Scientist Work During a Time of Radical Policy Change

The need for effective, prevention programs has never been greater, as Child and Adult Psychiatry, Emergency, Addiction and Primary Care services struggle to meet growing demands for care. Targeted prevention programs offered “upstream” to children and families hold particular promise. However, such models are often “fragile”, especially in the context of major policy changes. I will discuss a promising prevention approach, with a focus on the role of the clinician-scientist in evaluating and advocating for models that work for those who need help the most.
Dr. Scott Kim
Senior Investigator, Department of Bioethics,
National Institutes of Health, USA

Dr. Kim received his MD from Harvard and PhD in moral philosophy (on Kantian ethics) from the University of Chicago, and trained in adult psychiatry at the Massachusetts General Hospital.

Dr. Kim combines philosophical, clinical, and empirical research approaches to address a variety of ethical issues (ethical issues in pragmatic clinical trials, assessment of decision-making capacity, surrogate consent for incapacitated patients, theory and practice of informed consent, and physician assisted death). He is especially interested in the interface between psychiatry and euthanasia/assisted suicide as the practice is actually implemented in Belgium and the Netherlands, and its implications for the U.S. and Canada. Dr. Kim’s work has been supported by the NIMH, NINDS, NIA, NHGRI, Michael J. Fox Foundation, American Association for Geriatric Psychiatry, and the Greenwall Foundation. His work has appeared in *New England Journal of Medicine*, *Nature*, *JAMA*, and other key journals. His book *Evaluation of Capacity to Consent to Treatment and Research* (Oxford, 2010) was recently translated into Japanese.

He served on the Council of Canadian Academies Expert Panel on Medical Assistance in Dying. More information can be found at scottkimbioethics.org.

Dr. Kim’s presentation will be on **Assistance in Dying (MAID) in Individuals with Mental Health Conditions: Public Policy and Psychiatry.**

The current Canadian MAID law in effect excludes MAID where mental health conditions are the sole underlying condition. However, it remains a contested and debated exclusion. This talk will discuss the place of policy considerations in the debate, and illustrate how research can inform it with evidence from jurisdictions in which the practice is legal.
Mr. Michael DeVillaer  
*Assistant Professor, Psychiatry and Behavioural Neurosciences, McMaster University*

Following a diverse career with The Addiction Research Foundation of Ontario and The Centre for Addiction and Mental Health (CAMH), Mike is now a part-time Assistant Professor in the Department of Psychiatry and Behavioural Neurosciences at McMaster University. He is also a faculty associate with the Peter Boris Centre for Addictions Research and the Centre for Medicinal Cannabis Research at McMaster and St. Joseph’s Healthcare, Hamilton. Mike has been a recipient of the John C. Sibley Award for Excellence in Health Sciences Research and Education at McMaster. His current interests include epidemiology of drug problems and drug policy, and have provided consultation on cannabis law reform to committees of the Canadian Senate, The House of Commons, and the provincial governments of Ontario and Quebec. His report 'Cannabis Law Reform in Canada: Pretense and Perils' is available as a free download from The Peter Boris Centre website.

Mr. DeVillaer's presentation will be on Cannabis Legalization: Lessons from Alcohol, Tobacco & Pharma.

This presentation proceeds from a belief that the legalization of cannabis should not be viewed in isolation but rather within the context of our other long-established, legal, government-regulated drug industries. It will examine how well drug industries have balanced their pursuit of revenue with the protection of public health, and how effectively government has regulated these industries. The presentation will also consider the early trajectory of the cannabis industry.
Dr. Iris M. Balodis is an Assistant Professor in the Department of Psychiatry and Behavioural Neurosciences at McMaster University and a faculty associate with the Michael G. DeGroote Centre for Medicinal Cannabis Research. She is a core member of the Peter Boris Centre for Addictions Research as well as Director of the Integrated Neuroscience of Motivation and Change (IN-MaC) Laboratory. Her overall research program covers different aspects of reward and stress processing across various at-risk populations. This includes substance-based disorders, such as cannabis or alcohol use disorders, non-substance based disorders, including gambling disorder, as well as other disorders characterized by problems with impulse control, such as binge eating disorder.

She is addressing such questions as: how is incentive processing manifested in gambling disorder? Are anticipatory reward responses associated with addiction pathology? How do reward and stress responses relate to treatment outcome? Most notably, these questions are examined through parallel paradigms in multiple addicted populations. Therefore, her research has the potential to identify unique and overlapping alterations in motivational neurocircuitry as they relate within and across disorders.

One of the main areas in her research program examines the neurocognitive features of gambling disorder and today she will present some of this work, including implications for policy. Dr. Balodis’ presentation will be on Who Cares About Gambling?

Compared with other addictive disorders, public awareness of gambling disorder as a mental health condition remains very low. The Ontario Lottery and Gaming Corporation (OLG) generates over $7,500,000,000 in revenue annually. There is evidence that gambling is associated with significant harms and that the industry benefits in particular from individuals who experience problem gambling. Gambling disorder may best be understood as an interplay between the individual and the game. The current talk will demonstrate how research is shedding light on specific features of play, such as ‘Near-Misses’ or ‘Losses Disguised as Wins’ that tap into basic motivational neurocircuitry. These ‘dark nudges’, combined with marketing strategies, promote continued gambling, particularly in vulnerable individuals. Gambling research has meaningful implications for policymakers and regulators to make decisions about preventing gambling harms and developing safer gambling products.
Katherine Naish is a Postdoctoral Fellow in the Peter Boris Centre for Addictions Research in the Department of Psychiatry and Behavioural Neurosciences. Katherine obtained her PhD from the University of Reading in the UK in 2014, before moving to Canada to work as a postdoctoral fellow in Dr. Sukhvinder Obhi’s lab in the Psychology department at McMaster University. Katherine joined the Peter Boris Centre in 2017, where she has been working with Dr. Michael Amlung to explore the therapeutic potential of neuromodulation in individuals with substance use disorders, and with Dr. Iris Balodis on projects exploring food addiction in healthy and clinical populations.

Katherine has a long-standing interest in human eating behaviour, and in the complex array of factors that influence the type and amount of food that we eat. Today, she will be drawing on research from the fields of psychology and neuroscience to discuss how food policies could improve diet quality and obesity rates in Canada and beyond.

Dr. Naish’s presentation will be on Can (and Do) Food Policies Change How We Eat?:

In this talk, I will discuss whether policies around food can change eating habits and ultimately improve population health. I will discuss some of the strategies that have been implemented in Canada and elsewhere, including those that affect labelling of nutritional information, and how foods are marketed. Drawing on research from psychology and neuroscience, I will discuss possible reasons why many policies have been only minimally effective, as well as why some policies may actually have detrimental effects on our health.
1. Characteristics and Development of Kindergarten Studies in French Immersion Programs in Ontario
   Shiva Gheblehverdi, M Janus & C Reid-Westoby

2. Pain and Culture
   Sarah Pope & Eleni G Hapidou

3. Temporal and Spatial Expression of Cerebral Dopamine Neurotrophic Factors (CDNF) and Mesencephalic Astrocyte-Derived Neurotrophic Factor (MANF) in the Developing Rat Brain
   Dima Malkawi, Khaled Nawar & Ram Mishra

4. The Role of T Cells in Tight Junction Gene Expression in the Intestinal and Blood-Brain Barrier of Developing Mice
   Sarah Asbury, Bryce Kwiecien-Delaney, Rachael Horne & Jane Foster

5. Sex Differences in Behaviour and Gut Bacteria in a Mouse Model of Angelman Syndrome
   Owen D Luo, Cassandra Francella, Jonathan KY Lai, Kelly C Rilett, Robyn N Mackenzie & Jane A Foster

6. Prevalence of Hyperactive and Inattentive Behaviour in Kindergarten Children Across Canada
   Savannah Grant, M. Janus & C Reid-Westoby

7. Investigating the Receptor Dependency of proNGF Retrograde Transport in Basal Forebrain Cholinergic Neurons
   Ahmed Draiaia, Arman Shekari & Margaret Fahnestock

8. Tau Phosphorylation Sites and Their Role in BDNF Down-Regulation in Alzheimer’s Disease
   Haowoen (Kari) Guo, Crystal Mahadeo & Margaret Fahnestock

9. Expression of IGF-1 and IGF-1 Receptor in Human Idiopathic Autism
   Milena Cioana, B Michalski & M Fahnestock

10. Elevated Levels of Ataxia Telangiectasia Mutated (ATM) Protein in Autistic Young Human Male Fusiform Gyrus
    Chris Choi, B Michalski, F Antonucci, E Focchi & M Fahnestock
11. Analyzing Anxiety-Like Behaviours in Parent and offspring of Immunocompromised Mice
Nicholas Chronis, Tyler Burke, Bryce Kwiecien-Delaney, Shane Cleary, Sarah Asbury, Owen Luo, Jane A Foster & Cassandra Francella
Characteristics and Development of Kindergarten Students in French Immersion Programs in Ontario

Gheblehverdi, S.¹, Janus, M.², & Reid-Westoby, C.²

¹Psychology, Neuroscience and Behaviour Undergraduate Program, Department of Psychology, Neuroscience and Behaviour, McMaster University; ²Offord Centre for Child Studies, Department of Psychiatry and Behavioural Neurosciences, McMaster University

**Background:** French Immersion (FI) is a program in many Canadian schools, designed for non-French speaking students to allow them to learn as a second language. Evidence suggests that FI offers a variety of benefits to students, including greater cognitive development and a high level of proficiency in both French and English. To gain a better understanding of the effectiveness of FI, it is important to consider child- and family-related factors that can influence children’s development early in life. Previous studies have found that children’s characteristics such as sex, socioeconomic status (SES), and language background contribute to early child health outcomes. Despite the demonstrated benefits of FI programs for children, little is known about this association after controlling for children's demographics.

**Purpose:** This study aimed to examine: a) potential differences in demographics of Ontario kindergarten students attending FI and non-FI programs; b) the association between FI education and children’s developmental health outcomes; and c) the extent to which FI is associated with children’s developmental health after controlling for children’s language background (ability to speak a language other than English), sex, age, and SES.

**Methods:** Two population-level data sets were linked together: The 2015 Early Development Instrument (EDI; Janus & Offord, 2007) collected at the individual level in Ontario and the 2016 Canadian Census data, at the neighborhood level. The sample comprised 96,235 Senior Kindergarten students in Ontario’s publicly-funded schools, which were categorized into three groups: English-only in FI, English-only in non-FI, and multilingual in non-FI. Children’s developmental health outcomes were measured based on overall vulnerability on the EDI. SES was estimated based on the area-level median family income, rates of mobility, proportion of immigrants, and the percentage of people 15-years and older that do not possess a high-school diploma. Two one-way ANOVA tests were conducted to compare children’s age and SES. Sex differences were compared using a cross-tabulation analysis. Finally, children’s vulnerability rates and the association between children’s demographics and developmental health outcomes were compared by conducting two binary logistic regression (BLR) analyses.

**Results:** Results revealed significant differences on all SES indicators with children in FI living in neighborhoods with the lowest percentage of immigrants, the highest average income, and the lowest percentage of people with no diploma ($p < .001$). There was also a higher percentage of females in the FI group ($X^2(2) = 29.326, p < .001$). Children’s age was statistically but not meaningfully significant between groups. BLR revealed that the English-only in non-FI group was 1.28 times more likely to be vulnerable than the FI group. After controlling for sex, age, and SES, the English-only in non-FI group was 1.16 times more likely to be vulnerable than the FI group. No difference was found between the FI and the multilingual group in non-FI.

**Conclusions:** Findings suggest that FI is associated with children’s developmental health in unilingual children, above and beyond the influence of individual- and area-level demographics. While the association was not the strongest, children have only been enrolled in the program for a short time and the relation may get stronger over years. It may therefore be beneficial to encourage more children to participate in FI and benefit from such programs.

Pain and Culture
Sarah Pope\textsuperscript{1} & Dr. E.G. Hapidou\textsuperscript{2}

\textsuperscript{1} Undergraduate, Psychology, Neuroscience & Behaviour, McMaster University
\textsuperscript{2} C. Psych., Michael G. DeGroote Pain Clinic, Michael G. DeGroote Institute for Pain Research and Care, & Psychiatry and Behavioral Neurosciences, McMaster University, Hamilton, ON, Canada

Background: Pain has been defined as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage” (Classification of Chronic Pain, 1994). Culture is defined as “the customary beliefs, social forms, and material traits of a racial, religious, or social group” (Merriam-Webster’s Collegiate Dictionary, 2018). Culture is one of the primary factors affecting an individual’s pain experience.

Purpose: Many studies have been conducted to investigate the factors presumed to have an impact on the relationship between pain and culture (such as behavioural, emotional, and physiological differences specific to each patient and their culture and ethnicity), this complex relationship is one that is far from being understood. The purpose of this review is to try to better understand the way in which the divergence of cultural beliefs and behaviours affects how pain is felt, perceived, expressed and treated.

Methods: The topic of culture and pain was categorized into broader themes, such as pain sensitivity, pain behaviours, beliefs surrounding pain, medication, and caregiver-patient relationships. Each of these topics was examined in detail to gain a better understanding of how they each play a role in the subjective pain experience of patients of all ages and cultural backgrounds. Fourteen qualitative and quantitative studies were reviewed on different kinds of chronic pain, comorbidity of pain with various mental disorders, methods of coping depending on comparison between cultures, culturally-specific beliefs about pain, existing stereotypes about pain tolerance associated with certain cultures and how this might affect the doctor-patient relationship.

Conclusions: In the studies reviewed here, there are multiple factors suggested that could have accounted for the differences in pain perception, tolerance, threshold, and behaviours cross-culturally. The biopsychosocial model provides a framework for understanding these results by recognizing that an individual’s behaviours, thoughts and feelings may have an impact on their physical state. For instance, stringent beliefs that involve finding meaning in pain experiences, adhering to cultural values such as stoicism, and gender roles within culture can all be explained in terms of biological, psychological and social factors. Through these three lenses and with the support of many studies we are able to see how strong of a role culture plays in pain experience.

Temporal and Spatial Expression of Cerebral Dopamine Neurotrophic Factors (CDNF) and Mesencephalic Astrocyte-Derived Neurotrophic Factor (MANF) in the Developing Rat Brain

Dima Malkawi¹,², Khaled Nawar², Ram Mishra²

Undergraduate Student, Biomedical Discovery and Commercialization: Department of Biochemistry and Biomedical Sciences, McMaster University¹; Department of Psychiatry and Behavioural Neuroscience, McMaster University, Hamilton, Ontario, Canada²

Background: Neurotrophic factors are naturally occurring proteins that have been implicated in the maintenance, differentiation, and survival of neurons¹. Cerebral dopamine neurotrophic factor (CDNF) and Mesencephalic astrocyte-derived neurotrophic factor (MANF) belong to a recently discovered neurotrophic factor family which has been implicated in supporting survival and protection of midbrain dopaminergic neurons in the nigrostriatal pathway¹. These neurotrophic factors have been implicated in the regulation of endoplasmic reticulum (ER) stress as well as in the pathophysiology of Parkinson’s Disease PD².

Purpose: The purpose of this study is to determine the stage specificity of these neurotrophic factors was determined through the investigation of a developmental profile of the whole brain expression of CDNF and MANF from birth to adulthood using RT-qPCR quantification. Additionally, the differences in the levels of expression of CDNF and MANF between various regions of the brain were studied.

Methods: Pregnant female Sprague-Dawley rats were monitored and following birth, one pup from each mother was sacrificed at neonatal days 1, 3, 5, 7, 9, 14, 21 and 30 (n=4 per day). The remaining pups were left to reach adulthood and sacrificed at 5 months. The mRNA expression of CDNF and MANF was quantified using RT-qPCR. Statistical analysis was conducted using a one-way ANOVA with a Tukey’s post-hoc test.

Results: The results showed that the expression of MANF and CDNF is greater in the early postnatal days and gradually begin to decline as the brain matures. It was also observed that the expression of CDNF in the hippocampus is significantly greater than the substantia nigra and the striatum.

Conclusion: The elevated expression of both CDNF and MANF in early postnatal days and their implicated roles in the regulation of ER stress indicate their significant physiological function within the developing brain. The elevated expression of CDNF in the hippocampus further implicates its role in neuronal development. Keeping in mind the findings reported here, it is now possible to knock down these NTFs at a certain time point during development and investigate the functional consequences later in the adulthood. CDNF and MANF knockdown studies can reveal their functions early in development and moreover, it can help elucidate their mechanism of action. The study of novel NTFs for midbrain DA neurons is critical, for it can promote the discovery of novel therapeutic approaches for the management and treatment of neurodegenerative disorders.

References:
The role of T cells in tight junction gene expression in the intestinal and blood-brain barrier of developing mice.

Sarah Asbury, BSc Student\textsuperscript{1,2}, Bryce Kwiecien-Delaney, BSc Student\textsuperscript{2}, Rachael Horne, MSc\textsuperscript{2}, and Jane A. Foster PhD\textsuperscript{2}

\textsuperscript{1} Department of Biochemistry and Biomedical Sciences, \textsuperscript{2}Department of Psychiatry and Behavioural Neurosciences, McMaster University

Background: The importance of gut microbes to mental health is at forefront of neuroscience and psychiatry research. Foster lab research focuses on microbiota-immune-brain signaling pathways in pre-clinical and clinical studies. Work from our group and others has demonstrated a role for microbiota in behaviour and brain function. Recently, we have examined the host-microbe interactions at the gut intestinal barrier (Horne, 2018). Alterations in barrier function modulated by gut microbiota could play a role in microbiota-immune communication and influence both peripheral inflammation and immune-brain communication. Our published work establishes the importance of the T lymphocyte in behaviour and brain structure (Rilett et al, 2015). Unpublished data from our group show developmental delays in motor development and stress-reactivity in the first 2 weeks of postnatal development. Here we examine tight junction gene expression as a measure of barrier integrity in the intestinal barrier or the blood-brain barrier of developing wild type and T cell deficient mice. To model the role of T cells, TCR\textsubscript{β}⁻/⁻\textsubscript{δ}⁻/⁻ mice were used. These mice lack β and δ T cell receptor chains, and consequently lack functional mature T cells.

Purpose: The purpose of this study is to determine if T cells influence tight junction gene expression in the gut and the brain of postnatal day 7 mice. The tight junction genes to be examined in this study include: Occludin and claudin-5, which are both transmembrane tight junction proteins that bind adjacent cells’ tight junction proteins in the paracellular space and ZO-1, which is a cytoplasmic adaptor protein that binds the cell cytoskeleton to transmembrane tight junction proteins.

Methods: Cortex and small intestine were collected at post-natal day 7 from C57BL/6 (wildtype WT) and TCR\textsubscript{β}⁻/⁻\textsubscript{δ}⁻/⁻ mice. RNA was isolated using Norgen Biotek Animal Tissue RNA purification kit. Gene expression levels of ZO1 mRNA were analyzed by qPCR in the genomic-free cDNA samples using the standard curve method with the Bio-Rad SsoAdvanced Univ SYBR Green Supermix.

Results: To date qPCR of WT samples (cortex: n = 9; small intestine n = 6) has been completed and data analysis is ongoing. Additional analysis of tissue samples from T cell deficient mice are underway.

Summary: Preliminary results will be presented. A key question that will be addressed in WT mice is whether we observe similarities in barrier gene expression at the blood-brain barrier and the intestinal barrier? Future analyses will consider how this differs in T cell deficient mice and will extend to other developmental time points.

References:
Sex differences in behaviour and gut bacteria in a mouse model of Angelman Syndrome

Owen D. Luo, BHSc Student1, Cassandra Francella, MSc Candidate2, Jonathan K.Y. Lai PhD3
Kelly C. Rilett PhD3, Robyn N. Mackenzie MSc3 and Jane A. Foster PhD3

1Bachelor of Health Sciences (Honours) Program, 2 McMaster Neuroscience Graduate Program, 3Department of Psychiatry and Behavioural Neuroscience, McMaster University.

Background: Accumulating evidence has implicated the gut microbiome in behaviours including alterations in gut microbiota composition and diversity identified in preclinical and clinical studies of autism spectrum disorders (ASDs). Angelman Syndrome (AS) is an ASD-related neurodevelopmental disorder associated with behavioural differences such as speech impairment, sleep disturbances, and an inappropriate happy demeanor. The clinical presentation and course of AS has been successfully modelled with the heterozygous, maternal deficient Ube3am-/p+ mice. Previous studies exploring the behavioural phenotype of Ube3am-/p+ mice have reported increased anxiety-like behaviours, motor impairments, reduced social preference, and learning deficits (Godavarthi et al., 2012; Huang et al., 2013). However, no studies have explored potential links between the behavioural phenotype and gut microbiome of Ube3am-/p+ mice.

Purpose: The objective of this study is to associate early-life behaviours with changes in gut microbiota composition in Ube3am-/p+ mice.

Methods: Male (n=10) and female (n=11) Ube3am-/p+ mice and their male (n=16) and female (n=11) wild type littermates (WT) were subject to a battery of behavioural testing pre-puberty including measurements of growth and development, ultrasonic vocalizations after maternal separation, open field behaviour, and tests of social behaviour and self-grooming. Fecal samples were collected on postnatal day 24. Extracted fecal DNA were amplified and sequenced with the Illumina MiSeq platform at the 16s rRNA gene variable 3(v3) regions. MiSeq data was processed using an in-house bioinformatics pipeline. To guide targeted comparisons of the gut microbiome data, a list of bacterial taxa implicated in both preclinical and clinical studies of ASD were identified a priori through a systematic review of the literature.

Results: There was no effect of genotype on righting reflex or weight, but there was a delay in eye opening in both male and female Ube3am-/p+ mice. Ube3am-/p+ mice showed a reduced duration of ultrasonic vocalizations; further spectral analysis identified that this reduction was specific to frequency jump calls. A genotype difference in open-field activity and rearing behaviours were observed in male Ube3am-/p+ mice, whereas no effect of genotype was observed in females. In the 4th week of life, no genotype differences in social and grooming behaviours were found. Male Ube3am-/p+ mice showed a reduced relative abundance of bacteria from the genus Bacteroides; no other genotype differences in the a priori ASD-related bacterial taxa were identified. Multivariable correlation analyses revealed significant associations between sex, Coprococcus and Lactabacillus with grooming behaviour, and genotype, Clostridium, and Bacteroides with ultrasonic vocalizations.

Conclusions: This study shows that sex influences both the behavioural outcomes and composition of the gut microbiota of Ube3am-/p+ mice. Combined results of early-life behavioural analysis and gut microbiota shed light on bacterial correlates with the development of ASD in mouse models.

References:
Prevalence of Hyperactive and Inattentive Behaviour in Kindergarten Children Across Canada

1Grant, S., 2Janus, M., & 2Reid-Westoby, C.

1Honours B.A.Sc. Human Behaviour, McMaster University; 2Offord Centre for Child Studies, Department of Psychiatry and Behavioural Neurosciences, McMaster University

Background: A diagnosis of Attention Deficit Hyperactivity Disorder (ADHD) is more common after entry into elementary school than prior, notably because the routine, discipline, organization, and resources of the classroom make it easier to identify children who do not conform to social norms. However, in young children, it can be difficult to determine whether symptoms of ADHD will lead to a diagnosis of ADHD. The characterization of ADHD in preschool children is of great interest because an improved understanding of the disorder prior to school entry can increase the identification of the disorder and suitable early intervention.

Purpose: The purpose of this study was to examine the prevalence of ADHD-like behaviours in Canada, using the Early Development Instrument (EDI), a population-level, teacher-completed measure of developmental health at school entry.1 The study examined the prevalence of hyperactive and inattentive behaviours in kindergarten children and how they related to children’s developmental health.

Methods: The data collected for the study came from the Canadian Children’s Health in Context Study (CCHICS)2 and used EDI data for 996,949 children collected in 10 provinces and 2 territories from 2004 to 2015. The EDI measures kindergarten children’s abilities to meet age-appropriate developmental expectations in five general areas: Physical Health and Well-being, Emotional Maturity, Social Competence, Language and Cognitive Development, and Communication and General Knowledge. The study sample was created by selecting children who met few or none of the developmental expectations in the subdomain of hyperactive and inattention, a component of the emotional maturity domain. There were 145,691 (14.6%) children with hyperactive and inattentive behaviours. Hyperactive and inattentive children were compared to their non-hyperactive/inattentive peers on sex, age, and special need status which were included as covariates in subsequent analyses. A binary logistic regression (BLR) was conducted to determine whether hyperactive and inattentive behaviours was association with vulnerability in four of the five domains of the EDI (all except the Emotional Maturity domain) in comparison to their non-hyperactive/inattentive peers.

Results: Compared to non-hyperactive and inattentive children, the hyperactive and inattentive children included significantly more males (74.1% vs. 44.1%) and had a higher percentage of children with special needs (13% vs 4%). Kindergarteners who exhibited hyperactive and inattentive behaviours were between 4.33 and 26.23 times more likely to exhibit vulnerability in the four EDI domains of developmental health, with the highest vulnerability for the Social Competence domain.

Conclusions: Findings demonstrate that kindergarteners with ADHD-like behaviours are more likely to be vulnerable in four areas of their development. These findings suggest that hyperactive and inattentive behaviours are associated with young children’s development, and that efforts should be made to improve early detection and intervention of these behaviours.

Investigating the receptor dependency of proNGF retrograde transport in basal forebrain cholinergic neurons

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Background: Basal forebrain cholinergic neurons (BFCNs) play a crucial role in learning and memory. BFCNs depend on neurotrophins for their survival and function. Such molecules include nerve growth factor (NGF) and brain derived neurotrophic factor (BDNF), which are retrogradely transported from BFCN target tissues. NGF is found predominantly in the brain in its precursor form, proNGF. In Alzheimer's disease, an abnormally high level of NGF-immunoreactive material is found in BFCN targets like the cortex and hippocampus and is reduced in the basal forebrain¹, implicating dysfunctional retrograde axonal transport of proNGF in the disease. ProNGF binds with high affinity to the p75 pan-neurotrophin receptor (p75⁰⁰¹¹) and with low affinity to tropomyosin-related kinase A (TrkA) receptors. Which one is required for proNGF retrograde transport is unknown.

Purpose: To determine whether the retrograde transport of proNGF depends upon p75⁰⁰¹¹, TrkA, or both.

Methods and Results: pcDNA 3.1 plasmids containing DNA coding for NGF mutants binding only to p75⁰⁰¹¹ (KKE) or TrkA (9/13) were a generous gift from Dr. C. Wu, University of California, San Diego. These constructs were mutated by site-directed mutagenesis to substitute an arginine for a glycine at position -1 in the proNGF polypeptide to make them cleavage-resistant. The constructs also contained a His-tag for purification and an AviTag (biotin acceptor site) to facilitate labeling the expressed protein with quantum dots. The proNGF constructs have been made cleavage-resistant and have been transfected into HEK293 cells for expression.

Conclusions: Following purification through a nickel column, the proteins will be biotinylated and labeled with quantum dots. Basal forebrain neurons will be dissected from E18 rat embryos and will be cultured in microfluidic chambers to separate the axon terminals from cell bodies. Quantum-dot labelled mutant proNGF proteins will then be added to the axon terminals, and their speed and direction will be assayed by fluorescence microscopy.

Tau phosphorylation sites and their role in BDNF down-regulation in Alzheimer’s disease

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Background: Alzheimer’s disease (AD) is characterized clinically by memory loss and cognitive decline. The neuropathology of AD includes the presence of neurofibrillary tangles consisting of abnormally hyperphosphorylated and aggregated tau protein. Brain-derived neurotrophic factor (BDNF) rescues synaptic loss and cognitive decline in animal models of AD and is essential for neuronal function, connectivity and plasticity in the human brain. Previous research in the Fahnestock lab has shown that tau down-regulates BDNF mRNA in AD, in non-AD tauopathies such as Pick’s disease and corticobasal degeneration, in animal tauopathy models and in cell culture. However, whether hyperphosphorylated or aggregated tau leads to neurotrophin dysregulation still remains unclear.

Purpose: The purpose of this study is to investigate if abnormal hyperphosphorylation of tau at specific phosphorylation sites implicated in AD is responsible for BDNF down-regulation in vitro.

Methods: SH-SY5Y human neuroblastoma cells stably transfected with plasmids containing tau mutations at phosphorylation sites T231A and S262E, SH-SY5Y cells containing the empty pcDNA3.2 vector, and SH-SY5Y cells transfected with the unmutated longest human tau isoform, hTau40, were used. The two experimental groups (T231A and S262E) contain tau mutations preventing phosphorylation and aggregation at Alzheimer’s disease-specific phosphosites hypothesized to be involved in tau toxicity. Cells were differentiated with retinoic acid for 10 days. RNA was extracted and BDNF mRNA levels were quantified using qRT-PCR and normalized to β-actin as the housekeeping reference gene.

Results: This is an ongoing project with results to be reported at the meeting. It has previously been shown that cells containing the empty pcDNA3.2 vector will have higher BDNF mRNA levels compared to hTau40 cells, as over-expression of human tau causes hyperphosphorylation and aggregation, leading to BDNF down-regulation.

Conclusions: If cells with T231A or S262E mutations show significantly higher levels of BDNF mRNA compared to hTau40-transfected cells, tau hyperphosphorylation at these sites may be involved in the BDNF down-regulation by tau in Alzheimer’s disease. If neither of the tau mutations results in a significant increase in BDNF mRNA levels compared to hTau40-transfected cells, tau phosphorylation at these sites may not play a role in BDNF down-regulation.

References:
Expression of IGF-1 and IGF-1 receptor in human idiopathic autism

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Background: Autism is a lifelong neurodevelopmental disorder characterized by social impairments, restrictive interests and repetitive behaviors. It is believed that defects in the establishment and maintenance of functional neuronal networks due to synaptic/spine dysfunction underlie the clinical symptoms of autism. The potent effects of IGF-1 on synaptic function, maintenance and plasticity make it a potentially attractive target for the treatment of autism. In fact, this polypeptide hormone has proven to have beneficial effects in treating developmental disorders like Rett Syndrome and Phelan-McDermid Syndrome, and currently a pilot treatment study is testing its efficacy in Autism Spectrum Disorder. IGF-1 binds to its receptor (IGF-1R) in neurons and activates mitogen-activated protein kinase (MAPK) and PI3K/Akt signaling to produce biological effects such as neuronal survival. The PI3K/AKT pathway is downregulated in idiopathic autism and is hence believed to play a role in the disorder.¹ Although an imbalance in BDNF and TrkB protein isoforms, which activate the PI3K/Akt pathway, has been shown in human idiopathic autism, it is possible that the pathway is also mediated by IGF-1 and its receptor. Therefore, whether IGF-1 and IGF-1R are dysregulated in human idiopathic autism is an important question.

Purpose: To determine the level of IGF-1 and IGF-1R mRNA and protein expression in human post-mortem idiopathic autism brain tissue compared to control tissue.

Methods: Human fusiform gyrus tissue from normal controls and from subjects with idiopathic autism (20 control, 15 autism) was obtained from the Autism BrainNet. Samples were matched for age, gender and post-mortem interval, and no significant difference for these variables was found between the two groups. RNA and protein were isolated from frozen tissue. qRT-PCR was performed for IGF-1 and IGF-1R to determine mRNA levels. Protein levels were determined using a total IGF-1 ELISA and Western blots for IGF-1R.

Results: There was no significant difference between levels of IGF-1 and IGF-1R mRNA and protein in human idiopathic autism compared to controls.

Conclusion: This study suggests that although IGF-1 may be useful for autism treatment, IGF-1 and IGF-1R are not implicated in the pathogenesis of idiopathic autism.

Elevated levels of ataxia telangiectasia mutated (ATM) protein in autistic young human male fusiform gyrus

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Background: Idiopathic autism has been associated with decreased levels of mTOR mRNA expression¹ and abnormalities in GABA signaling, although the mechanism remains unclear. Interestingly, ataxia-telangiectasia mutated (ATM), a serine/threonine protein kinase originally thought to be associated with the DNA damage response, has been found to repress mTOR signaling and regulate GABAergic development². A high level of ATM may help explain decreased mTOR mRNA and abnormal GABA signaling in autism. Levels of ATM between autistic and control cases, however, have not yet been compared.

Purpose: The purpose of this study was to determine whether levels of ATM were indeed higher in human autistic samples compared to their age- and sex-matched controls.

Methods: Western blots were performed on post-mortem fusiform gyrus samples from human male autistic (n=5) and control (n=6) cases between five and sixteen years of age.

Results: Results demonstrated ATM levels were higher than matched controls in four out of five autistic samples, although the overall between-group difference was not significant (p=0.11).

Conclusions: This observation suggests ATM may be involved in pathways underlying autism and highlights the need to study larger cohorts. More specifically, the elevated level of ATM in some cases of idiopathic autism suggests that disruptions in mTOR mRNA expression and GABA signalling may occur through ATM. A deeper appreciation of ATM's role in autism may reveal new therapeutic targets for autism, and therefore future studies confirming our results are recommended.

References:
Background: Research conducted by the Foster Lab has shown that T-cell deficient mice, mice that lack both the $\beta$ and $\delta$ chains of the T cell receptor ($\text{TCR}^{\beta\delta-/-}$) have reduced anxiety like behaviours. This was shown in various approach avoidance behavioural tests including the elevated plus maze (EPM), open-field and light-dark box test in adulthood (Rilett et al., 2015). Our lab has also shown that $\text{B2M}^{/-}$-$\text{TAP}^{/-}$ mice, mice lacking both B-2 microglobulin and transporter associated with antigen processing, exhibit differences in behaviour in the open field and EPM tests, showing the important role Class I MHC has on behaviour (Sankar et al., 2012). As Co-Op students in the Foster Lab we wanted to build on the lab’s previous findings as well as gain experience in animal handling and conducting behavioural test to look at anxiety like behaviours in both parents and their offspring.

Purpose: The purpose of this Co-Op Placement was to examine anxiety-like behaviours in wildtype and immunocompromised mice as well as to see if there is an association between behaviour in the parent and the behaviour of their offspring.

Methods: The current study consisted of both parents and offspring of C57BL/6J and $\text{B2M}^{/-}$-$\text{TAP}^{/-}$ mice. Mice were bred in house in the animal facility at St. Joseph’s Healthcare. Mice were born on postnatal day 0 (P0) and weaned on P21. At P28, their anxiety-like behaviours were assessed using the elevated-plus-maze (EPM).

Results: Both breeders and the offspring of $\text{B2M}^{/-}$-$\text{TAP}^{/-}$ mice showed decreased anxiety-like behaviours as measured by the total time spent in the closed arms, compared to the both the open arms and intersection zone. In the preliminary analyses there were no evident associations between anxiety-like behaviours in the parent and their offspring as measured by open arm and poke around entries.

Conclusions: The behavioural differences observed in immunocompromised mice as compared to their wildtype agreed with previous findings, suggesting that the immune system plays a role in the development of anxiety-like behaviours. In this small sample set, associations between behaviour in the parents and their offspring were not detected. As our time spent in the Foster Lab as Co-Op students, we learned a variety of animal training skills such as handling, weaning, and tissue collection as well as learning to conduct the EPM test on mice. We also gained knowledge of scientific literature and how a science project is conducted.

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The Breadth of Benefit of Methadone Maintenance Treatment (MMT): Exploring Associations between MMT and Social Functioning in Opioid Use Disorder

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BACKGROUND: Canada is experiencing an opioid crisis: a rise in illicit and prescribed opioid use, as well as opioid-related harms. Methadone Maintenance Treatment (MMT) is an effective harm reduction tool for treating opioid dependency and is commonly prescribed by Canadian physicians. Social functioning (SF), the ability to successfully engage with life and fulfill personal roles, can influence MMT outcomes. Impaired SF is associated with greater drug use and depressive symptomatology, whereas high SF predicts MMT retention and addiction recovery. Currently, the SF of Canadians who use opioids, and whether MMT impacts SF in this population is not known. This prospective cohort study explored domains of SF in a group of Canadians living with opioid use disorder (OUD) following a 12 month MMT intervention.

METHODS: Extensive data were collected from over 1500 participants enrolled in MMT for OUD as part of the Genetics of Opioid Addiction (GENOA) research collaborative. All participants were interviewed by trained researchers between 2011 and 2016 and met criteria for OUD. SF was defined according to the Maudsley Addiction Profile’s three domains of (1) Relationships (2) Criminality, and (3) Employment, which was administered at baseline (i.e., study enrolment and first interview) and again, following 12 months of MMT. Participants who had undergone greater than 6 months of MMT prior to study enrolment were excluded. Data from 261 participants (those who initiated MMT less than 6 months prior to baseline) were analyzed. The sample was characterized demographically, and means were calculated for SF at baseline. Paired sample t-tests were conducted to examine changes in SF over 12 months of MMT. Future analyses for this study will explore the potential prognostic value of illicit opioid use on SF, as measured by urine screens and toxicology reports collected throughout the year.

RESULTS: Approximately 20% (n=261) of the study population had been on MMT for less than 6 months prior to study enrolment. This was a male-dominated (59.4%) cohort, with a mean age of 35 years (range: 18-66). The majority were single (54%), had children (59.4%), and were not formally employed (64%). At baseline, participants reported that serious conflict ensued 9.3% of contact time with either partner, relative, or friend. Eleven participants reported partaking in criminal activity, with an average of 18 episodes of crime per person per month. There was a significant improvement in days of paid work (M=7.81, SD=10.41) from baseline to 12 month follow up (M=10.31, SD=12.30); t(90)=2.04, p=0.04. A significant change in formal unemployment rate was also observed from pre (M=57.1%, SD=.50) to post (M=42%, SD=.50); t(90)=−2.32, p=0.02. No other statistically significant change was found. DISCUSSION: Preliminary results from this study suggest that individuals receiving treatment for OUD with MMT may experience improvements in their vocational functioning. However, unemployment rates after 12 months of MMT remained considerably lower than the general Canadian population (i.e., ~6%). This study demonstrates the inequality Canadians living with OUD face in terms of their social functioning, and highlights the need for increased funding and resources to better address these inequities. Future trials should examine treatment outcomes of MMT with adjunctive programming specific to social functioning in patients with OUD.

Measuring the effectiveness of Acceptance and Commitment Therapy to decrease symptoms in individuals with concurrent disorders

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Background: Studies consistently demonstrate that psychiatric and substance use disorders often co-occur (i.e., concurrent disorders). Additionally, individuals experiencing concurrent disorders often experience substantial negative outcomes, including poor treatment outcomes, greater hospitalizations, and lowered social and occupational functioning. A great deal of literature provides strong evidence for the use of Acceptance and Commitment Therapy (ACT) as a group intervention for individuals with concurrent disorders, however, there is limited research or access to existing marginalized group programs. This study examines whether an ACT-based group offered by St. Joseph’s Healthcare Hamilton Concurrent Disorders Outpatient Program called Committing to ACTion, leads to improvements for individuals experiencing anxiety, mood, and substance use disorders.

Purpose: The main purpose of this study is to evaluate whether the Committing to ACTion group will lead to symptomatic decrease for individuals experiencing concurrent disorders.

Methods: The group meets once a week for eight consecutive weeks. The material is based on ACT and includes topics such as: mindfulness, values, committed action, fusion/defusion, and developing an action plan. To assess the effectiveness of the group, self-reported measures were collected at weeks one, four, and eight. To measure anxiety, depression, alcohol use, cannabis use and psychological flexibility, the following scales were used: The Generalized Anxiety Disorder 7-item (GAD-7) scale, Patient Health Questionnaire (PHQ-9), Alcohol Use Disorders Identification Test (AUDIT-C), The Cannabis Use Disorder Identification Test-Revised (CUDIT-R), and the Acceptance and Action Questionnaire for Substance Use.

Results: Compared to pre-ACT, post-ACT questionnaires showed statistically significant symptom improvement in all five measures. Specifically, there were decreases in anxiety symptoms, \((t(24) = 4.89, p < 0.001)\), depression symptoms, \((t(24) = 4.48, p < 0.001)\), alcohol use, \((t(24) = 2.90, p = 0.008)\), and cannabis use, \((t(24) = 2.43, p = 0.023)\). Lastly, psychological flexibility significantly improved, \((t(24) = 2.25, p = 0.034)\).

Conclusion: This study demonstrates that individuals with concurrent mental health and substance use disorders experienced an improvement in symptoms after eight sessions of ACT. Data collection is ongoing and more results will be presented, alongside additional considerations for how these findings coalesce with extant literature and how ACT can be implemented to support symptomatic recovery in this often underservices sample.

Stepped Care Skills-based Group Therapy as a Resource-Effective Alternative to Dialectical Behaviour Therapy

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Background: Borderline Personality Disorder (BPD) is a serious psychological disorder with immense patient and healthcare resource costs. With prevalence estimates in the general population for those with BPD of ~1%, estimates of ~10% for psychiatric outpatients, and ~20% rates among inpatient populations, there are significant incentives to address the resource use of those with BPD1.

Rationale: Effective psychotherapy treatments have been developed for those with BPD, most explicitly Dialectical Behaviour Therapy (DBT). DBT has been shown to be highly effective in reducing symptoms and medical patient costs2, but remains a resource intensive therapy. As such, new treatments that can obtain effective clinical outcomes and use fewer resources are critical, reaching more patients with less delay. In the Borderline Personality Disorder Service at St. Joseph’s Healthcare Hamilton, a stepped care model based on DBT is currently being piloted; the first step of this model is Living Skillfully with BPD.

Purpose: Living Skillfully is a closed group, skills-based, DBT-informed therapy focused on introducing emotion regulation and distress tolerance skills to patients. The aim of Living Skillfully is to provide a large number of patients knowledge about emotion regulation, which patients can use continuously to address symptoms, and then proceed into higher levels of care as needed following the stepped care model. The purpose of this study is to examine the effectiveness of Living Skillfully.

Methods: Living Skillfully is an 8-week group therapy targeting emotion-dysregulation. Emotion skills are introduced with interactive worksheets that are filled out during the session and as homework. Questionnaires are completed at the beginning (emotion ratings, BPD symptoms, distress tolerance) and end (emotion ratings) of each session, and during their first and last session (emotion dysregulation, coping skills, PTSD/depression/anxiety/stress symptoms).

Results & Conclusion: A participant size of approximately 40 patients is expected by April. Change will be calculated for the patients from the first to last session and from session to session. The expected patient outcomes include more effective use of DBT-based skills, decreased difficulties in emotion regulation, a reduction in BPD symptoms and increases in psychological health and well-being. These outcomes are expected to demonstrate significant clinical change similar to the DBT program.

Examining patterns of attendance in Dialectical Behaviour Therapy: Predictors of and outcomes related to attendance

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Background: For some psychotherapies, greater attendance has corresponded with greater improvement in symptoms,¹ while for others, there has been no association or even a reverse association between attendance and improvement in symptoms.² Given these equivocal findings, it is important to investigate the attendance-outcome relationship for psychotherapies, especially those deemed to be highly resource-intensive (e.g., Dialectical Behaviour Therapy [DBT]). DBT is a third wave therapy developed for individuals with Borderline Personality Disorder (BPD). It is particularly important to investigate attendance in DBT because attendance rates vary across clients and there is no empirical estimate of the attendance rate needed for clinically significant changes in symptoms to occur. At the same time, it is unclear why attendance rates in DBT vary in the first place. Previous research on other psychotherapies shows that the severity of certain symptoms before treatment is inversely proportional to attendance rates.³ However, as of yet, no study has investigated the relationship between baseline symptoms of individuals with BPD and attendance rates in DBT.

Purpose: The purpose of this study is twofold: 1) to investigate the attendance-outcome relationship in DBT and 2) to investigate baseline symptom predictors of attendance in DBT.

Methods: This study of a sample of individuals with BPD engaged in DBT (N = 80) will identify baseline symptom predictors of attendance and assess the clinical impact of attendance rates. This will be done by collecting self-report measures assessing symptoms of BPD, depression, anxiety, stress, post-traumatic stress disorder, impulsive/self-harm behaviors, shame, emotion dysregulation, and psychosis before and after the first four months of DBT. Individual and group therapy attendance records for the first four months of DBT will also be collected.

Results: Data collection for this study is ongoing. Once data is collected, linear regression models will be used to predict the relationship between baseline symptoms and individual attendance, as well as between baseline symptoms and group attendance. Correlational analyses will then be conducted to establish the relationship between individual/group attendance and symptoms four months into treatment.

Conclusion: The findings of this study will lead to a better understanding of the baseline symptom predictors of attendance in DBT which will allow clinicians to identify patients who may struggle with attendance from the outset, and take appropriate measures to support compliance. Furthermore, understanding the relationship between attendance and outcomes in DBT will provide an empirically-derived criterion of attendance that clinics could use as a reference in order for DBT to be effective.

Psychosocial Determinants Predicting the Efficacy of Electroconvulsive Therapy on Depression

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Background: Major Depressive Disorder (MDD), is one of the most common mental health disorders with over 300 million people affected worldwide. MDD has been found to affect day-to-day life by restricting individuals’ social and occupational functioning (Hammar & Årdal, 2009). Medication therapy (antidepressants) and psychotherapy are among the most common treatment options. However, approximately 60% of those treated with antidepressants do not respond, leading to the exploration of other treatment options, such as electroconvulsive therapy (ECT). ECT is typically only prescribed to patients resistant to more common approaches. However, only approximately 50%-70% of patients who are administered ECT truly respond to the treatment (Al-Harbi, 2012).

Purpose: This study aims to identify potential psychological factors that could better identify which patients will respond to ECT vs. those who are less likely to respond.

Methods: Patients aged 18 to 65 years receiving out-patient ECT at St. Joseph’s Healthcare Hamilton were recruited to participate. Patients were administered a battery of tests, including the Beck’s Depression Inventory-II, Personality Assessment Inventory, World Health Organization Disability Assessment Schedule-2.0, and the Squire Subjective Memory Questionnaire, at 3 timepoints: pre-ECT, 2-4 weeks post-ECT, and 6 months post-ECT. Treatment response was determined by calculating the difference between baseline and post-ECT BDI-II scores. Baseline scores will be compared across patients to determine whether certain factors differentiate ECT responders from non-responders.

Results: Preliminary analysis of the data from 57 patients (41 females, 16 males) who completed all follow-up testing revealed an average sample age of 46 years (range 24 to 64 years), with an average of 15 years of education (range 10 to 23 years). Changes in BDI-II scores identified 33 (58%) patients as non-responders, 10 (17.5%) as responders, and 14 (24.5%) as remitters (those with post-BDI-II score in the non-clinical range).

Conclusion: Only 42% of this sample benefitted meaningfully from ECT, while 58% did not achieve treatment response. Further analyses will be conducted to determine if any baseline factors are significantly different between these groups. If so, future clinicians may be able to use such information to better predict which patients are more likely to benefit from ECT.

References:
The Role of Psychosis in Borderline Personality Disorder: Assessing Symptom Severity and Treatment

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Background: There is a high prevalence of psychotic symptoms experienced for individuals with borderline personality disorder (BPD). The literature surrounding this topic suggests that the presence of psychosis affects the severity and relative frequency of BPD symptoms as well as the effectiveness in outcome of clinical treatment. Previous studies have found that individuals with BPD with psychotic symptoms tend to have more severe and more frequent BPD symptoms.

Purpose: The purpose of this study is to (1) examine whether the presence of psychosis in patients with BPD is associated with symptom severity before clients engage in treatment for BPD, and (2) assess the role of psychosis as it related to symptom severity changes after 4 months of Dialectical Behaviour Therapy.

Methods: Symptom severity across a number of domains were assessed in a sample of BPD clients (N = 47) with (n = 25) and without (n = 22) psychotic symptoms. Clients completed self-report questionnaires examining domains including the Community Assessment of Psychic Experience (i.e., psychotic symptoms; CAPE), Borderline Symptom List-23 (BPD symptoms; BSL) & BSL Supplemental (BPD-related high-risk behaviours), Depression Anxiety Stress Scales (DASS), Experiential Shame Scale (ESS), Difficulties in Emotion Regulation Scale (i.e., emotion dysregulation; DERS), and the Post-traumatic Stress Disorder Symptom Checklist (PTSD Checklist).

Results: Consistent with hypotheses, clients who endorsed psychotic symptoms at baseline also endorsed more severe BPD symptoms (p = .003), anxiety (p < .001), stress (p < .001), shame (p = .004), post-traumatic stress disorder symptoms (p = .005), and emotion dysregulation (p < .001). Four months into treatment among a subset of the initial sample (n = 24), it was found that the differences in symptom severity between individuals with and without psychosis were retained after 4 months of Dialectical Behaviour Therapy.

Conclusions: These results suggest that the presence of psychotic symptoms are indicators of illness severity, and that they may be indicative of a poorer rate of improvement in the treatment of BPD. There are significant implications of this study, specifically for clinicians in understanding how the role of psychosis impacts symptom severity and treatment outcome. Data collection is ongoing.

Personality Dimensions in Anxious and Depressed Women during the Perinatal Period
(Work In Progress)

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Background: During the perinatal period (which includes pregnancy and up to 12 months post-partum), women are significantly more likely to experience mental health difficulties such as anxiety and depressive disorders (Ross & McLean, 2006). These disorders not only impair a woman’s functioning, but are also associated with long term emotional, physiological, and behavioural problems in their infants (Glover, 2014). For instance, offspring from women with perinatal anxiety or depression were found to be at a greater risk of developing anxiety disorders during early adulthood (Capron et al., 2015). Despite research citing personality factors as reliable predictors of anxiety and depressive disorders within the general population, few studies have explored this association during the perinatal period. Furthermore, the studies that do exist, have focused on perinatal depression solely, despite perinatal anxiety having equal, if not higher, prevalence rates. Given that previous research has found that personality factors (e.g., Neuroticism) have been able to predict anxiety and depression within the general population, personality factors may provide similar insight to help identify women in the perinatal period who are at a higher risk of developing anxiety/depressive disorders.

Purpose: The purpose of the current study is to investigate the relationship between personality factors and anxiety and/or depression within a perinatal sample of women recruited from the Women’s Health Concerns Clinic, St. Joseph’s Healthcare Hamilton.

Methods: Multiple regression analyses will be run on a projected sample of N=20 women within the perinatal period who have anxiety/depressive disorders (n=10) and women in the perinatal period without anxiety/depressive disorders (n=10). To confirm eligibility within the experiment, participants will go through a diagnostic clinical interview using the Mini-International Neuropsychiatric Interview (MINI; Hergueta et al., 1998) with a trained assessor. Participants will then be asked to complete various self-report measures to examine the association between different personality factors, anxiety symptoms, depressive symptoms, and other potential risk factors such as relationship satisfaction and social support. These risk factors will be evaluated through the following self-report measures: The HEXACO-60 Personality Inventory (HEXACO-60-PI-R; Ashton & Lee, 2009); the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987); the Penn State Worry Questionnaire (PSW-Q; Meyer et al., 1990), the State Trait Inventory for Cognitive and Somatic Anxiety (STICSA; Ree et al., 2008), the Abbreviated Spanier Dyadic Adjustment Scale (ADAS; Sharpley & Rogers, 1984), and the Social Provisions Scale (SPS; Cutrona et al., 1987).

Results: It is predicted that the personality trait of Neuroticism will be linked to perinatal anxiety and depression. If results demonstrate that an association exists between certain personality traits (e.g., Neuroticism) and perinatal anxiety or depression, this study can help identify women at risk of developing these disorders while advancing research to improve preventative measures for this population.

The Neural Correlates of Effort-Based Decision-Making in Cannabis Use Disorder

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Background: Approximately 7.2% of North Americans suffer from cannabis use disorder (CUD) within their lifetime and with the legalization of cannabis in Canada, it is important to understand the long-term effects of chronic cannabis use (Copeland and Swift 2009). Chronic cannabis use is linked with amotivational symptoms but only a few studies have specifically examined effort-based decision-making in CUD. Recently, some studies are showing relationships between cannabis use and measures of motivation (e.g. Lawn et al. (2016)), however, there have been no studies examining the neural correlates of effort-based decision-making in CUD.

Purpose: To examine the neural response underlying components of cost-benefit decision-making in CUD. Additionally, the study will explore if the severity of participants’ CUD is associated with their neural response when processing reward information or information on effort requirements.

Methods: This pilot project includes individuals with CUD between the ages of 18 and 65, recruited from the Hamilton area. The participants completed a variety of intake assessments, including the Cannabis Use Disorder Identification Test – Revised (CUDIT-R) which was used to determine the severity of their CUD. The participants completed a modified version of the Effort Expenditure for Rewards Task during functional magnetic resonance imaging at the Imaging Research Centre of St. Joseph’s Healthcare Hamilton, Charlton Campus. To examine brain regions encoding the choice to work versus selecting not to work we will contrast Effort Option versus No Effort Option at the Decision Prompt on the EEfRT to test Blood Oxygen Level Dependent (BOLD) signal differences. A correlation between activity during the High Effort Option and CUDIT-R scores will explore relationships with CUD severity.

Results: We expect that there will be increased BOLD activity in the ventral striatum, anterior insula and dorsal anterior cingulate cortex with high effort choices compared to low effort choices. As well, we expect BOLD activity in these areas to be inversely related to CUDIT-R scores.

Conclusion: This research will elucidate the effects of chronic cannabis use on effort-based decision-making in the brain. Such information can be utilized in developing targeted CUD treatments focusing on improving motivation. This research will also be important for educating the public on the lasting effects of cannabis use, which will be crucial with the legalization of cannabis use in Canada.

References:
Misconducts by Clinicians Towards Patients

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Background: Rules guiding the relationship between clinicians and their patients seem to have always existed. These regulations are made to ensure that the patient continues to trust his/her clinician as the latter will receive personal and sensitive information. Indeed, the patient, for the sake of his/her health, may not have a choice but to tell the person taking care of him/her. Unfortunately, some clinicians breach these boundaries in various manners, causing additional distress to their patients.

Purpose: The purpose of this study is to highlight any potential profiles of clinicians who may be prone to this type of inappropriate behaviour. This may help to develop some way of identifying these individuals who may act inappropriately in their practice due to their profile or vulnerabilities. These findings may help develop strategies to educate medical and allied health staff to overcome any particular difficulty and therefore avoid misconducts.

Methodology: Our aim is to conduct a systematic literature review looking at professional misconducts of clinicians towards their patients. Indeed, although it is easy to assume that professional misconduct relays to sexual behaviour, it seems that there is a spectrum of behaviour and that the misconduct may not only be due to the action of the professionals, but also due to the reaction of the patients.

Discussion: So far, the first steps of our literature screening has shown that complaints from patients occur across all disciplines of health professionals. It is also frequently highlighted that ethical courses addressing misconducts and sexual misconducts should be given at all levels of training.

References:


Predictors of Patient Satisfaction in a Four-Week Interdisciplinary Chronic Pain Management Program

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Introduction/Aim: Patient satisfaction (PS) is an important outcome in health care because it can indicate treatment effectiveness. Few studies have evaluated PS with chronic pain management (McCracken, Klock, Mingay, Asbury, & Sinclair, 1997). The purpose of this study was to examine PS as an outcome measure in a chronic pain program. Several psychosocial variables at pre- and post-treatment were examined as predictors.

Methods: The study sample consisted of 471 (52% female) individuals of 20 - 79 years (M = 44, SD = 10.3) who had sustained heterogeneous injuries in motor vehicle accidents or the workplace. Average time since injury was 61.0 months (SD = 69.4), with a range of 6 to 684. Participants completed pre- and post-treatment measures of pain, disability, depression, catastrophizing, anxiety, stages of change, and pain acceptance. PS was measured post-treatment. The latter was developed in this program and previously reported on.

Results: We used multiple regression to examine predictors of PS. Pre- and post-treatment variables explained 53.0% of the variance (R² = .53, F (24, 470) = 20.96, p < .001). Significant predictors included depression (β = -0.17, p < .005), acceptance (β = 0.11, p < .05), pre-contemplation, contemplation, and maintenance stages of change (β = -0.25, 0.16, 0.25, p < .001, respectively).

Discussion/Conclusions: Patients are more satisfied with pain management when they integrate self-management techniques in their lives, accept their pain more, and have better mood (Shaikh & Hapidou, 2018). They also recognize their ability to continue using these techniques post-treatment. Results are discussed within the patient satisfaction and pain program outcomes literature.

References:

Offence-Related Post-Traumatic Stress Disorder and Guilt

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Introduction: Offenders of serious crimes are often perceived as innately cruel individuals, even if an underlying mental disorder has played a major role in the commission of the offense. Remorse is overlooked by the public as a sign that the offenders have understood the nature of his/her action. However, the concept of offense-related trauma, and more extensively, post-traumatic stress disorder (PTSD) is under-appreciated. Although many will experience some feeling of guilt, this disposition can go beyond simple guilt and offenders may develop post-traumatic symptoms that need to be addressed.

Methodology: Our aim is to conduct a systematic literature review on offence-related PTSD and guilt. By this way, we will describe the characteristics of the individuals who developed these symptoms. We also intend to identify the therapeutic strategies that are in place to help these individuals.

Results: So far, the first steps of our projects have shown that focus has been made on offense related guilt, but few studies have focused specifically on offense related PTSD. Our full results are in progress.

Discussion: The lack of data around offense related PTSD may be due to several factors. This clinical finding may not be easy to identify due to the multiple transfers from one institution to another and lack of psychotherapeutic resources in the detention centers. Also, we find it likely that these symptoms are under-reported by offenders as they do not want to appear to be giving an excuse for their crimes.

References:

Investigating Comorbid Post-Traumatic Stress Disorder and Substance Use Disorders in an Outpatient Concurrent Disorders Sample

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Background: The comorbidity of Post-Traumatic Stress Disorder (PTSD) and Substance Use Disorders (SUD) is prevalent across a diverse range of populations and settings, along with being associated with more complex clinical treatment courses and poorer outcomes¹,². However, this association has not been extensively studied within a concurrent disorder’s population. As such, there is a critical need for increased research on this diverse patient population in order to better understand the etiology, course, and treatments for individuals with concurrent disorders experiencing trauma.

Objective: The objective of this study was to examine whether substance use was significantly higher in patients with Concurrent Disorders that are presenting with trauma symptoms.

Methods: Data was collected from the Concurrent Disorders Program as part of a standard intake assessment within the Mental Health and Addictions Program at St. Joseph’s Healthcare Hamilton. The sample was composed of 444 participants collected over a 12-month period. Trauma was assessed using the Posttraumatic Stress Disorder Checklist (PCL-5), a 20-item self-report questionnaire. A stepwise regression model was conducted to test the relationship between substances in individuals meeting criteria for trauma in individuals with Concurrent Disorders while controlling for age and sex.

Results: Substance use (DUDIT) was significantly associated with PTSD symptoms (PCL-5; N = 444; p < 0.01) even after controlling for self-reported psychosis, anxiety and depression symptomatology– variables that have previously been associated with greater substance use in this population.

Conclusions: The study findings suggest that individuals with Concurrent Disorders who are presenting with PTSD symptoms are also hazardously using substances, even after accounting for other major psychiatric symptoms. The results suggest a need for trauma-informed approaches that can address the needs of this concurrently-diagnosed population. This association also lends support to the need for additional examination of the relationship between trauma exposure and substance use.

References:
Measuring adherence to the ‘time in bed’ restriction and its impact on treatment outcome in Group Cognitive Behavioural therapy for insomnia (A study in progress)

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Background: Cognitive Behavioural Therapy for Insomnia (CBT-I) has proven to be the most effective treatment for insomnia and other sleep-related problems (Irwin et al., 2015). Time in bed (TIB) restriction is a critical behavioural component of CBT-I, which involves adhering to a clinician-prescribed total time spent in bed, based on individual sleep needs. Formulating individualized TIB prescriptions is one of the main challenges of providing CBT-I in a group format. There is currently no gold standard psychometrically established tool for assessing adherence behaviours to CBT-I treatment (Petrov et al., 2014). Adherence to TIB prescriptions specifically is crucial in implementing sleep restriction; however, its effectiveness has yet to be examined in the context of group CBT-I. 

Purpose: The aim of the study was to evaluate adherence to individualized TIB prescriptions during group CBT-I and its impact on treatment outcome. 

Methods: A sample of men and women (ages 18-80) completed a 6-session group CBT-I at St. Joseph’s Healthcare Hamilton. Self-report measures of insomnia symptoms were assessed through the Insomnia Severity Index (ISI) as a measure of treatment outcome, collected at baseline, over the 6-weekly sessions and at post-treatment. The Consensus Sleep Diary for Morning (CSD-M) was used to assess Actual Time in Bed at baseline, over the 6-weekly sessions and at post-treatment. Adherence to sleep restriction will be measured by comparing the individualized TIB prescriptions to the Actual TIB throughout the course of the group CBT-I treatment. Participants were included if they completed 4 or more sessions and last observation carried forward (LOCF) data imputation was used for missing values. 

Results: A sample of N=41 participants completed the group CBT-I treatment and were included in analysis. A Wilcoxon signed-rank test showed a statistically significant reduction in the Actual TIB between Session 1 and 2 (Z= -5.215, p<.01) and between Session 4 and 5 (Z= -2.603, p<.01). A repeated measures ANOVA showed a reduction in the ISI in all patients overall across treatment, with the only significant reduction between consecutive sessions occurred between Session 1 and 2 (p<.01). Adherence to SRT (Actual TIB minus Prescribed TIB) across CBT-I sessions was not significantly different across treatment (p>.05).

Implications: Adherence to individualized TIB prescriptions was high within group CBT-I and occurred early in treatment when SRT and clinician-prescribed TIB reductions are introduced (after Session 1). This corresponded with the largest decrease in insomnia severity, indicating the importance of SRT on improving insomnia symptoms. Insomnia symptoms also significantly improve after the session when cognitive strategies were introduced (between sessions 4 and 5). This may indicate the importance of identifying and changing dysfunctional beliefs about sleep for improving insomnia.

References: 

Validation of the 13-item Pain Stages of Change Questionnaire (PSOCQ-13) in a pediatric chronic pain clinic

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Background: The Pain Stages of Change Questionnaire (PSOCQ) is used in adult chronic pain assessment to determine one’s readiness to develop a self-management approach to their pain problem, and help identify areas for cognitive intervention. There is a wide repertoire of literature supporting the internal validity of this measure and its potential to predict treatment outcomes (Kerns et al., 1997, Williams, Hapidou, Lin & Abbasi, 2007). However, there currently lacks a version that is applicable to youth. As quality of life can be severely impacted by chronic pain, developing an adolescent version of the PSOCQ can have significant clinical implications for this particularly vulnerable population.

Purpose: This study aims to provide initial validation of the recently developed 13-item adolescent PSOCQ by Guite and her colleagues. This version includes 13 items instead of the usual 30, and combines two of the four subscales to form a 3-factor model. As patients are required to fill out multiple intake forms, which can be a tiring or distressing experience, there is a strong ethical rational for simplifying the traditional 30-item questionnaire.

Methods: Youth (10-18) enrolled in the Paediatric Chronic Pain Program at McMaster Children’s Hospital will complete a set of intake questionnaires, including PSOCQ-13, chronic pain acceptance (CPAQ), pain self-efficacy (PSE), and pain coping (PCQ). Factor analysis and multiple correlations will be performed to determine the internal reliability (Cronbach’s alpha) and concurrent validity of PSOCQ-13.

Results: Data from 60 participants (aged 10-18) will be obtained and entered into the database. Based on existing literature on the psychometric properties of the adult PSOCQ, it is expected that there will be significant positive correlations between the action/maintenance subscale of the PSOCQ-13 and the CPAQ, PSE, and PCQ scores. Further, there will be negative correlations between these scores and the pre-contemplation and contemplation subscales of PSOCQ-13. The subgroup of participants aged 10-12, when analyzed separately, is expected to produce results not statistically different from the older (age 13-18) group.

Conclusions: Initial validation of an adolescent PSOCQ by Guite and her colleagues was not conclusive. It is expected that current results will follow trends in existing literature on the use of PSOCQ among the adult chronic pain population. Pre-contemplation and contemplation scores will be negatively correlated with CPAQ, PSE, and PCQ, and the action/maintenance score will be positively correlated. These results will help us determine the suitability of the newly developed 13-item version, as well as future directions for improvement.

References
Examining the impact of personality traits on treatment outcome of Cognitive Behavioural Therapy for Insomnia

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Background: Insomnia is the most common sleep disorder and is characterized by difficulties with sleep onset, sleep maintenance, and early morning wakenings¹. Cognitive Behavioural Therapy for Insomnia (CBT-I), the first line treatment for insomnia, has recently demonstrated effective delivery in group format². However little is known why some people experience drastic improvements in symptomatology, while others do not experience such noticeable gains. Understanding what factors influence treatment outcome is important. Personality traits have been shown to be related to therapy outcome in CBT for other mental illnesses, such as major depressive disorder³.

Purpose: To investigate how personality traits impact insomnia symptom change across participants in a group CBT-I treatment program.

Methods: Men and women aged 18-80 with a diagnosis of insomnia disorder will be included in our study. Participants will complete a battery of self-report questionnaires before and after participating in six sessions of group CBT-I. The Insomnia Severity Index (ISI) will act as a measure of treatment outcome. In addition, the Dysfunctional Beliefs and Attitudes about Sleep (DBAS) scale. Additionally, participants will complete the Consensus Sleep Diary for Morning (CSD-M) daily, which provides information including sleep onset latency (SOL), wakefulness after initial sleep onset (WASO), and sleep efficiency (SE). Personality factors will be measured with the HEXACO Personality Inventory-Revised (HEXACO-PI-R).

Results: The planned analyses for this study will be conducted on an expected sample of N=27 by April, 2019. Percent change in sleep measures (ISI, DBAS, SE, WASO and SE) will be calculated for each of the measures from pre- to post-treatment to indicate treatment response, and bivariate correlations will be conducted with the scores on the six personality factors of the HEXACO-PI-R (corrected for multiple comparisons). Exploratory analyses will be conducted if specific correlations exhibit a strong relationship.

Conclusions: This analysis may indicate whether personality factors significantly impact the potential to identify those most likely to benefit from group CBT-I. This would assist clinicians in assessing patients for treatment suitability and identify those who may require additional support beyond group attendance in order to achieve symptom improvements. Further characterizing patients based on personality can help to provide more individualized treatment. This would lead to a better quality of life for patients, and a more efficient use of resources.

Efficacy of a transdiagnostic group cognitive behavioural therapy for anxiety disorders

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Background: Transdiagnostic Cognitive Behavioural Therapy (t-CBT) has been gaining attention in recent years as a practical alternative to disorder-specific CBT protocols. t-CBT applies therapeutic strategies to treat a variety of anxiety symptoms, rather than tailoring treatment to a specific diagnosis. Prior research has demonstrated that group t-CBT improves anxiety symptoms and is equally effective as group diagnosis-specific CBT including panic disorder, social anxiety disorder and generalized anxiety disorder (GAD) (McEvoy & Nathan, 2007; Pearl & Norton, 2017). However, continued research is needed to evaluate the efficacy of group t-CBT in routine clinical practice.

Purpose: The present study seeks to assess the effectiveness of group t-CBT in reducing anxiety symptoms and functional impairment in participants with a variety of anxiety disorder diagnoses. This study will also examine how outcomes in group t-CBT compare to a diagnosis-specific group CBT for a subset of participants with GAD to assess if the outcomes are of at least equal efficacy.

Methods: Participants (N = 38) with a variety of anxiety diagnoses from the Anxiety Treatment and Research Clinic at St. Joseph’s Healthcare completed a 12-session group t-CBT. Participants completed the Depression Anxiety Stress Scales (DASS-21) and the Illness Intrusiveness Rating Scale (IIRS) at pre-treatment and post-treatment to assess improvements in depression, anxiety, and stress symptoms and domains of functional impairment, respectively (Lovibond & Lovibond, 1995; Devins et al., 1983). Participants with a principal diagnosis of GAD from the t-CBT condition will be compared to a random sample of individuals who attended GAD-specific CBT (analysis is forthcoming).

Results: Participants’ pre-treatment and post-treatment scale scores for the DASS-21 and IIRS were compared using paired samples t-tests. Participants showed a significant reduction in anxiety, t=4.65, p < .01, stress, t=3.94, p < .01, and perceived interference of their disorder in daily functioning, t=4.07, p < .01, but no significant reduction in depression symptoms, t=1.85, p = .7.

Conclusions: The results suggest that group t-CBT is an effective form of treatment for individuals with anxiety disorders. Significant improvements in functional impairment are noteworthy as few studies assessing t-CBT for anxiety disorders have measured perceived interference in addition to anxiety symptoms. The clinical implications of this study suggest a possible increase in accessibility and availability of treatment for patients diagnosed with any anxiety disorder through the use of tCBT.

Brief Intervention and Contact (BIC) Program Pilot to Manage Suicidal Behaviour: A Pilot Study Protocol


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Background: Suicide is a significant public health concern, and causes approximately 1.5% of all deaths in the Canadian population. It is a multi-faceted issue that is often comorbid with psychiatric illness and associated with various sociodemographic risk factors. However, the most significant predictor of suicide is attempted suicide. Research shows that suicide attempts continue to persist for years following the initial attempt, particularly for individuals with comorbid psychiatric illness and suicidal behaviour. The period after discharge therefore provides an opportunity to connect patients with treatment services as provided. In particular, brief contact interventions have shown positive impacts in reducing further completed suicide and suicidal behaviour in patients presenting to the emergency department with following a suicide attempts.1

Purpose: The primary objective of this pilot study is to test the feasibility of implementing the BIC protocol in a large multisite trial. Secondary objectives include exploring whether the addition of a brief intervention and contact program decreases suicide thoughts and re-attempts, reduces depressive symptoms, improve social connectivity, and reduces further ER visits, compared to treatment as usual after 6 months of follow-up.

Methods: We aim to recruit 30 patients in each arm. The inclusion criteria are the following: patients with a previous suicide attempt or who have expressed any suicidal behaviour and who are also admitted to inpatient psychiatric wards. The intake and follow-up questionnaires include gathering data on sociodemographic variables, recruitment rate, data completion, retention in the trial, and changes in clinical indicators of mood and well-being and self-report scales (BDI-II, SSTS, WWI, TAS, PSIS, BHS, Bille-Brahe Social Support Scale, SSQ-short form). The pilot study will be conducted over 6 months, with a total of 9 follow-up contacts through phone calls, or text messages, as determined by participant preference, in the intervention group.

Results: Data exploration will be performed to compare the mean difference (and 95% confidence intervals) of the BDI-II, the Bille-Brahe Social Support Scale, the SSQ, number of ER visits, and suicide re-attempts, between intervention and comparator groups at the end of the trial using t test and within groups for repeated measures using analysis of variance (ANOVA).

Clinical implications: We hypothesize that brief intervention and contact is an effective intervention for reducing suicidal behaviour in patients who have attempted suicide. This study protocol will help to implement the pilot and ultimately the main trial in a transparent way to assist in improving the reporting and conduct of non-pharmaceutical clinical trials. The pilot study will show if the brief contact and intervention program is feasible to be delivered at the planned frequency and duration.

Social Connectivity and Its Association with Level of Suicidal Intent: Ongoing Study

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\textbf{Rationale:}
Level of suicidal intent is defined as the "seriousness or intensity of the patient's wish to terminate his or her life", and it has been found to anticipate completed suicide in a number of studies. In fact, a high level of suicidal intent has been seen to be a more powerful predictor of completed suicide than the number of previous attempts made by the individual (Suominen, Isometsä, Ostamo, & Lönnqvist, 2004). Lack of social support has also been found to be a predictor of suicidal behaviour. There a number of studies that suggest the importance of social connectivity in people prone to engaging in suicidal behaviour. For instance, a study looking at seniors with depression found that a lack of social networks increased activity in suicidal behaviour (Szanto et al., 2012). There is some evidence that social networks encompass more than just social support and may include places and activity networks that people can rely on. One study looking at personal well being networks found that social connectivity is better defined as an amalgamation of people, places and activities that a person interacts with. Thus this paper attempts to find an association between social connectivity as defined by person, place, and activities most frequented by participants and its association with level of suicidal intent.

\textbf{Purpose:}
To examine the association between social connectivity and level of suicidal intent in patients who have made a recent or past suicide attempt

\textbf{Methods:}
The data from this study will be obtained from a study investigating an intervention method for out-patients who engage in suicidal behaviour. Nvivo will be used to complete a qualitative analysis on data collected on social connectivity, and themes will be drawn from data using this software.

\textbf{Results and Conclusion:}
Results will be collected and analyzed over the duration of the study. We will present findings on themes and connections that have emerged through qualitative analysis. We hope our findings will be able to contribute to the design and implementation of suicide interventions.

\textbf{References}

Maternal social anxiety and children's avoidance: The mediating role of fear of negative child evaluation

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Background: Social anxiety is characterized by fear of negative evaluation in social situations, which can negatively influence social, psychological, occupational, and academic domains across development. Previous work has found that social anxiety aggregates in families, with infants of socially anxious parents being more likely to manifest the developmental precursors of social anxiety, such as a propensity towards avoidance and fear (Vente et al., 2011). However, limited work has examined (1) putative cognitive mechanisms underlying this risk, and (2) whether avoidance-related propensities are present during middle childhood, a critical developmental period in which social anxiety is likely to emerge due to increases in self-conscious emotions, greater social comparisons, and the importance of peer acceptance.

Purpose: The purpose of the study was to examine the relation between maternal social anxiety and offspring’s avoidance tendencies during middle childhood (a precursor to social anxiety), and whether maternal fear of negative child evaluation (FNCE) mediated this relation.

Methods: Participants included 51 children (24 girls, 27 boys) aged 7-8 years ($M_{age} = 7.74$ years, $SD = 0.42$) and their mothers ($M_{age} = 39.78$ years, $SD = 3.96$). Mothers completed validated questionnaires assessing their levels of social anxiety (Social Phobia Inventory), their FNCE (Fear of Negative Child Evaluation-Questionnaire), and their child’s avoidance tendencies (Behavioral Inhibition System). We used multiple linear regressions to examine the relation between maternal social anxiety and child’s avoidance tendencies. We used Baron and Kenny’s method to test whether FNCE mediated this relation (Baron & Kenny, 1986).

Results: We found that the direct relation between maternal social anxiety and child’s avoidance tendencies was significant ($\beta = .39$, $p = .01$). As well, the relation between maternal social anxiety and FNCE was significant ($\beta = .68$, $p < .001$) and the relation between maternal FNCE and child avoidance was also significant ($\beta = .32$, $p = .03$). However, as expected, we found that maternal FNCE fully mediated the relation between maternal social anxiety and children’s avoidance, such that the relation was no longer significant after controlling for maternal FNCE ($\beta = .33$, $p = n.s.$).

Conclusion: We identified a putative parent-level cognitive mechanism underlying the intergenerational transmission of socially anxious tendencies. Given that maternal FNCE appears to increase risk of children’s level of avoidance, this may be a target for intervention in socially anxious parents in order to help prevent the development of social anxiety early in development before the onset of disorder.

References:
Effects of Increasing Prenatal Adversity on Psychiatric Disorders in Adolescence

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Background:
Nearly 1 in 5 children suffers from a psychiatric disorder1 and 50% of adult psychiatric patients met diagnostic criteria for a psychiatric disorder as a youth2. Consistent with the cumulative risk hypothesis, research shows that psychiatric risk increases with exposure to an increasing number of postnatal adversities3. However, it is unclear if adverse prenatal exposures can similarly increase risk (i.e., in a dose-dependent manner). The current study examined whether the number of prenatal adversities an individual was exposed to in-utero (i.e., maternal depression, hypertension, gestational diabetes mellitus, bleeding during pregnancy, influenza, urinary tract infection, and thyroid disease) increases rates of psychiatric disorders in adolescence in a dose-dependent manner.

Methods:
Using data from the 2014 Ontario Child Health Study (OCHS) of youth we examined associations between counts of seven prenatal risk factors and risk of psychiatric disorders assessed. Adolescents (N= 2054) aged 12-17 years were assessed using the Mini International Neuropsychiatric Interview (MINI).

Results:
Significant associations were seen between the number of prenatal risk factors an individual was exposed to and the odds of a range of psychiatric disorders. Exposure to each additional risk factor was associated with increased odds of: conduct disorder (OR = 2.16, 95% CI = 1.63 - 2.84), oppositional defiant disorder (OR = 1.26, 95% CI = 1.03 – 1.54), attention deficit hyperactivity disorder (OR = 1.87, 95% CI = 1.54 - 2.29), generalized anxiety disorder (OR = 1.38, 95% CI = 1.11 – 1.72), social anxiety disorder (OR = 1.56, 95% CI = 1.14 - 2.15), and the presence of any psychiatric diagnosis (OR = 1.19, 95% CI = 1.10 – 1.39), and of one or more disorders (OR = 1.50, 95% CI = 1.26 – 1.79).

Conclusions:
Exposure to prenatal adversity was associated with an increased risk of a wide range of psychiatric disorders in adolescence in a dose-dependent manner. These results support the need for increased investment in maternal health, and the early identification and treatment of youth exposed to prenatal adversity.

References:
Seclusion related trauma: is virtual reality clinically useful to treat these symptoms?

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Background: Therapeutic strategies in psychiatry may be coercive due to the nature of the symptoms, the lack of insight of the patients and/or their aggressive behaviour. Several types of coercive methods exist such as involuntary admission, involuntary treatment, locked unit, seclusion and physical restraint. These have been the topic of interest from a legal and scientific standpoint, as they raise considerable ethical issues. These methods are used following stringent protocols and legal parameters. Even though the use of these coercive measures follows a medical justification, the impact on the individual is not neutral.

Purpose: The purpose of this study is to use virtual seclusion environment as a way to identify post traumatic experience.

Methodology: Patients who have been previously secluded will be approached and interviewed about their experience and feelings in relation to this event. Then, if they accept, they will be virtually immersed in a similar experience. A seclusion room environment, developed in a virtual reality by the Forensic Psychiatry Program at St. Joseph’s Healthcare Hamilton and Simwave will be used to immerse the participants. We will record their experience, notably their expressed emotions.

Results: This study is a work-in-progress, and as such, no results are available.

Discussion: The patients do not often speak about their experience in seclusion, and the clinicians also avoid the topic as they dislike using these coercive methods. Therefore, it is legitimate to believe that the trauma related to this experience is under-reported and subsequently under-treated. Our methodology will explore the consequences of being re-exposed to this situation, even virtually. Our findings may help us develop a strategy to better screen for these symptoms after seclusion and possibly use exposure therapy through virtual reality to over-come the emotional difficulties.

References:
Quality but not Quantity Matters: The Importance of At-Home Practice in Mindfulness Based Cognitive Therapy for Anxiety Disorders

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Rationale: Mindfulness-Based Cognitive Therapy (MBCT) has been shown to be effective for residual symptoms of anxiety disorders after first-line treatment (Key, Rowa, Bieling, McCabe, & Pawluk, 2017). MBCT emphasizes the importance of regular, daily mindfulness meditation practice (Parsons, Crane, Parsons, Fjorback, & Kuyken, 2017). There is minimal research studying home-practice completion and whether there is a link between home-practice completion and symptom improvement in MBCT for anxiety.

Purpose: To describe quality and quantity of home practice in MBCT and see if home practice frequency and quality have an effect on participants’ symptoms across treatment.

Method: Participants (N = 57; 77.6% female, mean age 49) were recruited from the Anxiety Treatment and Research Clinic at St. Joseph’s Healthcare where they completed an 8-week MBCT intervention for residual anxiety symptoms after completing a disorder specific Cognitive Behavioural Therapy (CBT) for anxiety (e.g. panic disorder, generalized anxiety disorder, obsessive compulsive disorder, social anxiety disorder). We collected pre- and post-treatment symptom scores using the Five Facet Mindfulness Questionnaire (FFMQ) and the Depression, Anxiety, and Stress Scale (DASS-21). In addition, we collected participants’ home practice logs where they indicated the duration of their practice, the type of mindfulness practice, and the quality of their practice (on a scale between 0 to 100).

Hypothesis: It is hypothesized that greater quantity of practice and higher quality practice will lead to better outcomes.

Results: Participants’ reported completing a mean of 19 minutes of formal meditation practice per day (30 minutes per day was requested). Participants indicated practicing formal meditation a mean of 3 days per week, across the MBCT intervention (participants were requested to practice 7 days per week). In addition, participants were asked to complete two to three brief breathing exercises daily and results suggest that they completed a mean of 2 per day. Participant’s mean quality rating for their home practice was 64%. Results using paired-sample t tests suggested that participants experienced a significant reduction in symptoms of stress on the DASS-21 across MBCT. Additionally quality, but not quantity, of home practice predicted these improvements in stress in a follow up regression analysis.

Implications: The results of this study suggest that participants complete less home-practice than assigned in a mindfulness intervention. Results also suggested that quality, but not quantity, of home practice is associated with decreases in symptoms of stress across MBCT.

References

Brief Interventions for Cannabis Use among Emerging Adults: a Systematic Review and Meta-Analysis

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Background: Globally, cannabis is one of the most commonly used substances with highest rates of use among emerging adults (18-25 years of age). Due to ongoing brain development, emerging adults are particularly vulnerable to the effects of cannabis. Insight into effective interventions for cannabis misuse among emerging adults is of critical importance. Brief interventions (BIs) for cannabis use, used to promote awareness and motivation to change, are of interest for decreasing cannabis use in emerging adults.

Purpose: The objective of this systematic review is to summarize and critically appraise the existing literature of BIs for cannabis use both narratively and meta-analytically, to determine the aggregated effectiveness of BIs on cannabis use and other outcomes (e.g., other substance use, mental health, and help-seeking behaviors).

Methods: A systematic search of BI studies was conducted during the first week of February 2018 (to be updated) in OVID MEDLINE In-Process, EMBASE, the Cochrane Central Register of Controlled Trials, AMED, CINAHL, PsychInfo, and other sources for unpublished studies. Random effects meta-analyses using the inverse variance method evaluated effectiveness of BIs at 1-3 months, 6 months, and 12 months post-intervention. Standardized Mean Differences (SMD) and 95% Confidence Intervals (CIs) are used to pool results for continuous measures. Dichotomous outcomes are pooled using Odds Ratios (OR). Heterogeneity was assessed with forest plots and the I² statistic. Results that could not be pooled due to insufficient studies (i.e. less than 2) are presented narratively. GRADE was used to assess quality of the literature.

Results: 3,241 records were screened, with 223 studies identified for full-text screening. A total of 31 BIs in 25 primary studies with 6,017 participants were included. Studies had moderate to high risk of bias. Samples were generally non-treatment seeking participants using cannabis at least once per month. BIs were mainly: motivational (84%), single sessions (68%), and delivered in person (61%). Few discussed concurrent mental health (16%). Results at 1-3 months post-intervention favoured BIs over passive control for frequency of use (SMD -0.06 [95% CI -0.14, 0.03]; p=0.19), symptoms of cannabis use disorder (CUD) (SMD -0.14 [95% CI -0.26 to -0.01]; p=0.04), and abstinence (OR 1.73 [95% CI 1.13 to 2.66]; p=0.01; I²=0%) although effects were small. Other outcome results often favoured BIs but were not statistically significant. Results of studies comparing types of BIs (n=7) or BIs to longer interventions (n=1) will be presented narratively.

Discussion: Preliminary results of the meta-analyses indicate that there is low to very low quality evidence that BIs may have small benefits on cannabis-related outcomes compared to passive control among non-treatment seeking emerging adults. Future research on BIs for cannabis use is needed, targeting treatment-seeking populations and incorporating concurrent mental health concerns into their protocol. Adequately powered clinical trials are also needed to provide further evidence into effectiveness of specific content and delivery methods of BIs.

References:
ABSTRACT #35

Mapping the Evidence of Brief Interventions for Cannabis Use Among Emerging Adults

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Background: There is currently a lack of evidence on interventions that address cannabis use among emerging adults (aged 18-25). Prevalence of cannabis use is highest during this developmental period, and has been associated with impairments in social, emotional, and cognitive development.¹ Brief interventions (BIs), or interventions of 1-2 sessions, are of interest as they increase awareness and promote motivation to change. However, there is little consensus in what a BI for cannabis use among emerging adults consists of.

Purpose: As a secondary objective to a larger systematic review on the effectiveness of cannabis BIs for emerging adults, this study will characterize BIs for cannabis use among emerging adults. Evidence maps and comprehensive descriptions of identified studies will be used to display the types of studies, target populations, contents, and outcomes of existing BIs.

Methods: A systematic search for BI studies, focused exclusively on cannabis use in individuals between the ages of 15 and 24, was conducted the first week of February 2018 (to be updated). Databases searched include MEDLINE, EMBASE, PsychInfo, Cochrane Central Register of Controlled Trials, AMED, CINAHL, and other sources for unpublished studies. Two reviewers independently screened 3,241 records, identifying 31 BIs in 25 studies for final review. Two reviewers extracted data typical of evidence maps: study types, population characteristics, intervention characteristics, contents of BIs, and outcome types.² The evidence maps were constructed based on the tabulated data and refined throughout review. As emerging adulthood is the intersection between adolescence and young adulthood, each map is stratified by developmental age group: older adolescence, emerging adulthood, and young adulthood.

Results: Evidence maps will be presented, stratified by developmental age group, on the: (1) types of studies; (2) population characteristics; (3) intervention characteristics; (4) contents of BIs, and; (4) types of outcomes in identified studies. Most interventions were motivational in nature and consisted of single sessions delivered in-person. The majority of the samples were not seeking treatment of any kind. The contents of the BIs mostly consisted of personalized feedback on frequency of use. Most BIs also included additional resources and/or goal setting that would help the individual past the session. The study outcomes most commonly evaluated were frequency of use, cannabis use dependence, and cannabis consequences measured at 3-months post-intervention. Mental health was rarely a part of the intervention or measured as an outcome and several studies excluded participants with mental health concerns.

Conclusion: These evidence maps provide an overview of the existing literature related to BIs for cannabis use among adolescents, emerging adults, and young adults and highlight gaps in existing literature. Currently, evidence is lacking regarding: the comparison of BIs to longer interventions, BIs that are not motivational in nature, evaluation of non-cannabis use outcomes, and interventions for populations that have concurrent mental health concerns or are seeking treatment. These maps can help inform the development of novel BIs and future research related to cannabis use among emerging adults.

Associations of Polysubstance Use and Suicidality in Opioid Use Disorder Patients

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Background: In Canada, opioid abuse has been increasing in prevalence at a rate exceeding that of the United States of America, where it had reached epidemic levels in 2015 (Fischer & Argento, 2012). In addition to an increased risk of mortality associated with opioid use, people with Opioid Use Disorder (OUD) are more likely to experience increased suicidality and polysubstance use than those without OUD. The addition of these factors in a patient with OUD increases their risk of mortality, as the use of multiple substances increases risk of overdose, and high suicidality implicates a risk of death by suicide. This study aims to investigate (1) the impact of comorbid polysubstance use and OUD on the level of suicidality, and (2) how the number of substances used is associated with suicidality in an opioid substitution treatment (OST) sample.

Methods: The participants and data used in this project were extracted from two studies: (1) The Genetics of Opioid Addiction (GENOA) study and (2) the Study of Determinants of Suicide: Conventional and Emergent Risk (DISCOVER). Participants from the GENOA study were recruited between April 2013 and March 2016 from Canadian Addiction Treatment Centres in Ontario, and included patients enrolled in OST programs who were at least 16 years of age. DISCOVER participants were recruited between March 2011 and November 2014 at St. Joseph’s Healthcare and Hamilton Health Sciences hospitals in Hamilton, Ontario, and included adults who were at least 18 years of age. All participants provided written informed consent, and were willing and able to follow study procedures.

Results: Using a logistic regression, we will analyze the association between number of substances used and level of suicidality in OST, psychiatric, and community samples. We will then compare how the number of substances used is differentially associated with level of suicidality in OST compared to non-OST groups to determine whether the extent of polysubstance use affects OUD patients differently than those without OUD. We hypothesize that OUD patients who use more substances will be more likely to show suicidality than OUD patients who engage in single substance use. Additionally, we expect that OUD patients will be more likely to exhibit suicidality than psychiatric and community controls, regardless of the extent of their polysubstance use.

Discussion: Results from this study will provide insight into the interactions between OUD, polysubstance use, and suicidality as compared to those without OUD. An increased understanding of these interactions will be useful in the development and utilization of screening tools and treatments to address patients’ needs in a holistic manner, decreasing the chance of mortality by overdose or suicide while subsequently offering a greater chance of recovery and overall well-being.

Determining the comparative association between health disorders and school readiness using the Early Development Instrument

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Background: Children with health disorders have an increased susceptibility to mental health issues, heart disease, obesity, and criminality. Compared to their typically-developing peers, the presence of a health disorder can lead to a reduction in a child’s readiness for school. Although a plethora of literature discusses this association, little is known about how different categories of health disorders impact children’s school readiness.1

Purpose: The purpose of the current study was to examine the developmental health of children with various types of health disorders (i.e. mental, developmental, speech/language, sensory, and motor) compared to children without these disorders, using the Early Development Instrument (EDI), and to compare developmental health outcomes in children with different disorders.

Methods: Data came from the Canadian Children’s Health in Context Study (CCHICS) database collected from 2010 to 2015.1 The study population consisted of 576,294 kindergartners, of which 29,705 (5.2%) were diagnosed with a health disorder. Scores on the five domains of the EDI were the main outcome variables. A total of five multiple analyses of covariance (MANCOVA) were conducted, to compare EDI scores between children with and without the five disorder categories, controlling for children’s age, sex, and neighbourhood-level SES.

Results: Children without mental, developmental, speech/language, sensory, and motor disorders scored significantly higher ($p< 0.001$) on every domain compared to children with the respective disorders (Wilks’ $\lambda=0.981, F(5, 567046)=2165.401$, partial $\eta^2=0.19$; Wilks’ $\lambda=0.936, F(5, 567046)=7753.106$, partial $\eta^2=0.64$; Wilks’ $\lambda=0.973, F(5, 567046)=3145.006$, partial $\eta^2=0.27$; Wilks’ $\lambda=0.998, F(5, 567046)=261.045$, partial $\eta^2=0.02$; Wilks’ $\lambda=0.990, F(5, 567046)=1128.722$, partial $\eta^2=0.10$, respectively). Amongst children with disorders, some disorders showed specificity (e.g. children with motor disorders scored lower on the physical domain, compared to children with other disorders) this was not the case for all disorders.

Conclusions: Study findings show that in kindergarten children, the presence of a health disorder is associated with decreased school readiness. While some disorders showed specificity that was not the case for all of them. Children with some types of disorders scored lower overall compared to children without the respective disorder. These findings suggest that early interventions should focus on development as a whole, and not necessarily focus on the specific aspects of development directly related to the disorder.

Absconding from Forensic Psychiatric Institutions: A Systematic Review of the Literature

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Background: Absconding from mental health units is referred to as a patient leaving without permission and can have significant consequences for the patient, family, community and institution. There is no standard definition of absconding in the literature, however the varying definitions of abscondion involve breaching security of an inpatient unit, accessing grounds or community without permission, gaining liberty during escorted leave or being absent for longer than permitted from authorized or trial leave ¹. While considerable literature exists on abscondion from acute psychiatric units, there is a paucity of literature specific to forensic abscondions, despite inherent differences between patients and systems¹.² The literature indicates the absconding rate within the forensic population is expected to be low, based on the fact that the level of security in forensic units is higher than general psychiatric units. Forensic patients are offenders who are found unfit to stand trial, not criminally responsible on account of mental disorder. Despite the rates being considered low, the outcomes of absconding in this population can potentially be serious, so exploration of factors surrounding these incidents is essential¹.

Purpose: To review the literature regarding abscondion from forensic psychiatric institutions. This review will identify potential risk factors and motivations of forensic patients that have absconded.

Methods: Electronic database and hand searches were conducted to locate articles pertaining to abscondion specific to forensic psychiatric institutions published from 1969-present. Search terms included “abscond”, “escape”, “AWOL”, “runaway”, “psychiatric inpatient”, “forensic institution”, & variants. All full text articles meeting inclusion & exclusion criteria were appraised for qualitative themes, limitations, and assessed for risk of bias using appropriate CASP Checklists. The review is structured following the PRISMA checklist and framework.

Results: A total of 19 articles meeting literature review criteria were identified. The majority of the articles were of retrospective case control design (n=12). Three systematic reviews were found on abscondion that included analyses from both forensic and general psychiatric populations. Definitions for abscondion were omitted or varied making comparisons between studies difficult. Much research compared demographic characteristics, static and dynamic factors. History of previous abscondion, scores on validated risk-of-violence assessment tools, substance-use disorder, acute mental state, and socio-environmental factors were consistently noted as risk-factors. Four distinct motivations for abscondion emerged: goal-directed, frustration/boredom, symptomatic, and accidental. Overall, the literature suggested forensic abscondion was a rare event of short duration with low risk to the public and few re-offending incidents.

Conclusions: There is a paucity of literature on forensic abscondions. Despite being considered a rare occurrence in the literature, forensic abscondions still pose a potential risk to the patient, family and the community. A consistent definition of abscondion and use of standardized reporting protocols across forensic programs would be beneficial in order to be able to compare data on absconding events. Also, prospective studies should be undertaken to better understand the motivations and dynamic risk factors of forensic patients who have absconded and would help inform a forensic abscondion risk assessment protocol.

The Munchies: Food Addiction and Cannabis Use in a Community Sample

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Background: Food Addiction (FA) theory suggests that addictive processes contribute to excess consumption of highly palatable foods. Emerging evidence suggests shared neurobiological and psychological features between addictive disorders and problematic eating. In addition, both anecdotal and empirical reports suggest that cannabis use has acute effects on food intake (2). The phenomenon of “the munchies” following cannabis use, refers to acutely enhanced appetite, including increased cravings for salty and sweet foods. Cannabis has been used to stimulate appetite in clinical populations such as cancer patients. The increase in hunger has been linked to stimulation of cannabinoids, the active ingredients in cannabis. Although the acute effects of cannabis on appetite have been examined, no study to date has looked at FA in adults who regularly use cannabis.

Purpose: To assess (1) whether differences in FA exist between cannabis users (CU) and non-users (NU); (2) whether onset of cannabis use is related to FA; and (3) whether frequency of cannabis use related to FA.

Methods: Regular cannabis users (CU) and non-users (NU) were recruited from the community. Individuals were classified as a CU if they reported using cannabis two or more times a month. All participants, completed the Yale Food Addiction Scale (YFAS) to measure FA symptoms, the Marijuana History Questionnaire (MHQ) to assess the age of onset of regular cannabis use, and the Cannabis Use Disorder Identification Test (CUDIT) to measure severity of problematic cannabis use.

Results: A one-way analysis of variance (ANOVA) will test group differences in YFAS scores. In the CU group, a partial correlation, controlling for mood differences, will be run between age of regular cannabis use and YFAS scores, and between CUDIT scores and YFAS scores.

Conclusions: Based on the literature, we expect that the CU population will have higher YFAS scores than NU. Moreover, we expect to find a relationship between earlier onset of cannabis use is linked to higher YFAS scores, and frequency of cannabis use will be linked to higher YFAS scores. Exploring the mechanisms of “the munchies” longitudinally may provide insight in cannabis use health outcomes such as obesity. Findings may have implications for a comprehensive understanding of how FA, cannabis use, and obesity are all linked. Given recent changes in legalizations of cannabis use, understanding links between regular cannabis and eating pathology are of high importance.

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50. Inhibition of DNA Methyltransferase Induces Melatonin Receptor Expression  
Emily Hartung, Sumeya Mukhtar, Mahnoor Shah & Lenard P Niles
51. Moderate Respiratory Sinus Arrhythmia Levels Predict Lower Affective Empathy in Children
   Taigan L MacGowan & Louis A Schmidt
**Double-Edged Sword of Self-Regulation: Relations Among Shyness and Social Behaviour**

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**Rationale.** The ability to regulate and control one’s behaviour and attention has been regarded as an important contributor towards children’s social and functional adjustment, with greater self-regulation associated with more positive adjustment. However, using behavioural and neurophysiological correlates of self-regulation, some researchers have found that shyness is associated with social-emotional maladjustment in children with strong attentional and behavioural self-regulation (Henderson, 2010; Sette et al., 2018).

**Purpose.** To determine whether individual differences in children’s attentional focusing moderated the association between shyness and social behaviour across multiple contexts in preschool aged children.

**Methods.** Children’s shyness and attentional control (self-regulation) were maternally reported using the Children’s Behavior Questionnaire-Short Form (Putnam & Rothbart, 2006). Children’s social behaviour was coded during a frustration and stranger approach task (Goldsmith & Rothbart, 1999). During the frustration task, children were precluded from playing with a desirable toy. The amount of time children spent asking the experimenter for help was operationalized as social support seeking. During a stranger approach task, a novel adult approached and attempted to engage the child. The number of times the child spoke and the inverse of expressed bodily fear was operationalized as social engagement. We conducted two linear regressions to determine whether children’s attentional control moderated the association between shyness and social behaviour during the frustrating (\(n = 83\)) and stranger approach task (\(n = 124\)), controlling for children’s age (\(M_{\text{age in months}} = 45.06; SD = 16.77\)) and gender.

**Results.** There was a significant interaction between shyness and attentional control predicting children’s social support seeking during a frustrating task (\(F(5, 78) = 1.42, p = .05\)), and children’s social engagement during a stranger approach task (\(F(5, 119) = 5.12, p = .02\)). For children with high attentional control, shyness was negatively associated with social support seeking during a frustrating task (\(B = -2.95, p = .05\)), and children’s social engagement and fear during a stranger approach task (\(B = -.68, p < .001\)). For children with low attentional control, shyness was not associated with children’s social behaviour during a frustrating (\(B = 1.53, p = .40\)) and stranger approach task (\(B = -.08, p = .70\)).

**Conclusions.** These results fit within the larger body of literature suggesting that child-level factors such as self-regulation interact with children’s temperament to confer different outcomes. Although for most children the ability to control their attention may lead to more positive functional outcomes, for shy children who already possess a temperamental style characterized by control and wariness, strong self-regulation may lead to over-control, and further reduce children’s ability to flexibly engage socially in different contexts.

**References.**
Behavioural Measures of Impulsivity and Decision-Making among Canadian Federal Offenders: A Preliminary Investigation

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Background: Substance use disorders are highly prevalent among offenders in the criminal justice system, with estimates as high as 70-80% in Canada (Farrell MacDonald, 2014). Deficits in impulse control (e.g., difficulties with inhibiting inappropriate behavioural responses, inability to delay gratification, or excessive risk-taking) are known to contribute to SUD and criminal behaviour, but research on the intersection of these variables is limited (Moffitt et al., 2011). Fortunately, recent technological innovations have led to the development of a range of validated computerized assessments of impulse control that provide objective performance-based measures of impulsive behaviour and decision-making.

Purpose: The purpose of this pilot study is to evaluate the feasibility of using technology-based assessments of impulsivity and decision-making to examine deficits in impulse control among offenders in federal correctional institutions.

Methods: Participants were federal offenders currently incarcerated at minimum- or medium-security facilities in Ontario. The study is ongoing, but the current sample is composed of 72 offenders (males [N = 46]: mean age = 38.9; females [N = 26]: mean age = 37.8). Five computerized tasks were administered via laptop computer: 1) Go/No-Go task (response inhibition); 2) Balloon Analogue Risk Task (BART, risk-taking); 3) Iowa Gambling Task (IGT, risky decision-making); 4) Stroop Colour-Word Test (response inhibition / interference); and 5) Delay and Probability Discounting Tasks (impulsive and risky decision-making). Relationships among archival CSC data on criminal behaviour, mental health, substance use, and other individual differences (e.g., personality and demographic variables) will also be examined.

Results: Practically, the results support the feasibility of collecting technology-based assessments in a prison setting. Participants had minimal issues with performing the tasks and completed them in the time allotted. However, several potentially important barriers were also noted, including computer literacy issues with a small number of participants, difficulty understanding task or questionnaire instructions, and concerns about privacy/confidentiality. Analyses of the data will focus on task performance (error rates, response latencies), psychometric properties of the self-report measures, and associations with the individual difference variables.

Conclusions: The results of this preliminary investigation will evaluate the feasibility of using behavioural measures of impulse control deficits within a correctional setting. These findings may have important implications for assessment of offenders upon intake and may inform future treatment strategies for rehabilitation.

Investigating the effect of subchronic Lurasidone treatment on MANF & CDNF expression in a MK-801 model of schizophrenia

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Rationale: Increasing evidence supports the notion that schizophrenia (SZ) is a subtle disorder of brain development and plasticity [1]. Neurotrophic factors (NTFs) are naturally occurring endogenous secretory proteins that play an important role in the differentiation, maintenance, and survival of neurons. Mesencephalic astrocyte-derived neurotrophic factor (MANF) and cerebral dopamine neurotrophic factor (CDNF) are two NTFs that support the survival of midbrain dopaminergic neurons [2]. Lurasidone hydrochloride (LUR) is a novel atypical antipsychotic drug with a strong affinity for dopamine D2 and serotonin 5-HT2A receptors and is hypothesized to improve the positive and cognitive symptoms of patients with SZ [3].

Purpose: This study seeks to examine the therapeutic role of CDNF and MANF in response to subchronic LUR treatment in a MK-801 rat model of SZ.

Methods: Adult, male Wistar rats were pre-treated with LUR (3.0 mg/kg i.p.) followed by MK-801 (0.35 mg/kg i.p.) for 10 days. Rats were subjected to a series of behavioural paradigms on day 8 (locomotor activity monitoring) and day 9 (novel object recognition, social interaction, and prepulse inhibition) to test for a distinct class of symptom. Rats were sacrificed one hour after the last injection on day 10 and the striatum, prefrontal cortex, substantia nigra, and hippocampus were harvested for analysis. mRNA expression of CDNF and MANF was quantified using RT-qPCR and analyzed using the 2^ΔΔCt method.

Results: Subchronic LUR treatment significantly attenuated MK-801-induced deficits in locomotor activity (F (2, 26) = 27.17, p < 0.0011), Novel object recognition (F (1, 30) = 8.693, p = 0.0061), and social interaction (t (8) = 1.597, p = 0.0213) but not prepulse inhibition (F (3, 25) = 9.598, p = 0.9644). Furthermore, LUR significantly increased MANF expression in the prefrontal cortex (F (3,24) = 3.034, p = 0.04).

Conclusions: These results reinforce the procognitive properties of LUR and suggest that subchronic LUR treatment may attenuate certain behavioral symptoms of SZ through the upregulation of MANF expression in the prefrontal cortex. Future research should be directed towards elucidating the underlying pathways of LUR and MANF expression to further understand the complex pathophysiology of SZ and enhance treatment options. This work was supported by CIHR, NSREC and IDRIF grant from McMaster University. Lurasidone was provided by Sunovion Pharmaceuticals.

References:
The effects of TP5, a CDK5/p25 inhibitor, in human neuroblastoma cell line and C. Elegans models of Parkinson’s disease.

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Background: Parkinson’s Disease (PD) is a chronic neurodegenerative disease that is characterized by impaired motor functions due to the premature death of dopaminergic neurons in the nigrostriatal pathway. Current non-invasive treatments are problematic as they only marginally increase striatal dopamine levels but fail to halt or reverse the course of neuronal death. Proactive approaches that could slow the progression of PD and maintain a healthy population of dopaminergic neurons are necessary. CDK5 binds to p25 to induce cell death and this complex is hyperactivated in PD which results in dopaminergic neuronal loss. Research has shown that TP5, derived from p35, has prevented PD like symptoms in an MPTP mouse model.

Purpose: The purpose of this study is to use TP5 to block CDK5/p25 in an in vitro and in vivo model to confirm therapeutic effects, both neuroprotective and neurorestorative, in PD.

Methods: The human neuroblastoma cell line and the nematode Caenorhabditis elegans were exposed to paraquat (PQ), an oxidative stressor, to exhibit PD’s phenotypes. TP5 was administered prior to PQ exposure to determine its neuroprotective effects and after to examine its neurorestorative effects. Cell viability in the SH-SY5Y cell line was analyzed using an MTT assay. TP5 was also added to cultures of SH-SY5Y cell line in a dose dependent manner to determine whether TP5 increases neurite outgrowth compared to a vehicle treatment. After exposure to TP5, cells were fixed and imaged to analyze neurite outgrowth using ImageJ. Using an in vivo model, C. elegans had classes of dopaminergic neurons that were fluorescently tagged to determine neurodegeneration using the Nomarski fluorescence microscopy.

Results: In the SH-SY5Y cell line, those exposed to 0.1uM of TP5 had a significant increased neurite extension compared to the vehicle group (p<0.05). Compared to the cells exposed to PQ alone, TP5 was also observed to protect neurons against PQ through increased cell viability (p<0.05). In the C. elegans system, TP5 demonstrated both neuroprotective and neurorestorative effects. Worms that were exposed to PQ alone had an 83% neurodegeneration, whereas the worms exposed to PQ and later injected with TP5 had a 57% neurodegeneration (p<0.05).

Conclusions: Together, these results indicate that TP5 can act as a potential treatment towards PD based on the models that display PD’s phenotype by targeting the CDK5/p25 pathway. Future projects will explore the mechanism of TP5 more in-depth; specifically examining the role of synapsins and neurotrophic factors, based on the neurite extension results. Behavioural assays will also be explored in C. elegans to examine PD like phenotypes. (Supported by CIHR and NSERC, Canada)

Bidirectional communication between microbes and host: the role of T lymphocytes

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Background: Recent findings from the Foster lab as well as others have demonstrated an important role that microbiota plays in the development of the immune system. Studies have shown that microbiota composition and diversity is influenced by host genetics, diet, and other environmental factors. Previous work from our group has shown reduced anxiety-like behaviors in T cell receptor deficient mice (TCRβ-/-δ-/) and neuroanatomical differences in brain regions, showing the importance of T lymphocytes in behavior (Rilett et al., 2015). The current work integrates analysis of the microbiome in wild type and T cell deficient mice to better understand the interaction between T lymphocytes and gut microbiota.

Purpose: The purpose of this study is to analyze differences in microbiota composition in TCRβ-/-δ and C57BL/6 postnatal day 24 mice.

Methods: In the current study, male and female TCRβ-/-δ- and C57BL/6 from a larger cohort study were analyzed. At P24, fecal samples were collected. Microbiota composition was determined by amplifying the 16S rRNA gene variable 3 (v3) region and then sequenced using the Illumina MiSeq platform data analyzed using DADA2, a Bioconductor pipeline. Alpha and Beta diversity analyses were conducted using the phyloseq package in the R software.

Results: Genotype differences were evident in microbiota composition between TCRβ-/-δ and C57BL/6 mice. TCRβ-/-δ mice were found to have significantly lower alpha diversity than C57BL/6 mice (Shannon: p<0.05). Samples were found to cluster by mouse strain in PCoA plot with Bray-Curtis (PERMANOVA: p<0.001). Relative abundance at both the phylum and genus level of taxa revealed significant differences between strains. At the genus level, male and female specific taxa were found to be different between the strains.

Conclusions: These findings show the important relationship between the immune system and gut microbiota. By understanding the relationship and influence between the immune system and gut microbiota, we can further begin to understand microbiome-immune-brain signaling pathways and its relation to behavior in early development. Future analyses will be to explore the relationship between specific immune related taxa and early developmental behaviours.

References:
Patterns of Adolescent Substance Use and Symptoms of Mental Disorders: a Systematic Review and Latent Profile Analysis Using Two Representative Samples of Ontario Adolescents

Halladay, J. 1a, Favotto, L. 1a, El-Khechen, H. 1b, Aryal, K. 1b, Kiflen, M. 1b, Woock, R. 2c, Noori, A. 1a, Munn, C. 1,3,4, MacKillop, J. 3,4, Amlung, M. 3,4, Georgiades, K. 1,3,5

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Background: The likelihood of experiencing a substance use problem is doubled in those who experience mental illness1, and most substance use and mental health concerns emerge during adolescence2. Facilitating early intervention and service use among adolescents is of utmost importance in reducing the severity and persistence of problems. Those with co-occurring substance use concerns are a particularly difficult population to engage in treatment. Therefore, it is important to identify common profiles of substance use and mental health concerns and correlates of these profiles to help facilitate identification and timely connection to care.

Purpose: The systematic review seeks to document the evidence of co-occurring patterns of substance use among adolescents and determine if these patterns have been (a) explored separately based on sex, and (b) compared based on levels of mental health problems and service use. From a scoping review, it appears most studies do not concurrently address mental health concerns and this review seeks to systematically demonstrate whether mental health is incorporated into classifying and distinguishing youth substance use behaviours. The subsequent study will use two representative samples of Ontario adolescents to identify distinct profiles of symptoms of both mental disorders and substance use, identify any sex-differences, determine mental health service utilization across profiles, and compare to existing studies.

Methods: A systematic search was conducted October 2018 for papers identifying profiles of substance use patterns among adolescents in PsycINFO, Embase, MEDLINE, and CINAHL. Two independent reviewers screened 4,069 records. Data extraction is currently underway and includes: sampling characteristics, indicator variables, and number and nature of profiles. Using the Ontario Child Health Study (n= 4,428) and the School Mental Health Survey (n=10,554), Latent Profile Analyses (LPA) will also be conducted to identify profiles of adolescents who vary with respect to the severity and co-occurrence of symptoms of mental disorders (including ADHD, oppositional defiant disorder, anxiety, and depression) and substance use (including binge drinking, tobacco, and cannabis). Patterns will be assessed for measurement invariance across sex. Service use will also be used as an external predictor of class membership.

Results: 65 primary papers are included. Preliminary results suggest existing studies do not commonly evaluate measurement invariance across sex, include mental health indicators, or discuss service use. Initial LPA using the SMHS suggests 6-profiles including: low substance use, low symptoms (55.2%); low substance use, high symptoms (21%); cannabis and drinking, moderate symptoms (9%); poly-substance use, high symptoms (6.6%); drinking, low symptoms (4.4%); and regular tobacco use, occasional cannabis and drinking, moderate symptoms (3.7%). Replication in the OCHS, sex-differences, and help-seeking have yet to be explored.

Conclusions: The results of these studies will help identify particular high-risk profiles of youth, which can help facilitate referral to appropriate care for those demonstrating high-risk patterns. The results may assist in targeting interventions to improve help-seeking among youth.

ABSTRACT #46

The Genetic Liability of Cannabis Use

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Background

On October 17th, 2018 the Cannabis Act came into effect in Canada which allows for the legal growth, possession and consumption of cannabis for recreational purposes for those who are 18 years or older. In the 1970s/80s cannabis was often described as the “gateway drug”, a stop on the way to the use of more harmful drugs and possible drug use disorders, however, in more recent literature it has been suggested that cannabis has a potential exit drug to problematic substance use such as opioids.

Opioid Use Disorder (OUD) is characterized by the Diagnostic and Statistical Manual fifth edition as a series of psychological and behavioural symptoms that lead to compulsive opioid-seeking and intake behaviours that cause clinical distress in their lives. In Canada, there was just under 4,000 apparent opioid-related deaths in 2017 and 2,066 opioid related deaths from January to June of 2018.

It has been hypothesised that cannabis may have a substitution effect on opioid cravings1 and research has demonstrated that cannabis can be used to treat pain2. However, cannabis has been shown to be addictive in approximately 9% of users3 and has been shown to increase the incidence of suicidal ideation, suicide attempts and suicide completion4.

Purpose

The purpose of the current research project is to understand the genetic factors associated with cannabis use within the OUD population. We aim to determine if genetic variants associated with cannabis use from the literature replicates in the OUD population.

Method

The data were collected as part of the Genetics of Opioid Addiction (GENOA) program, a completed prospective cohort study in collaboration with the Canadian Addiction Treatment Centers (CATC) and McMaster University. Participants (n=1500) were recruited from 16 CATC sites across Ontario, Canada, from 2013 to 2016. Patients were eligible to participate if they were 18 years or older and met the criteria for Diagnostic and Statistical Manual – fourth edition (DSM-IV) opioid addiction requiring treatment. All participants gave informed consent and provided a blood sample. Participants also completed an extensive interview with a trained researcher in which they completed the Maudsley Addiction Profile (MAP) and were asked about their substance use and any aberrant behaviour in the past 30 days. We will measure cannabis use in two ways: (1) regular cannabis use and (2) heaviness of cannabis use.

Results

The following study is currently in progress.

References

The retrograde transport of BDNF and proNGF diminishes with age in basal forebrain cholinergic neurons

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Background: The basal forebrain plays a critical role in learning, memory, and attention through diffuse cholinergic projections to its hippocampal and cortical targets. Extreme and rapid degeneration of basal forebrain cholinergic neuron (BFCN) projections are a hallmark of Alzheimer’s disease, with more modest degeneration occurring with aging in the absence of dementia. BFCNs do not synthesize their own neurotrophins and rely solely on their targets for neurotrophic support via retrograde axonal transport. Neurotrophins such as brain derived neurotrophic factor (BDNF) and nerve growth factor (NGF) are critical for processes including apoptotic suppression, activity-dependent plasticity and maintenance of synaptic connectivity. As a result, the retrograde axonal transport of neurotrophins is critical for proper BFCN function. In Alzheimer’s disease, NGF-immunoreactive material accumulates in BFCN targets like cortex and hippocampus and is reduced in basal forebrain, implicating dysfunctional retrograde axonal transport of neurotrophins. Age is the greatest risk factor for developing Alzheimer’s disease, yet the influence of age on BFCN axonal transport is poorly understood.

Purpose: The purpose of this study was to assess the impact of age on neurotrophin transport in BFCNs.

Methods: To model aging, E18 rat basal forebrain or cortical neurons were cultured in microfluidic chambers for 3 weeks. Days in vitro (DIV)7 neurons were classified as “young” and DIV18 neurons as “aged”. To confirm an aging phenotype, cells were stained for senescence-associated beta-galactosidase (SaβG), a well-validated marker of aging, at both time points. Biotinylated BDNF or proNGF, the precursor to NGF present in the brain, was labeled by conjugation to quantum dots and was added to the axonal compartment of the chambers harboring BFCN axon terminals. Transport was tracked using a fluorescence microscope with an environmental chamber, and data was analyzed using ImageJ.

Results: DIV7 BFCNs displayed robust BDNF and proNGF transport, which diminished with in vitro age. Significant SaβG staining was observed in BFCNs but not in cortical neurons cultured for 18 or more days in vitro. Significant reductions in BDNF transport speed and increases in pause duration were seen in DIV18+ BFCNs but not in DIV 18+ cortical neurons compared to DIV7 neurons.

Conclusions: These results suggest a unique vulnerability of BFCNs to age-induced transport deficits. These deficits, coupled with the reliance of BFCNs on axonal transport of two neurotrophins for proper function, may explain their vulnerability to age-related disorders like Alzheimer’s disease.

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References:
The effects of extracellular tau on BDNF expression in human neuroblastoma cells

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Background: Tau protein is abnormally hyperphosphorylated in Alzheimer’s disease, leading to the formation of toxic, soluble aggregates causing neurodegeneration and cognitive decline. Tau may disrupt neuronal function by reducing neurotrophin levels in the brain. Intracellular tau over-expression reduces expression of brain derived neurotrophic factor (BDNF) which is critical for neuronal function and for learning and memory. Pathological tau is secreted from cells in Alzheimer’s disease, and this extracellular tau may down-regulate BDNF levels in neighbouring cells.

Purpose: The purpose of this work is to determine if elevated levels of extracellular tau down-regulate BDNF in human neuroblastoma (SH-SY5Y) cells.

Methods: Differentiated SH-SY5Y cells and empty vector-transfected SH-SY5Y cells were treated with conditioned medium harvested from human tau-overexpressing cells and empty vector-transfected cells (negative control). Tau concentrations were determined by ELISA. SH-SY5Y cells were treated for 24 hours with conditioned medium at either 0, 0.2ng/mL, 3.5ng/mL or 5ng/mL of human tau. For empty vector-transfected cells, conditioned medium was concentrated to increase tau concentrations, and cells were treated at 0, 0.2 ng/ml, 3.5 ng/ml or 7 ng/ml of human tau. Their RNA was then extracted, and BDNF mRNA levels were quantified using qRT-PCR. Differences between groups were analyzed by one-way ANOVA (n=6/group).

Results: No significant differences were found in BDNF mRNA levels across all groups. However, BDNF mRNA levels were down-regulated by ~20% in groups treated with concentrated conditioned medium compared to no-treatment controls. A possible explanation could be that in concentrating the medium for treatment, additional factors were also concentrated that down-regulated BDNF expression. Alternative methods to examine the effect of extracellular propagating tau on healthy cells are being investigated. One possible solution could be to co-culture tau over-expressing cells with healthy, untransfected SH-SY5Y cells.

Conclusion: At these concentrations, tau does not have an effect on BDNF down-regulation. Future experiments will treat SH-SY5Y cells with higher concentrations of extracellular tau closer to the extracellular tau toxicity threshold (~6µg/mL) to determine their effects on BDNF levels in vitro.

Streptozotocin-treated differentiated human SH-SY5Y neuroblastoma cell line: a dual model of Alzheimer’s disease and diabetes mellitus

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Background: Streptozotocin (STZ) is a toxic glucose analog that induces Alzheimer’s disease and diabetes mellitus in experimental models. Nitric oxide generated from the methylnitrosourea moiety of STZ has been proposed to trigger nitro-oxidative stress and inflammation. Both factors are major contributors to brain insulin resistance. Perturbations of Akt (protein kinase B) and Erk (extracellular signal-regulated kinase) pathways are key molecular mechanisms observed in brain insulin resistance. Also, downregulation of cAMP-response element binding protein (CREB) transcription factor and its target brain-derived neurotrophic factor (BDNF) are linked to brain insulin resistance and Alzheimer’s pathology. These alterations ultimately lead to cognitive impairment in animal models. Brain insulin resistance-induced cognitive decline is now known as type 3 diabetes mellitus. Differentiated mouse Neuro-2a cells and astrocytes in the prolonged presence of STZ have been employed as models of type 3 diabetes mellitus.

Purpose: This study was designed to generate a similar model of type 3 diabetes mellitus in differentiated human SH-SY5Y neuroblastoma cells exposed to neurotoxic concentrations of STZ.

Methods: SH-SY5Y cells were differentiated for 9 days and then treated with STZ (0 to 2 mM, n=3) for 24 h. The neurotoxicity of STZ was determined by lactate dehydrogenase and colorimetric water-soluble tetrazolium-1 cytotoxicity assays. Evaluation of possible changes in phosphorylation of Erk1/2, Akt, and CREB was conducted by immunoblotting. Additionally, changes in BDNF mRNA expression levels in STZ-treated and non-treated samples were measured by real-time qRT-PCR.

Results: STZ treatment significantly decreased cell viability at concentrations higher than 1.0 mM (p < 0.05). Toxic concentrations of STZ led to insulin signaling pathway dysfunction evidenced by the significant reduction in phosphorylation of Akt (p<0.05) and CREB (p<0.05). Further, 2 mM STZ significantly increased phosphorylation of Erk1 (p<0.05). However, real-time qRT-PCR revealed that the mRNA expression levels of BDNF remained unchanged in the STZ-treated cells compared to the non-treated cells, suggesting that STZ-induced changes are independent of the BDNF signaling pathway.

Conclusions: Our data show that differentiated SH-SY5Y cells treated with toxic concentrations of STZ exhibit altered PI3K/Akt and MAPK/Erk pathways related to brain insulin resistance. Taken together, findings of the study highlight the potential use of STZ-treated SH-SY5Y cells as in vitro experimental model of type 3 diabetes mellitus.

Inhibition of DNA Methyltransferase Induces Melatonin Receptor Expression

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**Rationale:** The multiple physiological effects of the indoleamine hormone melatonin, are mediated primarily by its two G protein coupled MT₁ and MT₂ receptors. Expression of these receptors in the CNS, is decreased or altered with ageing and in patients with neurodegenerative and other disorders. Our group has shown an upregulation of MT₁ receptors following treatment with the anticonvulsant and mood stabilizer, valproic acid (VPA), or other histone deacetylase inhibitors, such as trichostatin A, in cultured cells. Importantly, chronic treatment with VPA caused a significant increase in both MT₁ and MT₂ receptors in the rat brain. Moreover, VPA was found to increase histone H3 acetylation at the MT₁ gene promoter region, indicating that an epigenetic mechanism underlies its upregulation of MT₁ expression.

**Purpose:** The objective is to further examine the epigenetic mechanism(s) responsible for the upregulation of melatonin receptors. In particular, the possible involvement of DNA methylation will be examined.

**Methods:** Rat C6 glioma cells are treated with the DNA demethylating agent, azacytidine (AZA), at concentrations ranging from 1 - 25 µM for 24h or 48h. Drug vehicle (DMSO) and PCR controls are included in all experiments. Total RNA is extracted using Trizol, and cDNA is synthesized for PCR experiments. To assess MT₁ expression, which has low basal expression, a nested protocol is used with standard PCR, while qPCR will be used in selected studies. Amplified products are separated on a 2% agarose gel and optical density ratios of the target gene over an internal control are analyzed. In addition to qPCR, Western blotting or ELISAs will be used to assess the effect of AZA (or other drugs) on the expression of DNA methyltransferase (DNMT1,3a,3b) isoforms.

**Results:** A concentration-dependent increase in relative MT₁ mRNA levels was observed following treatment with the HDAC inhibitor M344 (N-Hydroxy-7-(4-dimethylaminobenzoyl)-aminoheptanamide), in keeping with earlier observations with other HDAC inhibitors. Importantly, treatment of C6 cells with AZA for 24h or 48h, revealed an upregulation of MT₁ expression. One-way ANOVA indicated significant concentration-dependent effects at 24h (p<0.004) and 48h (p<0.05) post treatment.

**Conclusion:** The upregulation of MT₁ mRNA expression after AZA treatment indicates that DNA demethylation plays a role in the regulation of this receptor, consistent with the well-known effects of this epigenetic mechanism on gene transcription. Future experiments will determine whether combinatorial treatment with HDAC inhibitors plus AZA (or other DNMT inhibitors), enhances induction of melatonin receptors. The epigenetic regulation of melatonin receptor expression could provide a novel strategy for modulating the therapeutic effects of this hormone and its clinically relevant agonists, such as agomelatine.

Moderate respiratory sinus arrhythmia levels predict lower affective empathy in children

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**Background:** Empathy is a core social cognitive skill that develops in early childhood. Empathy-related behaviors are important for healthy socioemotional development and are often used as indicators of overall well-being and psychosocial adjustment.

Like many behavioral responses, empathy requires an optimal level of arousal to be displayed. Individual differences exist within biological predispositions that govern the peak level of arousal reached in response to a situation (i.e. reactivity) as well as the modulation of that arousal (i.e. regulation). We can examine individual differences in self-regulation by assessing the child’s respiratory sinus arrhythmia (RSA), which is a measure of heart rate variability associated with respiration. Baseline RSA is commonly used as an index for parasympathetic control, modulation of physiological arousal, and is predictive of self-regulatory behaviors.

Relatively higher RSA indicates a slower heart rate, a calmed and soothed state, and adaptable behavioral responding, while lower RSA indicates a faster heart rate, an aroused and dysregulated state, and maladaptive behavioral responding.

Two recent studies have reported a quadratic (inverted-U) relation between baseline RSA and empathy-related behaviors in children (Miller et al., 2018) and adults (Kogan et al., 2014), with moderate baseline RSA levels associated with the highest levels of prosociality, affective empathy, and reported subjective empathy. Meanwhile, relatively higher or lower baseline RSA levels were associated with lower levels of prosocial and empathy-related behaviors, suggesting that physiological extremes are not ideal for some behavioral responses.

**Purpose:** The purpose of this study was to replicate and extend these findings by assessing baseline RSA in relation to an observed measure of affective empathy in 131 typically developing 4- and 6-year-old children ($M_{age} = 63.5$ months, $SD = 12.2$ months; 68 females).

**Methods:** Baseline RSA were collected during for a five-minute period while the child watched an emotionally neutral video. Affective empathy was coded from video of the Empathy Task, which involved a female experimenter feigning injury to her finger and outwardly expressing pain for 35 seconds.

**Results:** As predicted, we found that baseline RSA was both linearly ($b = -2.3$, $SD = 0.07$, $p = 0.01$) and quadratically ($b = 0.17$, $SD = 0.07$, $p = 0.01$) related to observed affective empathy, $F(6, 108) = 2.2$, $p > .05$. However, contrary to prediction, the quadratic relation was a U-shape relation, showing that children with moderate baseline RSA levels exhibited the lowest, not highest, observed affective empathy.

**Conclusions:** Our findings suggest that children with relatively high baseline RSA adapt quickly and overcome arousal elicited from the distress of the victim and effectively respond to the needs of another person. In contrast, children with relatively low baseline RSA may not physiologically cope with the distress of the victim, and therefore may be motivated to attempt to comfort another to alleviate their own distress. Meanwhile, children with a moderate level of baseline RSA may not have experienced enough arousal modulation to motivate them to engage in comforting behaviors; however, they may be able to calm themselves enough to not require comforting actions in order to soothe the victim, and therefore, themselves.


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Exposure to stressful and traumatic life events and Hoarding Disorder: Comparisons to individuals with anxiety disorders and PTSD

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Rationale: Research has shown that individuals with Hoarding Disorder (HD) report an elevated rate of stressful and traumatic experiences compared to controls (Landau et al., 2011). Landau et al., (2011) investigated the rates of traumatic life events (TLEs) in three domains (crime and related events, general disaster and trauma, and physical and sexual experiences) in individuals with HD, Obsessive-Compulsive Disorder (OCD), and healthy controls; those with HD reported significantly higher rates of disaster-related events and TLEs in general. However, no research has compared rates of TLEs to other clinical controls.

Purpose: To extend the previous findings, we examined self-reported rates of TLEs in a large sample of individuals with HD and compared them to rates of TLEs in individuals with Post-Traumatic Stress Disorder (PTSD), other anxiety disorders, and Obsessive-Compulsive Disorder (OCD).

Method: Participants with a principal diagnosis of HD, PTSD, anxiety disorder, or OCD completed the Trauma History Questionnaire (THQ), which asks about traumatic life events across three domains (crime and related events, general disaster and trauma, and physical and sexual experiences). The total number of events and number of events within the three domains were compared across all groups.

Results: The mean number of total TLEs reported in the HD group was not significantly different than those reported in all other groups. The PTSD group reported significantly more TLEs than those in the anxiety ($M = 3.51$, $SD = 1.01$, $p = 0.004$) or OCD ($M = 4.68$, $SD = 1.32$, $p = 0.003$) groups, but reported similar TLEs to the HD group. The HD group reported more crime-related events than the anxiety group ($M = 0.96$, $SD = 0.19$, $p = 0.001$) and the OCD group ($M = 0.78$, $SD = 0.39$, $p = 0.037$) but not the PTSD group. No significant differences were found between groups on general disaster and trauma events. Those with HD reported significantly less physical and sexual TLEs than those with PTSD ($M = -1.39$, $SD = 0.38$, $p = 0.002$).

Conclusion: Results indicate that those with HD report similar numbers of TLEs to individuals with PTSD, who, by definition, have experienced at least one but often multiple TLEs. Notably, individuals with HD report significantly more crime-related events than those with other anxiety disorders and OCD. It may be that having experienced multiple TLEs increases the risk of developing HD, and that crime-related events may be particularly impactful in increasing the intensity of hoarding-related beliefs and behaviours.

Further psychometric validation of the Brief Alcohol Social Density Assessment (BASDA) in an adult community sample

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Purpose: The aim of this study was to validate the Brief Alcohol Social Density Assessment (BASDA), a short measure of perceived alcohol use within a person’s social network. Previously, the BASDA has been validated in a sample of undergraduate students (MacKillop et. al, 2013), however there is currently no evidence to support its use within a sample of community adults. For this analysis, convergent, criterion-related, and incremental validity were investigated by examining the BASDA in relation to other established measures of drinking motives, quantity, and severity in community adults.

Methods: Participants were 903 adult drinkers from a community sample who completed the BASDA, the Drinking Motives Questionnaire (DMQ), the Daily Drinking Questionnaire (DDQ), and the Alcohol Use Disorders Identification Test (AUDIT).

Results: For convergent validity, significant positive correlations were found between the BASDA total score and all DMQ subscales ($r_s = .2 - .4$, all $p < .0001$), drinks/week on the DDQ ($r = .44$, $p < .0001$), and the AUDIT ($r = .5$, $p < .0001$). To determine independent contributions of each subscale of the DMQ to the overall variance in the BASDA, a multiple regression analysis was conducted. The overall model was significant ($F(4, 899) = 51.22$, $p < .0001$, $R^2 = .18$); however only social motives ($\beta = .244$, $p < .0001$) and enhancement motives ($\beta = .283$, $p < .0001$) had significant independent contributions to the overall variance in the BASDA total score.

For criterion-related validity, an ANOVA was conducted to determine whether the mean BASDA score was significantly different between those scoring above or below a hazardous drinking cut off score of 8 on the AUDIT. There was a significantly higher BASDA score in individuals scoring at or above an AUDIT cut-off ($n = 167$, mean = 23, SE = .53), as compared to those scoring below ($n = 736$, mean = 16.4, SE = .2; $F(1,901) = 176.2$, $p < .0001$).

For incremental validity, a stepwise linear regression analysis was conducted to determine whether there was incremental value of the BASDA in a model that included all the DMQ subscales to predict alcohol misuse. The data-driven model selected DMQ-Enhancement first (model $R^2 = .55$, SE = .02), then the BASDA total score (model $\Delta R^2 = .1$, SE = .02), then DMQ-Coping (model $\Delta R^2 = .03$, SE = .03), and finally DMQ-Conformity (model $\Delta R^2 = .01$, SE = .03).

Conclusions: The BASDA was supported in all validation analyses. The results provide further evidence that the perceived level of drinking among close social associates as measured by the BASDA exhibits the predicted relationships with drinking motives, drinking behaviour, and alcohol misuse.

Explicit Emotional Memory in Major Depressive Disorder During Euthymia

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Background: Major depressive disorder (MDD) has been associated with the presence of an emotional memory (EM) bias. An EM bias is the tendency for individuals with MDD to remember positive or negative information more accurately than healthy controls (HC).¹ Research has reliably shown that positive and negative information is preferentially recalled by HC; however, the existence of an EM bias for explicit information in MDD remains unclear.²

Purpose: The purpose of this study was to investigate the presence of an explicit EM bias in MDD during euthymia when compared against age/sex/IQ-matched HC.

Methods: Sixty-one participants completed this study (30 euthymic MDD, 31 matched HC). Participants underwent a clinical interview to determine past and current psychiatric diagnoses. Participants rated the emotional intensity of positive, neutral and negative images before returning one week later for a surprise recognition memory task. Memory sensitivity (d') scores were calculated for each valence category.

Results: Our analysis of the emotional intensity ratings revealed a main effect of valence, with both groups reacting more intensely to negative versus positive, and to positive versus neutral images (all ps<0.05). There was no statistically significant difference between groups on general memory performance (p=0.450). We found a main effect of valence in the memory data, with both groups displaying worse memory for positive compared to neutral (p=0.007) and negative (p=0.051) images. Analysis of normalized memory sensitivity scores (normalized according to d' for the neutral images) also revealed a main effect of valence, with both groups displaying worse memory for positive versus negative images (p=0.006).

Conclusions: The euthymic MDD group did not differ from HC on emotional reactivity and explicit EM. The absence of an explicit EM bias provides support for the notion that EM is a state, not trait, phenotype in MDD.

References

“Death from a Broken Heart”: A Scoping Review of the Relationship between Bereavement from the Loss of Spouse and Physical Health Outcomes

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Background: The death of a spouse or family member are life events with profound effects on physical, mental, and emotional well-being. These events may cause individuals to experience grief, mourning, and bereavement. The loss of a loved one is often associated with ‘death from a broken heart’ for the survivor and there is evidence that shows that widowers and mothers of children who have died are at risk of high morbidity and mortality. Research has also shown that bereavement may lead to adverse psychological and emotional health outcomes. There has been less research that explores physical and physiological consequences of bereavement from the loss of a spouse or child. There also has been no research that has synthesized the literature on how bereavement from the loss of a spouse may influence physical health.

Purpose: This poster will review the findings of a scoping review that identified the relationship between bereavement and physical, physiological, and clinical health outcomes. The focus of this study was the loss of a spouse or partner. The research questions were: What physical health outcomes are associated with bereavement? What other psychiatric disorders can complicate bereavement and how might these issues be prevented?

Methods: This study used the Arksey and O’Malley scoping review framework. A database search was conducted in MEDLINE, Embase, and PsychINFO. In total, 38 studies were reviewed.

Results: The majority of these studies found a statistically significant and positive association between spousal bereavement and adverse physical, clinical, and physiological health outcomes, such as inflammation, cardiovascular risk, chronic pain development, and mortality. In particular, multiple studies reported a widowhood effect, an increased risk of mortality following spousal bereavement.

Conclusions: The loss of spouse or partner causes an increased risk of mortality and morbidity. This poster will highlight some strategies clinicians can use to target surviving spouses who are at a higher risk of the adverse consequences of bereavement.

References:

Examining the Impact of Perfectionism on Homework Completion and Effort Across Group CBT for Anxiety Disorders

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Background: Certain dimensions of perfectionism are often elevated in anxiety disorders relative to healthy controls.1 The current gold-standard psychological treatment for anxiety disorders is cognitive-behavioural therapy (CBT). Regularly practicing the skills learned in CBT through completing homework is considered an integral part of the therapy. Recent research has shown that pre-treatment perfectionism levels are associated with increased skill use during early sessions of CBT for Social Anxiety Disorder (SAD), but reduced skill use in later sessions.2 However, the relationship between pre-treatment perfectionism and homework completion has yet to be investigated in a large clinical sample across multiple disorder-specific CBT groups.

Purpose: To examine the association between pre-treatment perfectionism and homework completion and effort during group CBT for anxiety disorders.

Methods: Participants were 295 patients at the Anxiety Treatment and Research Clinic, St. Joseph’s Healthcare Hamilton, who completed disorder specific group CBT for SAD, Obsessive-Compulsive Disorder, Panic Disorder with or without Agoraphobia, and Generalized Anxiety Disorder. Participants completed weekly questionnaires assessing the amount of homework completed and the effort put into homework. Perfectionism was measured with the Clinical Perfectionism Questionnaire (CPQ).3

Results: The relationship between pre-treatment perfectionism and homework completion and effort was analyzed using hierarchical linear modelling. Results indicated that both the percentage of homework completed and the amount of effort put into homework showed a significant linear decrease across sessions. Slope analyses revealed that sex, age, and pre-treatment perfectionism did not predict changes in homework completion or effort over time during the course of treatment. However, females and older patients generally completed more homework and put more effort into homework compared to males and younger patients. Pre-treatment perfectionism did not predict average homework completion or effort.

Conclusions: This study does not find support for pre-treatment perfectionism predicting changes in homework completion and effort across sessions in a large clinical sample with multiple disorder-specific CBT groups. Rather, individuals in this sample completed less homework and put less effort towards homework exercises as treatment progressed regardless of baseline perfectionism. Avenues for future research to better understand predictors and trajectories of homework completion in CBT for anxiety disorders will be discussed.

References:
Perinatal Mental Health Problems Among Indigenous Women: A Systematic Review and Meta-Analysis

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Background: Pregnancy and the postpartum period are a vulnerable time for the development or recurrence of mental health problems. Poor maternal mental health has significant negative consequences for mothers, their offspring, and their families. Much research has examined the predictors of perinatal psychopathology. However, these studies have largely been conducted in Caucasian women from middle- to high- income countries, even though marginalized and disadvantaged groups (including Indigenous women) are exposed to high rates of risk factors1. Despite having the highest birth rate of any Canadian group, Indigenous women’s mental health in the perinatal period is not well understood. In order to optimize Indigenous women’s mental health and interrupt the intergenerational transmission of psychopathology from mother to offspring, it is important to understand the prevalence and scope of perinatal mental health problems among Indigenous women.

Purpose: To determine the prevalence of perinatal mental health problems among Indigenous women from the first trimester of pregnancy up to 12 months postpartum

Methods: We searched Embase, Medline, CINAHL, and Web of Science from their inceptions until October 2, 2018. Studies were included if they assessed mental health outcomes in Indigenous women during pregnancy or up to 12 months postpartum.

Results: Twenty-three articles met our inclusion criteria and 18 were eligible for meta-analysis. Indigenous ethnicity was associated with higher odds of mental health problems (OR 1.42, 95% CI 1.20-1.68), particularly depression and anxiety. Risks were higher when analyses were restricted to problems of greater severity (OR 1.88, 95% CI 1.22 – 2.90), and when Caucasian women alone comprised of the control group (OR 1.63 95% CI 1.29 – 2.07).

Conclusions: Indigenous women are at increased risk for perinatal mental health problems. Despite increased exposure to risk factors (e.g., impoverished relationships, environments, and trust with the healthcare system), their risk appears relatively low. However, this may be to the use of convenience samples and measures without established cultural equivalence. Future studies should recruit more representative samples, employ measures that have been validated in Indigenous groups, and engage appropriate Indigenous communities and related allies to help improve the well-being of Indigenous mothers, their families, and future generations.

Effects of ECT on Depressive Symptoms and Cognitive Performance: A Naturalistic Study

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**Background:** Electroconvulsive therapy (ECT), which is implicated for treatment-resistant and severe depression, is highly efficacious (Hermida, Glass, Shafi, & McDonald, 2018). Despite promising treatment outcomes, acute impairment in cognitive functioning can be a deterrent for referring clinicians and patients. However, cognitive deficits appear to be acute and often resolve completely within two weeks post-ECT (Semkovska & McLoughlin, 2010). Further, there is evidence that certain cognitive functions, such as executive functioning, may actually improve slightly in the long-term following ECT (Semkovska & McLoughlin, 2010). However, it is unclear if these findings generalize to a more naturalistic treatment setting as individuals are often excluded from research if they have comorbidities or if depression is not their primary diagnosis.

**Purpose:** The current study aims to 1) describe the diversity of patient populations (e.g., primary diagnoses, comorbidities) and ECT parameters (e.g., electrode placement) used in a naturalistic ECT clinic, 2) examine the efficacy of ECT on depressive symptomatology and relevant comorbidities, and 3) examine the short- and long-term effects of ECT on cognitive functioning.

**Methods:** Participants (N=124) consist of adult outpatients who received treatment at the ECT clinic in St. Joseph’s Healthcare Hamilton in Ontario. ECT treatments varied on a number of parameters (e.g., electrode placement). Participants completed a cognitive and psychological test battery at baseline (before ECT), 2-6 weeks post-ECT, 6 months post-ECT, and 12 months post-ECT. The test battery included the Hopkins Verbal Learning Test (HVLT) to assess verbal learning and memory, the (RBANS) to measure cognitive decline or gains, and the Test of Premorbid Functioning (TOPF) to assess pre-morbid general intellectual functioning, the Squire Subjective Memory Questionnaire (SSMQ) to measure subjective memory impairment, and the Beck Depression Inventory-II (BDI-II) and the Personality Assessment Inventory (PAI) to assess relevant clinical and personality factors.

**Results:** Planned analyses include descriptive statistics to illustrate relevant patient characteristics and ECT parameters; within-subject analyses of variance to examine the longitudinal effects of ECT on depressive symptomatology and cognitive functioning.

**Significance:** This study will provide insight into the efficacy and long-term cognitive effects of ECT in a naturalistic treatment setting.

**References:**
Adverse Childhood Experiences & Relation to Maternal Executive Function, Depression & Parenting Behaviour (A Work-In-Progress)

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Background: Adverse childhood experiences (ACEs) are traumatic experiences including childhood abuse, neglect and household dysfunction that occur before the age of 18 years. The impact of ACEs is evident across the lifespan, with increased risk for mental and physical health disorders, and cognitive and interpersonal difficulties in adulthood (Felitti et al., 1998). Many studies have also provided support that these longitudinal associations may also extend intergenerationally, by influencing parent-child relationships (Vaillancourt, Pawlby & Fearon, 2017). Recent research demonstrates that this association may be due to underlying varied mechanisms, such as the disruption of cognitive, emotional and behavioural capacities that are essential for nurturing parenting practices.

Purpose: The objective of this study is to examine: 1) the effects of mother’s history of ACEs on parenting trajectories, which will be modeled from child ages 18 months to 60 months; and 2) examine the impact of both maternal depressive symptoms and executive function on this association.

Methods: This project is part of the Maternal Executive Processes & Parenting (MEPP) study, a longitudinal research study, involving five home visits that have been conducted at 3-, 8-, 18-, 36- and 60-months postpartum. Women (N = 141) were recruited from the maternity ward at St. Joseph’s Hospital in Hamilton, Ontario. At each assessment, mother and child dyads participated in a two-hour home visit completed by trained researchers. Mother-infant interactions were videotaped during each visit, and additional observational and questionnaire data were collected. ACEs were measured using the Childhood Trauma Questionnaire (CTQ) and the National Comorbidity Survey. Maternal depressive symptoms were measured using the Center for Epidemiologic Depression Scale (CES-D) and executive function was assessed using the Delis-Kaplan Executive Function System. Finally, parenting capacity is currently being coded using the Emotional Availability (EA) Scales, 4th Edition, which is an internationally established assessment that examines the quality of caregiver–child relationships through four parental dimensions and two child dimensions. Multilevel growth curve modeling using Mplus will be used to examine parenting trajectories.

Implications: Given that safe, stable and sensitive caregiving is foundational to healthy child development, an understanding of the key risk mechanisms that may affect these behaviours is imperative to improve outcomes for mothers affected by ACEs and their families. This knowledge is critical so timely and preventative interventions can be appropriately developed and adapted to meet the needs of parents and their children, which have the potential to optimize outcomes for those affected by ACEs, and prevent the intergenerational cycle of child adversity.

References:
An Examination of Interoceptive Awareness in Heavy Cannabis Users and Relationships with Motives for Use

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Background: Interoceptive awareness is the ability to integrate internal bodily sensations with external stimuli. The role of body awareness in guiding behaviour and decision-making is gaining increased attention. In some individuals, heightened interoceptive awareness may be maladaptive and lead to increased somatization and anxiety symptoms. Alternatively, increased interoceptive awareness may also guide behaviour and adaptive decision-making1. Until now, no studies have examined interoceptive awareness in individuals with heavy cannabis use. This is important, as heavy cannabis users often report using the drug to cope with negative affect2. Furthermore, it remains unclear how other non-emotional facets of interoceptive awareness such as actively listening to the body, and self-regulation may relate to motives to use cannabis. As such, there is a need to examine relationships between interoceptive awareness and motives for cannabis use.

Purpose: To examine differences in self-reported interoceptive awareness in heavy cannabis (CAN) users and healthy control (HC) participants and explore relationships between interoceptive awareness and motives for cannabis use.

Methods: Participants were recruited from the community and consisted of n=46 HC and n= 51 CAN individuals. Both groups completed validated self-report measures including the Multi-dimensional Assessment of Interoceptive Awareness (MAIA); the CAN group additionally completed the Marijuana Motives Questionnaire (MMQ).

Results: Preliminary analyses show higher scores of interoceptive awareness in the CAN group relative to the HC group (p<0.05) on the MAIA. Further analyses will examine MAIA subscales and whether differences in Noticing, Not-distracting, Not Worrying, Attention Regulation, Emotional Awareness, Self-regulation, Body Listening and Trusting subscales underlie these effects. It is hypothesized that specific facets of interoceptive awareness such as one’s inability to not worry or experience emotional distress and physical discomforts may positively relate to coping motives. Additional analyses will explore these relationships with motives for cannabis use as reported on the MMQ.

Conclusions: Altered interoceptive awareness, such as increased awareness of distressing emotion, may serve as motivators for cannabis use. This research has the potential to inform clinical practice about why individuals use and misuse cannabis. This work has implications for focusing treatment strategies on recognizing bodily signals and emotions, improving distress tolerance, and developing healthy coping mechanisms.

References:


Examining the effects of anxiety disorder-specific Cognitive Behavioural Group Therapy on severity of insomnia symptoms

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Background: Insomnia is a severe form of sleep disturbance, commonly reported by individuals with anxiety disorders1. Transdiagnostic Cognitive Behavioural Group Therapy (CBGT) treatment for anxiety is found to reduce symptoms of insomnia, even when sleep disturbances were not specifically targeted2. It remains unclear whether a change in insomnia symptoms depends on the specific anxiety disorder being targeted with CBT.

Purpose: The aims of the current study were to (1) examine changes in the severity of insomnia pre and post CBGT for Generalized Anxiety Disorder (GAD), Obsessive Compulsive Disorder (OCD), Panic Disorder (PD), Social Anxiety Disorder (SAD), and Cognitive Processing Group Therapy (CPGT) for Post-Traumatic Stress Disorder (PTSD) and (2) determine the rate of reliable and clinically significant change in insomnia symptoms.

Methods: Participants included adult patients (N=270) at the Anxiety Treatment and Research Clinic, St. Joseph’s Healthcare Hamilton who were enrolled in CBGT for GAD (n = 80), OCD (n= 36), PD (n= 30), SAD (n= 66) and CPGT for PTSD (n= 59). Insomnia symptoms were assessed using the Insomnia Severity Index (ISI). A non-parametric test was used to determine differences within subjects pre- to post-treatment on ISI scores collapsed across groups, followed by paired comparisons to assess differences in ISI scores for each CBGT. A Reliable Change Index (RCI) was calculated to assess the percent of reliable change, and clinically significant change in insomnia symptoms within each CBGT.

Results: At pre-treatment 54% of the total sample had ISI scores above the clinical threshold for moderate insomnia symptoms. Across all treatment groups, participants reported significant improvement in insomnia symptoms (p<.01). Participants who completed the CBGT for GAD and CBGT for SAD had significantly decreased insomnia (p <.01), but no significant change was noted for the other CBGT groups RCI analysis showed 26% of people in the GAD CBGT sample and 20% of people in the SAD CBGT sample showed reliable symptom improvement. Reliable and clinically significant improvement of insomnia symptoms occurred in 12% of the sample with pre-treatment ISI above the clinical cut-off for insomnia.

Conclusion: The findings suggest that severity of insomnia symptoms attenuates following CBGT for specific anxiety disorders, with notable changes following CBGT for GAD and SAD. However, clinically significant improvements were only found in a minority of patients, which suggests that many patients continue to experience significant symptoms of insomnia following completion of CBGT for anxiety disorders.

References:
Influence of Sex on Subjective and Objective Measures of Sleep and Biological Rhythms in Bipolar and Major Depressive Disorder

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Background: Wrist-worn actigraphy is increasingly being used to measure ambulatory activity, rhythm and sleep patterns. Previous studies indicate that females have better objective sleep quality [1], and an earlier chronotype than males [2]. In mood disorders, little is known about sex differences in these patterns.

Purpose: We investigated effects of sex on sleep and biological rhythm parameters in a comprehensive study of individuals with and without mood disorders. We hypothesized sex differences would manifest in individuals with mood disorders, with possible sex-by-group interaction.

Methods 111 participants (40 healthy volunteers [HC], 38 with major depressive disorder [MDD], 33 with bipolar disorder [BD]) completed 15-day actigraphy and a first-morning urine sample to measure 6-sulfatoxymelatonin. Questionnaires were administered: Biological Rhythms Interview of Assessment in Neuropsychiatry (BRIAN), Munich Chronotype Questionnaire (MCTQ), Pittsburgh Sleep Quality Index (PSQI), Epworth Sleepiness Scale (ESS). Differences in actigraphy data according to sex and diagnosis were analyzed for sleep and circadian activity rhythms, light exposure, likelihood of transitioning between rest and activity states.

Results: A sex effect was found, where females had lower disruptions on the eating pattern subdomain of the BRIAN, and an earlier chronotype according to the MCTQ compared to males. Females had earlier sleep onset latency, higher sleep efficiency, and shorter WASO, indicating better sleep patterns. Females also had an earlier mean mid sleep time, higher rhythm amplitude, higher interdaily stability, and an increased probability of transitioning from activity to rest at night (all p<0.05). A sex-by-group interaction was seen only in the BRIAN activity subdomain.

Conclusions: Females with and without mood disorders had a wide-ranging profile of better biological rhythm and sleep patterns than males, with minimal sex-by-group interaction.

References:
Emotion Dysregulation as a Mediator of Perinatal Anxiety/Depression and Negative Social Outcomes During the Perinatal Period.

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Background: The perinatal period, which includes pregnancy and the first 12 months post-partum, is a period of vulnerability for women as they experience an increased risk of developing an anxiety and/or depressive disorder. The presence of anxiety and depression during this time leads to adverse outcomes in both mothers and infants including impairment in functioning in the mother, and negative social outcomes such as decreases in marital satisfaction, perceived social support, and maternal bonding (Berle et al., 2015). However, the relationship between perinatal anxiety and depression and these negative social outcomes remains unexplored. Emotion dysregulation (ED) which refers to maladaptive emotional expression, reactivity and regulation, has been linked to numerous psychopathological conditions, including anxiety and depressive disorders and various facets of ED have been linked to impairments in social functioning (Keltner & Kring, 1998). This is due to the impairments in emotional expressivity and misinterpretations of other’s emotions that are part of ED which can greatly affect social interactions with others (Keltner & Kring, 1998). Different facets of ED could therefore explain the relationship between perinatal anxiety and depression and negative social outcomes.

Purpose: The purpose of the current study was to explore the impact of ED on various social outcomes that are specific to the perinatal period including marital satisfaction, perceived social support, parental sense of competence and mother-infant bonding.

Methods: Secondary analyses were run on a sample of (N=70) perinatal women with a primary anxiety and/or comorbid depressive disorder who were enrolled in a randomized controlled trial (RCT) on CBT for perinatal anxiety at the Women’s Health Concerns Clinic, St. Joseph’s Healthcare Hamilton, Ontario (Green et al., 2015). The following self-report measures were obtained as part of their baseline assessment prior to randomization: the State Trait Inventory for Cognitive and Somatic Anxiety (STICSA; Ree et al., 2008), the Penn State Worry Questionnaire (PSWQ; Meyer et al., 1990), the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987), the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004); the Parenting Sense of Competence Scale (PSoC; Gibaud-Wallston & Wandersman, 1978); the Social Provisions Scale (SPS; Cutrona & Russell, 1987), the Postpartum Bonding Questionnaire (PBQ; Brockington et al., 2006), and the Abbreviated Dyadic Adjustment Scale (ADAS; Sharpley et al., 1984).

Analyses: All data were analyzed using SPSS. To examine correlations between measures, bivariate Pearson correlation analyses were conducted. Social outcome variables that were correlated with both the DERS and an anxiety/depression measure (EPDS, PSWQ, STICSA) were selected for mediation analyses. To examine whether DERS is a mediator between anxiety/depression (EPDS, PSWQ, STICSA) and social outcomes, the PROCESS MACRO by Andrew F. Hayes SPSS Add-On Mediation Model 4 with 5000 bootstrapping reiterations was used.

Results & Implications: Parenting sense of competence was the only social outcome that was related to perinatal worry and depression. Emotion dysregulation was a mediator between perinatal worry and parenting sense of competence as well as a mediator between perinatal depression and parenting sense of competence. These results suggest the effects of depressive symptoms and worry on parenting sense of competence are a result of emotion dysregulation processes. These findings can help inform future treatment adaptations. Specifically, by targeting emotion dysregulation directly, we can increase confidence in parenting competence in women with perinatal anxiety and/or depression.

Genetic Variants of Cytochrome P450 Genes and Associated Negative Treatment Outcomes in Ontario Patients Undergoing Methadone Maintenance Treatment

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Background: Opioid use disorder (OUD) is a heterogenous disorder with varying severity amongst patients. Evidence has shown the presence of a genetic cause for this variability. Therefore, patients with different severities might not react similarly to treatments and, in turn, present with different outcomes. One of the most common opioid substitution therapies is methadone maintenance treatment (MMT), where methadone, a synthetic opioid, is administered to patients to help decrease withdrawal symptoms and prevent any illicit opioid use. Methadone is primarily metabolized in the body by cytochrome P450 (CYP) enzymes in the liver. Genetic variants of the CYP-encoding genes have been previously associated in the literature with altered methadone metabolism and clearance. An increase in methadone metabolism rate in patients may lead to reduced methadone plasma concentrations, and, consequently, negative treatment outcomes such as continued opioid use or relapse.

Purpose: This study aims to investigate the association between a subset of CYP genetic variants and continued opioid use or relapse in patients undergoing MMT in Ontario Canadian addiction Treatment Centres (CATCs) for OUD.

Methods: 1370 samples were collected as part of the GENetics of Opioid Addiction study run by McMaster University in conjunction with CATCs across Ontario. Patient demographics, opioid use and treatment information, urine drug screens, and blood samples were collected from the participants. Participants included are 18 years of age or older, had a DSM-5 diagnosis of OUD, provided informed written consent, were on MMT, and had provided urine screens for a duration of 12 months. Participants are excluded if they were prescribed opioid medications. DNA extraction and genotyping were performed by Genome Quebec. Genome-wide quality control checks and imputation will be applied to the genotyped data. The 13 genetic variants selected from the literature have a reported minor allele frequency of greater than 0.05 and are biallelic. Continued opioid use will be defined by the presence of a positive opioid urine screen throughout the duration of 12 months on MMT, and its association to the genetic variants will be measured by applying a logistic regression. Relapse in patients will be defined by the presence of a positive opioid urine screen following a negative one; its respective association will be measured by applying a survival analysis, observing the time to relapse within 12 months of MMT since the recruitment date. All analyses will adjust for patient age, sex, ethnicity, methadone dose, and duration on MMT.

Results: The study is in-progress, so no results have been obtained.

References:
A Meta-Analytic Investigation of the Relationship between HTR2A Gene Polymorphisms with OCD and its Subtypes Based on Sex and Age of Onset

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Background: Obsessive-compulsive disorder (OCD) is a distressing psychiatric disorder with notable sex-differences in onset and symptoms. The heterogeneous nature of this disorder has made it difficult to elucidate the genetic risk factors that contribute to its etiology¹. Serotonergic dysfunction is implicated and several studies have attempted to determine whether candidate genes of the serotonin system, such as the serotonin receptor 2A gene (HTR2A), are associated with OCD.

Purpose: To perform a meta-analysis investigating whether there is an association between polymorphisms of the HTR2A gene with OCD or its subtypes, based on sex and age of onset.

Methods: Using the PRISMA guidelines, a search of all published studies cited in MEDLINE, PsycINFO, Embase, DisGeNET (version 3.0) and the OCD Database up to July 2018 was conducted. Only studies which employed a case-control or family-based control design met eligibility criteria and those meeting full inclusion underwent quality assessment using the quality of genetic studies (Q-Genie) tool as rated by two assessors. Data reporting allele frequencies of cases and controls or from transmission disequilibrium testing in family-based studies were extracted, along with demographic information. The meta-analysis was conducted in R 3.3.1 using the “catmap” and “forestplot” packages, and employed the DerSimonian & Laird random-effects approach. Secondary meta-analyses were completed on stratified data based on sex (males vs. females) and age of onset (early vs. late; early-onset defined as onset <18 years of age).

Results: From 269 publications initially identified, 19 studies met eligibility criteria for inclusion. After quality assessment, one study not meeting the quality standard was excluded, resulting in a total of 18 studies. The most studied polymorphisms of the HTR2A gene with OCD are the G-1438A and the T102C single nucleotide polymorphisms, which are in complete linkage disequilibrium and were combined in analyses. The total sample comprised of 3514 OCD cases and 5032 controls. The model showed a significant association of the HTR2A polymorphism risk allele (A or T) with OCD, OR=1.14, p-value = 0.038, 95%CI [1.01, 1.29]. Among these studies, only a subset reported allele frequencies separately by sex or age of onset. When stratified by sex, a significant association was found for females with OCD, OR=1.20, p=0.049, 95%CI [1.0, 1.4], but not males, p=0.47. When stratified by age of onset, a significant association was found in early-onset OCD, OR=1.23, p=0.048, 95%CI [1.0, 1.5], but not late-onset OCD, p=0.96.

Conclusion: The HTR2A G-1438A/T102C polymorphism is significantly associated with OCD. When stratified by subtypes, the association remained only for females and those with early-onset OCD, but more research is warranted. Stratification of OCD into more homogenous subgroups has clear beneficial implications and highlights the importance of including OCD subtypes, specifically sex and age of onset, when investigating the genetic etiology of OCD.

Household Chaos and Child Behavioural Problems: The Moderated effect of Maternal Stress

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Background: Household chaos (e.g. crowding, chronic noise, unpredictable routines) is a significant adverse environmental predictor of child behavioural problems. Though studies have intimated negative effects of household chaos on parental stress; and high maternal stress has been linked to child externalizing behaviours, no study to date has directly examined the role of maternal stress in the association between household chaos and child behavioural problems.

Objective: This study aimed to examine the moderated effect of maternal stress on the association between household chaos and child behavioural problems.

Methods: Mothers and their children participated in a longitudinal study, (Maternal Executive Processes and Parenting), conducted in Hamilton, ON. Household chaos was measured via a self-report measure, the Confusion, Hubbub, and Order Scale (CHAOS), as well as a maternal guided tour of the home, scored for negative emotion variables via Linguistic Inquiry and Word Count software, during home visits when the child was 5 years of age. The ASEBA® Child Behavior Checklist was used to assess child behavioural problems. Hair samples were collected from mothers from which cortisol levels were extracted as a biomarker of chronic stress.

Analysis: A moderated multiple regression was conducted using Hayes’ PROCESS syntax in SPSS. Covariates included maternal depression and maternal education.

Results: Household chaos and maternal stress were significantly related to child internalizing ($R^2 = .334, F(5, 118) = 11.84, p < .0001$) and externalizing ($R^2 = .41, F(5, 118) = 16.09, p < .0001$) behaviour problems. The interaction between household chaos and maternal stress accounted for a significant proportion of the variance in internalizing ($\Delta R^2 = .09, F(1, 118) = 15.06, p < .001$) and externalizing ($\Delta R^2 = .13, F(1, 118) = 25.36, p < .0001$) behaviour problems. Maternal depression also emerged as a significant predictor of internalizing behaviour problems, while approaching significance for externalizing behaviour problems. Counter to our expectations, the association between household chaos and child behavioural problems worsened when maternal hair cortisol levels were low.

Conclusions: To our knowledge, this is the first study to directly examine the moderated effect of maternal stress on the association between household chaos and child behavioural problems. Though unexpected, the results suggest that mothers with depression may present with a downregulated hypothalamic-pituitary-adrenocortical (HPA) axis, lessening the effect on the association between household chaos and child internalizing and externalizing behaviours. Further examination of these associations is necessary as well as possible protective factors buffering the effects of maternal stress on child behavioural outcomes. This can contribute to tailored programs aimed at improving maternal mental health and stability within homes.

Borderline Personality Traits in Predicting Feelings of Social Ostracism in Adolescents

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Objective:
Borderline personality disorder (BPD) is a debilitating mental health disorder characterized by patterns of instability and dysfunction across emotional, behavioural, cognitive, and interpersonal domains. Research suggests that interpersonal difficulties common to BPD may be due in part to rejection sensitivity (Gratz et al., 2013). Cyberball is a validated computer task known for eliciting feelings of social rejection, social exclusion, and ostracism. It is an online virtual ball toss game that sets up participants to believe they are playing the game with other participants over the internet (Gratz et al., 2013). The purpose of our study was to examine if BPD features, and diagnosis status in adolescents predicted self-reported feelings of social rejection in response to completing this laboratory-based social rejection task.

Method:
Our sample comprised 11-17-year-old youth (N=85; females=62%; Mage=14.53), including both community controls, and clinically referred individuals. The 11-item Borderline Personality Features Scale for Children (BPFSC-11) was used to assess self-reported BPD features, and the Childhood Interview for DSM-IV Borderline Personality Disorder (CI-BPD) was used to assess BPD categorically (diagnosis) and dimensionally and administered by graduate student research assistants. The Need Threat scale (including perceived control, belonging, self-esteem, and meaningful existence subscales, and overall ostracism) was used to assess feelings of rejection following the Cyberball task.

Results:
Linear regression analyses revealed that BPD symptom scores significantly predicted reported feelings of belonging following the ostracism task. Higher BPD scores were associated with lower feelings of belonging (β= -.13, p< .01), and explained 11% of the variance F(1, 84)= 9.98, p<.01). These results remained even after controlling for age, sex, and depression. BPD scores also significantly predicted perceived control, self-esteem, meaningful existence and overall ostracism scores (p’s<.05), such that higher BPD scores reflected worse feelings in these domains of social rejection. These results remained after controlling for sex and age, but not depression. A different pattern of results emerged when using the CI-BPD dimensionally as our predictor measure, such that fewer models were significant. Analyses remained nonsignificant when examining differences between groups (i.e., healthy controls, clinical controls and BPD diagnosis individuals) on domains of social rejection.

Conclusion:
Our results indicate BPD features are predictive of certain aspects of social rejection in some of these youth, but the nature of relations is affected by concurrent depression. Method of measurement needs to be considered since different BPD measures (self-report vs. interview and dimensional vs. categorical) resulted in different findings. It is possible that adolescent BPD is better represented as a dynamic spectrum that may capture emerging pathology.

References:
Changes in Mood Symptoms and Metabolic Measures in Treatment-Seeking Patients with Major Depressive Disorder Enrolled in a Behavioural Activation Program Compared to a Control Group


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Background: Major depressive disorder (MDD) is a serious health concern and according to the World Health Organization (2008), is the third leading cause of disability globally. Depression symptoms extend beyond psychological impact to affect the individual’s overall health and quality of life. MDD affects 11.2% of Canadians, and demonstrates significant variation in epidemiology and clinical presentation between sexes. Characterized by numerous risk factors, it is associated with many symptoms that can contribute to low mood, and significant impairment to function and cognition. The course of the disorder is highly heterogeneous, and many individuals are found to be resistant to treatment. Interventions designed to treat and manage depression are further challenged by issues in accessing treatment, as well as the need to produce sustainable changes in symptoms. Past research has highlighted the relationship between physical health and mood, and has identified the importance of treatment programs that involve activity-based components. Further, Behavioural Activation (BA) is a promising approach that emerges from Cognitive Behavioural Therapy. BA uses activities to provide strategies for handling specific life situations in order to change patient perceptions of these situations and improve mood. Further, BA involves active components that promote engagement and may also improve physical health. BA involves group therapy, which is shown to provide several advantages, while also reaching a wider population and reducing barriers to accessing therapy. Recent evidence advocates for the feasibility of BA group therapy in improving mood and quality of life in MDD patients.

Purpose: To assess the effectiveness of BA in bettering mood symptoms and physical measures in patients with MDD, in comparison to a control condition which includes group therapy and treatment as usual.

Methods: Data was collected for 164 patients currently seeking treatment for MDD in outpatient mood disorders clinic. Participants are male and female patients 18 years of age and older with a confirmed diagnosis of MDD, with a referral to the mood disorders clinic from a physician. Participants are randomized into intervention or control conditions in 1:1 design. Changes in depressive symptoms were analyzed for patients enrolled in an 18-week group-based BA program in combination with care as usual, in comparison to controls who received unstructured group therapy in addition to care as usual. Metabolic measures such as body-mass index, basal metabolic rate, fat mass, fat percentage, pulse, and total body water were collected before and after treatment. Mood symptoms were measured by the Beck Depression Inventory (BDI), and were collected weekly, as well as at baseline and post-treatment. Change scores for BDI and physical parameters were calculated, and the mean change scores between groups were compared using Student’s T-tests.

Results: No results yet as the full analysis of this data set has not been completed.

References:
From the Ground Up: Montessori as a Resilience Program for the Prevention of Later Psychopathology

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The developmental nature of psychopathology (Cicchetti, 2013; Sroufe et al., 2005) forces the necessity of developmentally-informed treatment and intervention solutions. This poster aims to illustrate how Montessori can represent an important component of such solutions by promoting mental health resilience as a *lifestyle* children can grow up with and rely on into adulthood. Montessori is a philosophy and corresponding practical program that views children as predisposed to actively absorb and grow into to their surroundings. Montessori classrooms serve as prepared environments that facilitate this curiosity and independent discovery. Through an emphasis on *consistency*, *regulation*, and *community*, Montessori promotes mental health resilience as part of children’s natural development.

**Consistency:** Environmental harshness and unpredictability foster psychopathology (Sroufe et al., 2005). Alternatively, the Montessori environment promotes consistency in classroom organization, expectations, and teacher–student relationships (Lillard, 2018). For example, the continuity of Montessori across all age groups ensures children experience consistency in their programming throughout their lives. Clear environmental structure and expectations foster a sense of control and a secure base from which children can challenge themselves as they explore the materials and interact with peers in the classroom. Consistency facilitates exploration.

**Regulation:** Exploration encourages the development of a child’s regulatory capacities (Sroufe et al., 2005). Difficulty regulating emotions, attention, and behaviour under stressful conditions represents a hallmark of psychopathology. In a Montessori classroom, experience with challenging yet manageable circumstances help children establish links between their behaviour, emotions, and the environment (Lillard, 2018). Through practicing these regulation strategies, children develop trust in their ability to manage uncomfortable sensations and disagreeable encounters with their environment. With repeated experiences managing emotion, attentional, and environmental challenges, children develop their sense of self-efficacy.

**Community:** Self-efficacy facilitates a stable sense of self and respectful cooperation (Sroufe et al., 2005). Meanwhile, a lack of opportunities to exert self-efficacy and find one’s place among others contributes to the development of psychopathology. The design of a Montessori environment fosters inter-dependence and cooperation (Lillard, 2018). Children learn that all members of the community—including themselves—are worthy of respect and represent an important contribution to the community.

Through an emphasis on consistency, regulation, and community, children in a Montessori environment develop a foundation for managing future challenges skillfully and effectively. Experience in a Montessori classroom inherently addresses the risk factors for psychopathology at the etiological level by building mental health resilience into children’s lifestyles—*from the ground up*. Montessori is a sustainable program with testable, action-oriented principles that merits future consideration by empirical researchers and policy makers.

**References:**
The Pursuit of Happiness: How Happiness Mediates the Relation Between Shyness and Quality of Life Among Adults with Schizophrenia

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Background

Individual differences in temperament develop early in life and remain stable throughout adulthood. Those who are temperamentally shy are susceptible to impairments in several domains of adaptive functioning, including poor social skills, reduced quality of life (QoL), and higher rates of psychiatric disorders. Individual differences in temperamental shyness in childhood are known to portend reduced QoL in adults with schizophrenia (Goldberg & Schmidt, 2001). However, not all temperamentally shy people with schizophrenia have reduced QoL. Recent studies have found evidence of biological moderators on the relation between temperamental shyness and QoL (Khalesi et al., 2018).

One psychological factor that may mediate this relation is level of trait happiness. Trait happiness refers to a subjective assessment of whether one is generally a happy or an unhappy person and is different from both subjective and objective QoL. People who are temperamentally shy tend to report higher levels of negative than positive affect, suggesting lower trait happiness. To our knowledge, no study has examined whether level of happiness mediates the relation between temperamental shyness and QoL in adults with schizophrenia. Accordingly, the purpose of this study was to examine whether trait happiness mediated the relation between temperamental shyness and QoL in stable outpatient adults with schizophrenia.

Method

Participants were 95 stable outpatients with a primary diagnosis of schizophrenia or schizophrenia spectrum disorders (n schizophrenia = 41, n schizoaffective disorder = 30, n other = 24). The participants (59 male, Mean age = 48.5 years, SD = 11 years) completed the Subjective Happiness Scale, Cheek and Buss Shyness Scale, and the Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q).

Results

Analyses revealed that increases in shyness were associated with decreased QoL (p < .05) in this sample, but this relation was no longer significant when happiness was entered into the model (p > .05), suggesting that happiness mediated the relationship between shyness and QoL.

Discussion

Lower levels of trait happiness may be a factor underlying the risk of poorer QoL outcomes in shy adults with schizophrenia. These findings confirm that individual differences in temperamental factors and premorbid shy personality may play a role in psychological well-being and QoL in adulthood in individuals with schizophrenia. These findings may inform the development of novel psychosocial interventions for this population.

References:


Association Between Methadone Dose and Smoking Intensity in Opioid Use Disorder Patients in Methadone Maintenance Treatment

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Introduction: Smoking rates range from 85% to 98% in methadone maintenance treatment (MMT) population1. Nicotine and opioid use activate the same neuro-pathway, providing reinforcing effects. It is unclear as to whether smoking intensity during MMT is because of its reinforcing effects or if the actions of nicotine are attenuated by opiate intoxication where more cigarettes are required to compensate2.

Research Question: In opioid use disorder patients receiving methadone maintenance treatment, does being a smoker at the entry of the study predict treatment response and how does methadone dose mediate that relationship?

Methods: Data will be obtained from the Genetics of Opioid Addiction (GENOA) research collaborative. Participants aged 18 and older diagnosed with OUD receiving MMT from Canadian Addiction Treatment Centres through Ontario were recruited. Information on social demographic factors, smoking status, medical history, methadone dose, methadone duration, family history, past drug use, and alcohol consumption were obtained during the interview process.

Results: A multi-variable logistic regression analysis will be performed to determine whether the number of cigarettes smoked per day (CSPD) is associated with illicit opioid use among MMT patients. In this model, we chose to include sex, age, current treatment duration, and age of onset of methadone, methadone dose as additional variables to account for the possibility of a confounding effect. In addition, we will have an interaction model in which the interaction smoking and methadone dose will be investigated in association with illicit opioid use. We will also conduct a subgroup analysis by sex as there are many sex differences in the MMT population.

Implications: The results from this study can have valuable implications in the OUD population. This could suggest an indirect relationship where an increase in methadone dose due to the number of cigarettes, could show an increase with treatment adherence. Specifically, this research project could provide some clarity as it is unclear as to whether the use of nicotine products during opioid agonist administration is because of its reinforcing effects or if the actions of nicotine are attenuated by opiate intoxication where more cigarettes are required to compensate.

References
Abstract #72

Investigating Delay Discounting and Impulsivity in a Sample with Trauma and Substance Use

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Background:
The relationship between trauma and substance use have recently emerged as two of the most frequent, co-occurring disorders. Very little research has examined trauma and substance use in relation to behavioural measures such as delay discounting and impulsivity even though impulsivity and decisions making are two of the most predictive and informative variables to examine when considering one’s mental health and well being. A small sample of studies have found that facets of impulsivity are predictive of trauma and PTSD symptoms (Contractor et al., 2015), while another study found that mono-, dual-, and tri-substance users all discount more steeply, and exhibit greater impulsivity, than controls (Moody et al., 2016).

Purpose:
The goal of the current study was to investigate the understudied relationship between trauma, substance use, decisions making, and impulsivity, in a large-scale, general population sample.

Methods:
A large sample of adult drinkers (n = 1,643, 54% female) were recruited through an online crowdsourcing site (Amazon Mechanical Turk). Of this initial sample, participants meeting cut-off criteria for PTSD/trauma, via the Brief Trauma Questionnaire (BTQ) and the PTSD Checklist (PCL-5), were included in the final sample. Participants completed two Delay Discounting tasks, as well as the UPPS-P Impulsive Behaviour Scale; responses on these measures were included in the analyses.

Results:
Preliminary findings show that higher trauma scores positively predict delay discounting at $10 and $100, and that higher trauma scores positively correlate with our measure of impulsivity. All results were significant after controlling for age, sex, education, income, race, depression and anxiety. Next steps will be to include substance use variables into the analyses.

Conclusions:
Preliminary findings suggest that there may be a significant relationship between trauma and impulsivity. We hypothesize that similar findings will transpire when we examine substance use and impulsivity. Such findings may suggest a mediation model involving trauma, substance use, and impulsivity which we also plan to explore and present.

References:

Investigating the Effectiveness of Down-regulating Alpha and Up-regulating Beta Neurofeedback Training as a Potential Treatment for Substance Use Disorders

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Background: Low rates of success for Substance Use Disorder (SUD) treatment are a major public health challenge in Canada, increasing the need for researchers to develop novel and effective interventions. A promising treatment approach capitalizing on neurotechnological advances is neurofeedback training (NFB). NFB allows individuals to modulate brain activity through immediate sensory feedback using electroencephalography (EEG). As such, patients are rewarded for maintaining target brain states, evaluated by activity in certain frequency bands within an optimal range. Systematic review of the literature indicated that there is a need for more research to be conducted using novel neurotechnologies. We propose that with recent advances allowing for real-time data analysis, such as portable EEG equipment, we are able to further early research supporting the use of NFB as a treatment for SUD1. The enhancement of neural processing in frontal executive brain networks by NFB has the potential to increase cognitive control, resulting in heightened self-regulation. Previous studies have used a down-regulating alpha NFB protocol. Combining this with beta-activity up-regulation could potentially enhance frontal executive network functioning, thereby enhancing cognitive control over the impulsive behaviours that characterize SUD.

Purpose: (1) Evaluate NFB as a potential intervention for SUD via a proof-of-concept study and a pilot study in individuals receiving SUD treatment. Change in functional brain activity across alpha and beta frequency waves using NFB will be measured via performance on a variety of neurocognitive tasks. We predict that down-regulating alpha/up-regulating beta frequency activity via NFB will be associated with improved cognitive control on these tasks. (2) Determine whether heightened self-regulation skills following NFB contribute to significant changes in clinically-relevant variables such as craving, drinking/drug use, and self-efficacy to resist use. Although exploratory, we anticipate increases in executive functioning following NFB to be associated with a reduction in addiction-related variables and an increase in self-efficacy.

Methods: The proposed study will consist of two phases: 1) a proof-of-concept study with 30 healthy undergraduate students to develop a standard protocol for use within a clinical sample; and 2) a pilot study implementing the NFB protocol in a sample of 30 individuals receiving treatment for SUD at St. Joseph’s Healthcare Hamilton. We propose a multiple session NFB protocol, specifically 10 sessions at 0.5 hours each. Pre- and post-NFB neurocognitive assessments will assess changes in response inhibition, impulsivity, and executive functioning, which map onto core cognitive control deficits in SUD.

Expected Results/Conclusions: Overall, research utilizing novel neurotechnology methodologies has the potential to open a new avenue for SUD treatment. Establishing the NFB protocol in a healthy undergraduate sample will provide the basis for extending NFB to a clinical sample. With accessible, user-friendly neurotechnology, it may be possible for treatment clinics to target a larger number of patients in a cost-effective and evidence-based manner.

References:
Mental Health Intervention Services and Implementation Supports Among Ontario Schools: A Latent Class Analysis

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Background: It is estimated that 13-14% of children and adolescents experience mental disorders1,2. Most children access mental health supports within the school3, but the availability of services and organizational capacity of schools to effectively address student mental health needs vary. In order to inform the provision of mental health supports in Ontario schools, it is important to characterize the different patterns of mental health intervention resources and implementation supports available in schools and to identify associated features of these schools.

Purpose: The purpose of this work was (1) to identify "homogeneous" clusters of schools based on mental health intervention resources and implementation supports, and (2) to examine school, and student level correlates of the clusters.

Methods: Using data from the 2014 School Mental Health Survey, a representative survey of Ontario elementary and secondary schools (n=204 schools), a three-step latent class analysis (LCA) was utilized to identify clusters of schools that endorse similar intervention resources (i.e. counselling and crisis intervention) and implementation supports (i.e. interdisciplinary meetings and professional development on mental health topics) to address student mental health needs. Analysis of Variance (ANOVA) and chi-squared tests were used to describe school level differences between clusters.

Results: Three school mental health resource classes were identified: (1) high capacity (n=56), (2) intermediate capacity (n=122) and (3) low capacity (n=26). The three classes differ on the probability of providing implementation supports but offer similar intervention resources. Additionally, socio-demographics such as family income (p=0.44) and rurality (p=0.58) do not differ among the classes, but the high capacity class includes more high schools (p<0.001), has higher average student enrolment (p=0.02) and higher average student internalizing (p<0.001) and externalizing (p=0.04) problem scores.

Conclusions: This study identified three distinct classes of schools that offer similar intervention resources but differ on the implementation supports in place to address student mental health. Thus, findings provide support to current provincial initiatives that focus on strengthening organizational conditions and implementation supports within schools to support the mental health needs of their students.

Children's Mental Health Need and Expenditures in Ontario: Findings from the 2014 Ontario Child Health Study

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Rationale: To our knowledge, this is the first study anywhere to use an allocation formula to evaluate expenditure allocations in children’s mental health. Only two studies in Canada have examined allocations for children’s mental health at all. In Québec, Blais and colleagues (2003) reported no significant regional differences in need indicators, but large differences in mental health resources and services in 1992-93. In Ontario, Boyle & Offord (1988) reported large discrepancies in expenditures and service use that could not be explained by child mental health need.

Purpose: To estimate the alignment between Ontario Ministry of Children and Youth Services (MCYS) expenditures for children’s mental health services and population need, and to quantify the value of adjusting for need in addition to population size in formula-based expenditure allocations. Two need definitions are used: ‘assessed need’ as presence of mental disorder, and ‘perceived need’ as perception of need for professional help.

Methods: Child mental health need and service contact estimates (from the 2014 Ontario Child Health Study), expenditure data (from government administrative data) and population counts (from the 2011 Canadian Census) were combined to generate formula-based expenditure allocations based on a) population size and b) need (population size adjusted for levels of need). Allocations were compared at the service area and region level and for the 2 need definitions (assessed and perceived).

Results: Comparisons were made for 13 of 33 MCYS service areas and all 5 regions. The percentage of MCYS expenditure reallocation needed to achieve an allocation based on assessed need was 25.5% at the service area level and 25.6% at the region level. Based on perceived need, these amounts were 19.4% and 27.2%, respectively. The value of needs-adjustment ranged from 8.0 to 22.7% of total expenditures, depending on the definition of need.

Conclusions: Making needs-adjustments to population counts by using population estimates of child mental health need (assessed or perceived) provides additional value for informing and evaluating allocation decisions. This study provides much-needed and current information about the match between expenditures and child mental health need.

References

Infant Respiratory Sinus Arrhythmia Before and After Maternal Cognitive Behavioral Therapy for Postpartum Depression

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Background:
Postpartum depression (PPD) affects up to 20% of women in the first year after delivery. Interruptions in the development of healthy emotion regulatory processes have been proposed to link maternal depression and infant risks (Hoffman et al, 2006). Although the consequences of PPD in offspring have been found with neurophysiological markers of emotion dysregulation, it remains unclear if treating PPD can prevent the risk transmission from mother to child. Metrics of heart rate variability (HRV) are among the earliest emerging markers of emotion dysregulation. Specifically, respiratory sinus arrhythmia (RSA) is a valid marker of parasympathetic nervous system malfunction and emotion dysregulation in infants.

Purpose:
To determine if mothers who received a 9-week group Cognitive Behavioral Therapy (CBT) had infants with more adaptive RSA than those randomized to usual postnatal care.

Methods:
We conducted preliminary analysis on women and infants enrolled in an ongoing randomized control trial (RCT) examining the effectiveness of group CBT for PPD delivered by Public Health Nurses. Mother-infant pairs are randomized (1:1 ratio) to attend group CBT (treatment group) or receive usual postnatal care (control group). Mothers in the treatment group receive nine 2-hour group CBT sessions. Our present analysis includes 27 infants (treatment group n=17; control group n=10) who completed pre- and post-group study visits. During each study visit, baseline HRV recordings were taken from mother-infant pairs during a baseline task where participants were asked to sit with their infants and relax for period of 6 minutes. ECG data were recorded using the Mindware 3000A Wireless System and processed using Mindware HRV Analysis 3.2.2 software (Mindware Technologies).

Results:
We found no significant differences in demographic characteristics between treatment and control groups. T-test results found no significant difference in pre and post study visit RSA between the treatment and control groups (t (25) =1.489, p=.149). However, within group differences were found such that infant RSA significantly increased at the post study visit in the CBT group (t (16) = -2.561, p=.021) but not the control group (t (9) =-.311, p=0.763; Figure 1). As these are preliminary results, between group differences may emerge with a larger sample size once data collection is complete.

Conclusions:
Infants whose mothers attended the treatment group demonstrated significant increases in baseline RSA between pre and post testing whereas infants whose mothers were in the control group did not exhibit any change. These preliminary analyses suggest that treatment of maternal depression can lead to healthy changes in infant emotion regulation and parasympathetic nervous system control. This study is one of few that measures infant physiology as a marker of emotion regulation to examine the effect of maternal treatment on offspring. Focusing on infant outcomes provides a unique opportunity to understand the transmission of risk from mother to infant and emphasizes the importance of early intervention to ensure optimal infant development.

Reference:
Trauma-Exposure in Military Members and Public Safety Personnel: A Qualitative Investigation

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Background: Public safety personnel (PSP) such as paramedics, firefighters, and police officers, as well as military members, are frequently exposed to stressors and demanding work environments¹. While their specific tasks may vary, a commonality between these professions is the significant chance of repeated exposure to trauma over the course of their careers. In part due to these repeated exposures, military/PSP are at an elevated risk of mental health concerns including alcohol dependence, suicidality, post-traumatic stress disorder, and poorer quality of life¹. While there are successful evidence-based treatments for trauma-related mental illness, there is a lack of evidence regarding the specific therapeutic requirements of military and public safety populations.

Purpose: The purpose of this study was to obtain a more in-depth understanding of the challenges that are faced by public safety personnel and military members that may complicate mental health treatment and recovery.

Methods: Study participants were recruited during inpatient treatment at a private mental health hospital. Semi-structured focus groups were conducted, audiotaped and transcribed verbatim. Categories of inquiry included: expectations for treatment, perceived differences between military/PSP compared to civilian careers, impact of military/PSP career on mental health, whether military/PSP career changed their perception of the world, stigma, guilt and shame, and concerns with returning to work. Qualitative content analysis will generate a thematic coding scheme from which to identify concepts and linkages in the data. Study rigour will be achieved collaboratively through independent coders, an audit trail and data triangulation.

Results: Preliminary data analysis has identified five primary themes: relationship difficulties, return to work/home challenges, personal identity shift, toll of profession, and potentially morally injurious events. A variety of subthemes have been identified thus far, including: family dynamic uncertainty, inability to trust others, a negative shift in their perception of the world, stigma within the military/PSP culture, a “necessary” lack of emotionality, stressors are “brought home”, reduced ability to cope, increased negative emotions about self/others, and a reliance on comradery within the service. More subthemes are expected to be elucidated following completion of content analysis.

Conclusions: The information garnered from this study will be critical to appropriately inform specific treatment options for military/PSP inpatients, as the career stressors and related trauma exposures of this population are unique. Ideally, the development of tailored treatment plans for this population will lead to an increase in positive mental health outcomes post-treatment.

Neural Correlates of Autobiographical Memory in Post-traumatic Stress Disorder: Evidence of Emotion Overmodulation

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Background: Exposure to trauma has the potential to lead to the development of post-traumatic stress disorder (PTSD) or its dissociative subtype (PTSD-DS). PTSD is characterized by emotion undermodulation involving dampened activity of neural regulatory areas and increased activity of limbic areas with an associated behavioural pattern of hyper-arousal/emotionality. By contrast, PTSD-DS is characterized by a pattern of emotion overmodulation where hyperactivation of regulatory areas and hypoactivation of limbic areas is associated with the emotional detachment observed in symptoms of depersonalization and derealization. Alterations in cognitive and in emotional processing associated with these patterns of neural activity have the potential to result in key alterations in the episodic memory recall underpinning self-identity.

Purpose: The purpose of this study was to identify the role of key brain regions in episodic memory recall among trauma-exposed military members, veterans, and healthy controls.

Methods: Study participants comprised three groups: military members/veterans with PTSD (n=13), military members/veterans with trauma exposure and no diagnosis of PTSD (n=9), and healthy controls (n=14). Participants attended a pre-scan interview to identify a neutral, positive, negative, and traumatic memory and to complete clinical assessments regarding PTSD and associated symptomology. Each participant then recalled the previously identified memories under fMRI scanning. Participants also rated the level of re-experiencing and emotional change felt after the recall of each memory type.

Preliminary Results: Task data may demonstrate overmodulation in the trauma-exposed groups as overall neural activation decreased during negative and traumatic memory recall, suggesting a numbing effect. Further region of interest analyses are expected to reveal key regions involved in this finding. Correlation analyses of clinical variables and ratings may provide supporting evidence of overmodulation suspected in task data. Positive correlation analyses of Multidimensional Dissociation Inventory items identified significant activation for the following regions in the two trauma exposed groups combined when recalling traumatic memory: right inferior frontal gyrus, right middle frontal gyrus, right lingual gyrus, right middle cingulate gyrus, right postcentral gyrus, and left precentral gyrus.

Preliminary Conclusions: This study has the potential to identify neural key regions involved in emotion overmodulation among trauma-exposed military members and veterans. These regions are expected to serve as therapeutic targets for pharmacological and non-pharmacological treatment of PTSD and its dissociative subtype.

Operationalizing Experience-Driven Innovation through Integration of Peer Support in Clinical Mental Health Systems in Canada and Norway


Background: Policymakers call for mental health systems design informed by patient experience¹. Peer support programs can incorporate lived experience into clinical settings, while improving quality of life and reducing hospitalizations². How to effectively integrate peer support workers into the existing spectrum of health professionals and create supportive organizational contexts is unclear.

Approach: A collaboration among researchers in Norway and Canada explored the policy, organizational, personal characteristics, and change management processes required to support successful integration of peer support workers within clinical mental health care settings in each country using a case study approach. The case is defined as the integration of formalized/intentional peer support services within clinical services delivered in hospital, primary care and community settings. In Ontario, key informant interviews and focus groups were carried out with 30 participants (peer support providers, clinical managers and staff, people receiving peer support services, and policy makers) in Ottawa and Hamilton, Ontario.

Results: Distinct organizational and team cultures between hospitals and between hospitals and Assertive Community Treatment teams influence the roles undertaken by peer support workers, information and communication with clinical colleagues, and acceptance of the peer support role. In some contexts, clinical staff are strong advocates for and protective of peer support workers, while in others there is limited trust, which restricts the nature of peer support programming offered. Issues such as funding, remuneration, certification, accreditation of training programs and training needs, as well as the need to educate clinical staff on peer support roles are discussed. We present a conceptual framework of factors at the individual, hospital/care team, organizational, LHIN and provincial policy levels as well as promising change management approaches to support peer support integration.

Conclusion: It is clear that peer support workers typically shoulder the responsibility of educating clinical staff about the nature of their work and navigating boundaries of responsibilities. Successful peer support worker integration in clinical settings requires a thoughtful and staged implementation approach by managers that attends to contextual considerations.

References:

Cumulative Effects of Maternal Distress on Psychiatric Disorders in Adolescents

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Rationale:
Exposure to maternal distress prenatally, as well as in adolescence increases the risk of psychopathology across the lifespan. Although associations between maternal distress experienced prenatally, as well as later in a child’s life (concurrent) have been independently linked to offspring mental health, the cumulative effect of these exposures on adolescent mental health are not well understood.

Purpose:
To examine the cumulative effect of maternal prenatal distress and concurrent maternal distress on the risk for common psychiatric disorders in offspring at age 12-17 years.

Methods:
2177 participants enrolled in the 2014 Ontario Child Health Study (OCHS) aged 12-17 years completed the Mini-International Neuropsychiatric Interview for Children and Adolescents (MINI-KID). Maternal experience of depression and/or anxiety during pregnancy requiring treatment was assessed retrospectively by mothers and defined prenatal distress. Maternal (concurrent) distress was self-reported when offspring were 12-17 years of age using the Kessler Psychological Distress Scale (K6). We examined associations between increasing exposure to maternal distress (no exposure, prenatal exposure, concurrent exposure, both prenatal and concurrent exposure) and the risk of psychiatric disorders in 12-17 year-old adolescents. Analyses were adjusted for participant age, sex, socioeconomic status, family functioning, single-parent status and parental physical health.

Results:
The odds of major depressive disorder (OR=1.29, 95% CI: 1.01-1.67) and ADHD (OR=1.30, 95% CI: 1.02-1.65) increased with increasing exposure to maternal distress, with the adolescents of mothers with no exposure to distress having the lowest risk and those exposed to both prenatal and concurrent distress being the highest.

Conclusion:
These results suggest that increasing exposure to maternal distress is associated with an increased risk of clinically significant depression and ADHD in adolescent offspring in a dose-response manner. These results highlight the importance of the identification and the early and ongoing treatment of maternal distress in order to reduce the burden of common mental disorders in adolescence.

References:
Spatial Clustering and Developmental Vulnerability of Kindergarten Children with Autism Spectrum Disorders: A Population Level Study

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Background: Autism Spectrum Disorders (ASD) are the most commonly diagnosed neurological disorders in Canada, with a national prevalence estimate of 1 per 66 children diagnosed in 2015. There is some research indicating that spatial clustering of children with ASD is associated with neighbourhood level resources that can facilitate diagnosis, such as number of pediatricians, number of advocacy organizations, and regional center spending on ASD services¹.

Purpose: This study aimed to determine, among kindergarten children (1) the prevalence of spatial clusters of children with ASD; and (2) the developmental vulnerability of children with ASD in spatial clusters at the neighbourhood level across provinces and territories in Canada.

Methods: This study used data from a Canada-wide population database of child development in kindergarten, collected with the Early Development Instrument (EDI). The EDI is completed by kindergarten teachers, includes records of medical diagnoses, and has been administered at the population level in most Canadian provinces and territories. The EDI data provide information on children’s developmental status in 5 domains: physical health and well-being, social competence, emotional maturity, language and cognitive development, and communication skills and general knowledge. To examine spatial clustering of children with ASD in neighbourhoods, neighbourhoods were categorized according to the number of children with ASD, ranging from neighbourhoods with one child with ASD to neighbourhoods with two, three, four, five, and six or more children with ASD. Descriptive statistics were used to examine prevalence of spatial clusters of children with ASD, as well as the developmental vulnerability of children with ASD in these spatial clusters.

Results: Across most provinces and territories, a greater proportion of neighbourhoods had one, or two, or three children with ASD compared to neighbourhoods with four or five children with ASD, with the exception of Manitoba, Newfoundland and Labrador, and Nova Scotia. Across provinces and territories, the proportion of neighbourhoods with six or more children with ASD ranged from 3.3% (in Quebec) to 40.4% (in Nova Scotia). The average neighbourhood rate of vulnerability in most EDI domains increased as the number of children with ASD per neighbourhood increased, with the exception of the social competence domain, in Ontario – a pattern that was not observed in other provinces and territories.

Conclusions: This study established that the spatial clustering of children with ASD and their developmental vulnerability at the neighbourhood level varies across provinces and territories. The next steps should focus on examining resources available in neighbourhoods across Canada to help explain spatial clustering of children with ASD and their developmental health.

Neurocognitive Correlates of Obesity: A Multi-modal Examination of Neurocognitive Performance, Neural Activity, and Cortical Morphometry

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Background: Literature estimates that over 33% of adults in the United States are obese. While etiological literature has traditionally focused on metabolic, dietary, and physical activity factors as determinants of obesity, the association between cognition and adiposity is less well understood. The present study investigates the neurocognitive underpinnings of obesity.

Methods: Individuals with a BMI of over 30 kg/m² (Obese (OB), n=243) were compared to healthy BMI (HB) individuals (n=469) with a BMI ranging from 18-24.9 kg/m². Participants completed a well-validated battery of neuropsychological testing and MRI scan. Working memory performance and associated neural activity was assessed using functional magnetic resonance imaging. Cortical morphometry was measured from high-resolution structural MRI.

Results: Results from neuropsychological tests found the OB group exhibited impaired performance on tests measuring psychomotor dexterity, verbal memory, executive functioning, fluid intelligence, language and vocabulary comprehension, delay discounting, and cognitive flexibility, than HB group (p<0.05, FDR-corrected). Increased BOLD activation during N-back performance in regions associated with the default mode network (DMN) were found in OB vs. HB; suggesting impaired DMN disengagement during task-based activity. Compared to HW the OB group exhibited greater cortical thickness (CT) in the right mOFC, bilateral rostral ACC, and bilateral inferior and superior parietal gyri, and decreased CT in the right entorhinal cortex, and bilateral temporal pole (p<0.001, FDR-corrected).

Conclusions: Results highlight a pattern of cognitive impairment that may reflect a vulnerability to poor decision making precipitating the development of obesity or may reflect the neuroinflammatory consequences of on cognitive and neural outcomes.

References:

Cannabis Use and Aggressive Behaviour: An Exploratory Study

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Background: Cannabis is known for its multiple psychoactive abilities. The public is quite divided about its overall effect, positive for one group and negative for the other. Moreover, its effects depend on the individual brain structure.¹ From a forensic perspective, cannabis, among other psychoactive substances, can be prohibited from its recreational use, if it is suspected that it played a role into a violent behaviour.² When a patient has been mentally stable and has used occasionally cannabis over the course of their admission (despite the term of their disposition that prohibits him/her from using), it is sometimes difficult to identify the role that cannabis currently plays into the symptoms. As the clinical team proactively prevents the patient from relapsing too much, there is no obvious reoccurrence of a violent behaviour. Nonetheless, the team identifies at times some slight changes of the patients’ behaviour while being under the influence of cannabis.

Purpose: The aim of this study is to do a retrospective analysis of the co-occurrence of positive urine for cannabis and behavioural change of the patients.

Methods: We will access the chart of the patients, admitted into the forensic programs, who have presented with urine drug screening positive for cannabis. The date of these positive urines will be recorded. At the same time, behavioural changes, identified by the Aggressive Incident Scale (AIS) and Dynamic Apraisal of Situational Aggression (DASA) will be recorded. Other parameters such as gender, age, mental health diagnoses and historical offenses will be recorded.

Results: This is a work in progress; at this point no data is available.

Discussion: This study will have the potential of demonstrating the link between the use of cannabis and the inappropriate behaviour. This may become a useful tool when testifying at the Review Board hearing of the patients involved in the forensic system, to provide some evidence about the benefit of keeping the prohibition term in individuals. It remains unclear to us if some other parameters will be associated with these findings. If this becomes the case, this may help tailored even better the recommendation that the clinical team may provide when addressing the risk that an individual poses to the safety of the public due to the nature of his/her mental disorder.

Reference:
84. Waterloo Regional Campus Psychotherapy Program Progress Review
Chin ho Tsang, Amanda Ritsma, Madeline Wootton, Ewa Talikowska-Szymczak

85. How to Best Care for the Patient Previously Diagnosed with Borderline Personality Disorder Presenting to the Emergency Department in Suicidal Crisis: A Review of the Clinical Evidence and Practice Guidelines
Theoren Judson, Ben McCutchen

86. MD Burnout: A QI Project to Redesign the Landscape of Postgraduate Medical Training
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87. A Quality Improvement Project: Examining the Intake Questionnaire Process for Patients and Caregivers at Ron Joyce Children's Health Centre
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88. Cognitive Behavioural Therapy to Treat Obsessive-Compulsive Behaviours in Children with Autism: A 5-7 Year Follow-Up
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89. Predictors of Cognitive Behavioural Therapy for Body Image Disturbances in Adults with Eating Disorders
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90. Assessment of Cognitive Impairment in Non-English Language and Low Literacy Settings
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91. Predicting Outcomes of Group Cognitive Behavioural Therapy for Social Anxiety Disorder: The Role of Anxiety Sensitivity
Jesse Renaud, Karen Rowa, Matilda Nowakowski & Randi McCabe

92. Illness and Relapse Anxiety in Early Psychosis: An Overview and Cognitive-Behavioural Treatment Approach
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93. Reporting Suicidal Thoughts to Healthcare Professionals: What Facilitates This?
   Joanna Bhaskaran, K Gahagan, L O'Neil, B Key, F Wilson, J Brasch & RE McCabe

94. Changes to Non-Opioid Substances Use in Patients with Opioid Use Disorder Treated with Buprenorphine: A Systematic Review and Meta-Analysis
   Tea Rosic, Nitika Sanger, Zena Samaan

95. Do Posttraumatic Stress Symptoms Impact the Effectiveness of Dialectical Behaviour Therapy for Borderline Personality Disorder?
   Jenna Boyd, M Carrigan, T Logan, E DeKort, L Dunne, H Raymond & K Holshausen

96. Continuous Quality Improvement - Handover in a Busy Psychiatric Emergency Service
   Lauren Forrest

97. Facilitating Difficult Conversations and Decisions: Development of an Information Sheet for the Use of Antipsychotics in Major Cognitive Disorders
   Khaja F Ahmad, Caitlyn Gregory & Maxine Lewis

98. Violent Video Games, Aggression and Underlying Motivations to Play
   Marc Legault & Yedishtra Naidoo

99. A Novel Approach to the Assessment of Concussion: Visual Memory, Mood Parameters and Electrophysiology for Predicting Recovery
   Natalie Raso, Michael Mazurek, Suzanna Becker, Isaac Kinley, Saurabh Shaw, Lauren Iafrate & Conor Pires

100. Problematic Sexual Behaviours and Sexual Psychosis in Individuals with a Primary Psychotic Disorder
    Katrina N Bouchard, Heather M Moulden, Gary A Chaimowitz, Robert B Zipursky
ABSTRACT #84

Waterloo Regional Campus Psychotherapy Program Process Review

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Background: As a resident body, it has been recognized that the psychotherapy training program at the Waterloo Regional Campus is designed in such a way that residents are often unaware of their next steps in the process, have difficulty finding patients, and struggle with the administrative burden of the process, resulting in prolongation of the time it takes for them to complete their psychotherapy requirements.

Purpose: Our overall goal was to create a more streamlined and efficient process for completing psychotherapy training at the Waterloo Regional Campus.

Methods: To do this we thoroughly reviewed the current structure of the psychotherapy program in five different facets and gradually introduced (or advocated for where necessary) solutions to arising problems identified. Iterative plan-do-study-act (PDSA) cycles included: PDSA#1: gathered input from WRC resident body about their experience; PDSA#2: connected with the Hamilton campus psychotherapy centre to learn about and compare their processes to our own; PDSA#3: divided the psychotherapy program into five major components of the completion process – identifying potential supervisors, finding a patient, screening patients, registering patients at a location, and identifying an MD backup; PDSA#4: further investigated the specific problem areas & obstacles within each part of the process; PDSA#5: identified & implemented solutions to simple problems identified; PDSA#6: presented to administration the problems identified, which were outside of the control of the resident body and offered suggestions and/or potential solutions.

Results: The main issues identified included; telephone/VC supervision not permitted, unclear guidelines on the provision of medical back-up and back-up limited by site, ineffective patient referral process, lack of standardized patient screening, lack of clarity with regards to registering patients, and lack of secure documentation storage system. Overall, the training process was found to be largely resident-dependent and yet this process lacks clarity from the perspective of the residents. Solutions implemented included: creating a process map for each psychotherapy modality, a secure cabinet for documentation storage which was placed in the resident office, creating a document to outline the steps involved in registering a patient at each particular site, and a centralized electronic spreadsheet which was created to facilitate a more stream-lined referral process. Recommendations made to program administration included: allowing for VC/telephone supervision at the distributed site and for this to be reflected in policy, providing clear guidance on the requirements and responsibilities of the MD back-up, and considering adoption of a standardized screening approach for psychotherapy patients, which could be used across both sites.

Conclusion: We were able to identify where the most significant difficulties lay in each of the five key facets of psychotherapy training. We were also successful in implementing simple solutions as well as proposing relevant administrative recommendations that have the potential to significantly improve the resident experience in psychotherapy at the Waterloo Regional Campus.

How to Best Care for the Patient Previously Diagnosed with Borderline Personality Disorder Presenting to the Emergency Department in Suicidal Crisis: A Review of the Clinical Evidence and Practice Guidelines

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Background: The question “for patients with a diagnosis of Borderline Personality Disorder presenting with acute suicidality to the emergency room, does psychiatric hospitalization reduce the risk of completed suicide, when compared to discharge to standard outpatient care?” frequently arises in the clinical practice of psychiatry.

Context: The One-Room Schoolhouse (ORS) is a novel postgraduate psychiatry curriculum that was designed and implemented at the Waterloo Regional Campus of McMaster University. ORS relies on problem-based learning and flipped classroom approaches, by using complex clinical cases from our local community as a “learning trigger” for residents.

Methods: As a group of psychiatry residents, we conducted a literature search using the MEDLINE database, PubMed, PsycInfo, and Google Scholar, with search terms “Borderline Personality”, “Hospital”, “crisis”, “admission”, “suicide” and “mortality” to answer this question.

Results: A literature review revealed that no research studies have addressed this question in a randomized control trial or observational study. As an alternative, we reviewed the American Psychiatric Association’s (APA)¹, and the National Institute for Clinical Excellence (NICE)² clinical guidelines related to the management of Borderline Personality Disorder. We reviewed the studies upon which their recommendations were based. None of these studies examined mortality or completed suicide as a primary outcome, with hospitalization as an intervention. The referenced studies were based primarily on expert opinion, psychodynamic theory of the illness, and mitigation of medico-legal risk.

Discussion: These guidelines offer generic recommendations, which are of low clinical utility. Furthermore, they are based on a small number of articles, which have several methodological limitations and do not answer our question directly. It is a humbling experience as a clinician to safely manage a life or death decision when there is minimal data on the risks and benefits of a commonly used intervention, and when our guidelines offer little to no help. It is difficult to inspire confidence in our patients and their families when we have little data to support our proposed disposition plan.

**MD Burnout: A QI Project to Redesign the Landscape of Postgraduate Medical Training**

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**Background:** Physician burnout is a growing endemic problem. It emerges within medical training, and peaks during residency, where upwards of 60% of residents report being affected¹. Resident physicians face heightened stress both due to systemic challenges common to healthcare, and inherent pressures of training. This leads to the erosion of work-life balance and prevents vital needs² from being met, which are required for the development of well, fulfilled, and empowered physicians. It is crucial then, that our programs and institutions create a culture which promote wellness/well-being, particularly as we enter the era of sustainable medicine. The RESPITE initiative (Resilience in the Era of Sustainable Physicians: An International Training Endeavour) is a voluntary resilience curriculum that works to lead this cultural shift by filling an often neglected area in medical trainees’ formal education. Founded by McMaster’s psychiatry program, the initiative grew from a meaningful synergy between medical students, resident physicians, and academic healthcare professionals located at several sites across North America. While RESPITE began with the e-curriculum, this has expanded locally to include ‘Respite Rounds’ (RRs), a peer-support rounds, and ‘Concordia’, a wellness newsletter.

**Purpose:** The purpose of RESPITE is multi-faceted: a) to teach the importance of enhancing wellness and mitigating stress, while granting the authority learn at one’s own pace, b) to foster learners’ comfort in sharing and de-stigmatizing their experiences with chronic stress and burnout, and empowering them to explore new ways to approach such challenges, c) to encourage dialogue between the medical infrastructure and medical professionals to maintain a bidirectional, healthy, lifelong-learning process that is aimed at caring for both the public and its healers, and d) to support the modern physician to participate in a more acceptable manner when addressing the needs of a rapidly changing healthcare landscape.

**Methods:** RESPITE encompasses three components: an e-curriculum, peer-support rounds, and quarterly newsletters. The e-curriculum integrates two core learning dimensions: *Know Yourself* and *Integrate New Lifestyles*, which focus on building awareness and providing strategies to enhance resilience. This is delivered during optional teaching times, and combines lectures, reflection, and simulated skill building exercises. The RRs are offered seasonally and provide a confidential space for residents to debrief and process difficult topics related to life as a psychiatry resident. This works to promote a sense of safety and belonging, and builds esteem. The newsletters are distributed to staff and residents, offering wellness strategies, and serve as a reminder that physicians are not alone in their experiences of burnout.

**Results:** RESPITE is currently within its pilot phase, having launched in 2019. Over the next 12 months, residents’ engagement and feedback, will be collected to further improve and enhance the project to address their wellness needs. This data will help to understand how best to engage and empower learners, as well as determine the utility and efficacy of the current methods aimed at improving resilience and well-being of the physician-in-training.

**Conclusions:** While further trial of RESPITE will determine its utility and role, this project has the potential to improve the quality of life for the resident physician and cultivate a systematic training model that is more attuned to the well-being and sustainability of its physicians.

A Qualitative Improvement Project: Examining the Intake Questionnaire Process for Patients and Caregivers at Ron Joyce Children’s Health Centre

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Background: At Ron Joyce Children’s Health Centre every patient and family is required to arrive at the clinic an hour before a consultation appointment to complete a paper intake package which consists of a series of questionnaires. These self-administered questionnaires are for a variety of child and adolescent psychiatric disorders (e.g. anxiety, depression, ADHD), and have research and clinical utility. This experience is felt to be lengthy and time-consuming for patients and their families. There are various ways of delivery for self-reported questionnaires though there is limited and mixed data existing on the impact of the place of completion of self-administered questionnaires on patient satisfaction¹. There is limited qualitative evidence on whether patients and families prefer this format of the intake package or if there is an improved format for administration.

Purpose: The aim of this project is to improve this patient and caregiver experience of the self-administered questionnaires at the Ron Joyce Children’s Health Centre using the “Plan, Do, Study, Act” (PDSA) model.

Methods: For Phase 1 of the PDSA cycle, satisfaction surveys were designed for both patients and caregivers. These surveys were distributed at Ron Joyce Children’s Health Centre to 20 children and adolescents (ages 8-18) and their caregiver(s) between May-June 2018, which they completed after the initial intake package. Surveys rated the experience and ease of completing the intake assessment on a scale of 10 (10 being “very satisfied”), and also rated their preferred delivery method. Satisfaction surveys were also distributed to 20 clinicians at RJHC to evaluate the clinician’s preferred mode of administration and collating of information from the intake package. The specific change for Phase 2 was based on stakeholder preferences and feasibility of making the change. Phase 2 involved acting on preferences indicated by caregivers from Phase 1. For Phase 2, this change involved mailing intake packages to caregivers for completion. Surveys and part of the intake packages (the initial parent questionnaire and the Problem Behavior Scale, PBS) were mailed out to 20 caregivers with upcoming appointments between the months of July-September 2018. Satisfaction was compared using the mean scores of the satisfaction survey from Phase 1 to Phase 2.

Results: For Phase 1 of the PDSA cycle, majority of the patients preferred to receive the intake package in paper format (55%) and to receive it immediately before the appointment (61%). The mean score on the satisfaction survey for patients was 60%. Caregivers were nearly evenly split in preference between electronic (52%) and paper (48%) format. They demonstrated a preference of receiving the intake package in advance of their child’s appointment (62%). The mean score for the caregiver’s satisfaction survey for Phase 1 was 60%. For clinicians, 78% preferred to receive the results of the intake questionnaires directly from the EMR (Electronic Medical Record) prior to the appointment. In Phase 2 of the PDSA cycle, caregivers preferred a paper format over electronic (75%), and preferred to receive the materials in advance via mail. Mean score of satisfaction for caregivers increased to 70% in Phase 2.

Conclusion: After completion of a PDSA cycle, satisfaction and ease of completing the intake package was at ~60% at Phase 1 for both caregivers and patients. Following implementation of Phase 2, based on caregivers’ preferences from Phase 1, satisfaction rose to 70%. These preliminary results indicate that mailing out intake packages to caregivers in advance of their child’s appointment may be a preferred method of administering the intake package for caregivers, although cost analyses will be required before considering implementation.

Cognitive Behavioural Therapy to Treat Obsessive-Compulsive Behaviours in Children with Autism: A 5-7 Year Follow-up

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Background: Children with high functioning Autism Spectrum Disorder (ASD) often engage in repetitive behaviours similar to those seen in Obsessive Compulsive Disorder. Recent research supports the use of a manualized Cognitive Behavioural Therapy (CBT) treatment package to treat these obsessive-compulsive behaviours (OCBs) in children (ages 7 to 12 years) with high functioning ASD (Vause et al., 2018). This package adapted traditional CBT to meet the unique needs of children with ASD (e.g., increased use of visuals, highly repetitive, a protracted cognitive component). However, no research to date has evaluated the long-term treatment effects.

Purpose: The purpose of the current study was to evaluate treatment outcomes, five to eight years after the children received nine weekly sessions of group CBT to treat their OCBs.

Methods: Participants who participated in a nine-week CBT program, five to eight years ago, were contacted. In total 13 families agreed to participate. Families were asked to complete a series of standardized and behavior specific parent-report questionnaires.

Results: Analyses were completed between baseline, post-treatment, and five to eight years following treatment were compared. Results from the 13 participants showed a substantial reduction in OCBs between pre-test and follow-up as well as no significant difference between post-test and follow-up.

Conclusions: The present study suggests that CBT is effective in not only the short-term treatment of OCB’s in children with ASD, but also five to eight years post treatment. Future implications and limitation of these results will be discussed.

Reference:
Predictors of Cognitive Behavioural Therapy for Body Image Disturbances in Adults with Eating Disorders

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Background: Body dissatisfaction is an important determinant of psychological and physical wellbeing and is one of the strongest predictors of eating disorder relapse (Keel et al., 2005; Mitchison et al., 2016). As matters stand, the majority of research has focused on establishing the efficacy of cognitive behavioural therapy for eating disorder symptoms; however, limited research exists on how to effectively treat body image disturbances. In order to maximize long-term outcomes for patients with eating disorders, it is imperative to increase our understanding of factors that facilitate change in body dissatisfaction following treatment focused primarily on symptom interruption.

Purpose: While we know that cognitive behavioural therapy produces improvements in eating pathology, a dearth of research exists on interventions designed to directly target body image disturbances. In accordance with the theoretical underpinnings of cognitive behavioural therapy along with prior treatment outcome research in the field of eating disorders, it is hypothesized that depressive symptoms, weight control beliefs, and drive for thinness will predict changes in body dissatisfaction over the course of group cognitive behavioural therapy (GCBT).

Proposed Methods: The proposed research will be conducted with adults with eating disorders who received 10 weekly sessions of GCBT for body image disturbances. All participants completed self-report questionnaires at baseline and post-treatment. Hierarchical linear regression analyses will be conducted to determine whether depressive symptoms, weight control beliefs, and drive for thinness predict changes in body dissatisfaction and frequency of disordered eating behaviours. Power analyses were performed using a statistical program called G*Power. Assuming a medium effect size, a total of 85 participants will provide a power of 0.80.

Anticipated Results and Conclusions: It is anticipated that lower levels of depressive symptoms, weight control beliefs, and drive for thinness will predict improved body image post-treatment. This research project will identify potential predictors of outcome that can inform decisions regarding treatment sequence and duration. Ultimately, this research can be used to refine treatment approaches and decrease risk of relapse for patients with eating disorders and related pathology.


Assessment of cognitive impairment in non-English languages and low literacy settings

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Background:
Diagnosing dementia relies upon screening candidates for further assessment. Several instruments exist, including the Montreal Cognitive Assessment (MoCA), Mini Mental Status Examination (MMSE), and the Rowland Universal Dementia Assessment Scale (RUDAS). Screening for cognitive impairment in a patient who either speaks English as a second language, does not speak English at all, or has significant literacy issues is known to impact the validity of such testing.

Purpose:
Such a concern is exemplified in the case presented, wherein a 60 year old gentleman is referred to a secondary care clinic due to memory concerns but does not speak English. A review follows, with an overview of the above tests and their relevance in this setting. Thereafter, we present the pertinent evidence for cognitive impairment detection when English is a second language or low literacy is present.

Methods:
Our narrative review strategy included searching for “MoCA” or “MMSE” alongside “non English speaking patients”, “ESL”, “English as a second language”, or “low literacy”. The databases searched included EBSCO, Medline, Cochrane, and Google Scholar. Additional search strategies to ensure pertinent articles were not missed included a search of the grey literature by reviewing the reference lists of each article.

Results:
There exist validated translations of the MoCA into several other languages. Unfortunately, this has not consistently provided cross-cultural adaptations suitable for widespread use. Similar concerns have led to the creation of the MoCA-Basic, validated in those with low literacy, but requiring further study at present\textsuperscript{1}. Finally, the RUDAS is designed to consider both issues and has been validated and systematically reviewed with encouraging evidence\textsuperscript{2}. One proposition with cross-cultural applicability involves asking a caregiver/family member if they have concerns about their older adult’s memory. This has a similar positive likelihood ratio to the more formalized tests.

Conclusion:
Although there is limited research, there are promising improvements in the methods of screening in the non-English and low literacy setting.

References:

Predicting Outcomes of Group Cognitive Behavioural Therapy for Social Anxiety Disorder: The Role of Anxiety Sensitivity

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Background: Anxiety sensitivity (AS), the tendency to fear anxiety-related physical sensations, is elevated in individuals with social anxiety disorder (SAD; Naragon-Gainey, 2010). Although pre-treatment levels of AS have been found to predict outcomes for SAD after cognitive behavioural therapy (CBT; Nowakowski et al., 2016), other studies have failed to find an association between pre-treatment AS and CBT outcomes (Kwee & van den Host, in press). Given that CBT appears to exert an effect on AS and to clarify equivocal findings, it is important to examine whether changes in AS across treatment predict treatment outcomes.

Method: To test this possibility, the present study examined whether changes in AS over the course of therapy (vs. just assessing pre-post changes) predict changes in SAD symptoms after 12-week group CBT for SAD (N = 65). To measure changes in SAD symptoms, the SPIN (Connor et al., 2000) was completed at pre-treatment, session-by-session, and at post-treatment. To measure AS, the ASI-3 (Taylor et al., 2007) was completed at sessions 2, 4, 8, and 12. Hierarchical Linear Models were used to test the hypotheses. The ASI-3 total and its dimensions (physical, social, cognitive concerns) were examined in separate models.

Results: The results showed that, controlling for pre-treatment SAD symptoms, early (sessions 2-4) and middle (sessions 4-8) decreases in total ASI-3 on the social and cognitive dimensions were associated with lower post-treatment SAD symptoms. In addition, mid-treatment (sessions 4-8) decreases in social concerns predicted the slope of SAD symptoms, indicating that only those individuals who declined in social concerns, but not those who remained stable or increased, experienced a linear decrease in SAD symptoms during therapy.

Conclusions: These findings suggest that examining changes in AS at various time points across therapy may clarify the associations between AS and outcomes for CBT for SAD.

References:

Illness and Relapse Anxiety in Early Psychosis: An Overview and Cognitive-Behavioural Treatment Approach

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Background: Psychotic disorders are associated with high rates of comorbid anxiety. In early psychosis, individuals at clinical high risk or with remitted first-episode psychosis may experience anxiety related to a fear of developing psychosis (e.g., a transition to psychosis or psychosis relapse). This anxiety may be associated with significant distress and impact prognosis for these individuals.

Purpose: The purpose of this project is to examine the phenomenon of illness/relapse anxiety in early psychosis and provide information to inform treatment.

Methodology: Literature review and composite clinical case example.

Results: A number of empirical studies have examined anxiety in psychotic disorders but have not focused specifically on illness or relapse anxiety. A cognitive model of anxiety in clinical high risk for psychosis has recently been proposed, which can be expanded for individuals with a fear of psychosis relapse. Cognitive-behavioural therapies have been used to successfully treat anxiety in psychotic disorders. These treatment approaches, including exposure therapy and cognitive restructuring, can be applied to target illness/relapse anxiety in psychosis.

Conclusions: Illness and relapse anxiety may be experienced in individuals with early psychosis. This anxiety can be conceptualized using a cognitive model, which provides a framework to guide treatment using a cognitive-behavioural therapy approach.

References:
Reporting Suicidal Thoughts to Healthcare Professionals: What Facilitates This?

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Background:
An estimated one million people worldwide die by suicide each year, accounting for 1.5% of the global burden of disease. For every completed suicide there are approximately twenty suicide attempts, representing a large at-risk population for future suicide death. Additionally, unsuccessful suicide attempts themselves can contribute to significant injury and permanent disability and thus lower quality of life for the individuals involved. Suicide, therefore, is a large public health concern and significant efforts have been made to identify those at risk and mitigate this risk. A large part of identification and prevention efforts rely on self-reported suicide risk; however, research demonstrates that explicit denial of suicide risk is common among individuals who eventually go on to die by suicide.

Purpose:
The purpose of this study was twofold: a) to identify factors that facilitate disclosure of suicide risk to health care professionals; and b) to determine areas of improvement in the care currently provided in this area.

Methods:
Data was collected from focus groups (n=5) conducted with former and current patients of St Joseph’s Healthcare Hamilton (n = 22). All participation was voluntary with the only inclusion criteria being experiencing suicidal ideation while a patient of St Joseph’s Healthcare, Hamilton; or attending a St Joseph’s Healthcare location to cope with suicidal thoughts and plans. Participants also included peer support workers who have experience both with supporting patients with suicidal ideation, as well as with disclosing these thoughts themselves.

Results:
During these interviews, we encountered individuals with different attitudes and beliefs about disclosing suicidality to healthcare professionals. Their decisions to disclose suicidality to healthcare professionals often followed complex reasoning and better understanding of this reasoning may inform how healthcare professionals view these disclosures. This research is a work-in-progress. We plan to use a grounded theory approach to come to a more multifaceted understanding of why individuals choose to disclose their thoughts of suicide, with the hope of fostering conversation and facilitating improvements in service delivery in this area.

References:
Changes to Non-Opioid Substance Use in Patients with Opioid Use Disorder Treated with Buprenorphine: Systematic Review and Meta-Analysis

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Rationale: Canada continues to experience a crisis of opioid use disorder (OUD)¹. More patients are now receiving treatment for OUD with medication assisted therapy (MAT)², and buprenorphine is recommended as first-line treatment. Many patients receiving MAT engage in the use of other non-opioid substances. This comorbidity is associated with worse retention in treatment, increased illicit opioid use, and increased risk of overdose and death. It is unclear if, or how, non-opioid substance use changes during treatment.

Purpose: To determine the effects of maintenance treatment with buprenorphine compared to methadone, placebo, or waitlist control, on non-opioid substance use in individuals with OUD.

Methods: We will search Medline and Medline In-Process (1946 to Feb. 2019), EMBASE (1974 to Feb. 2019), PsycINFO (1806 to Feb. 2019), and the Cochrane Central Register of Controlled Trials. Unpublished trials will be identified by searching clinical trial registries (WHO and ClinicalTrials.gov), and conference abstracts (Conference Proceedings Citation Index and Biosis). Two study authors will independently screen titles and abstracts of identified studies for inclusion and exclusion criteria, followed by assessment of full text eligibility for data extraction, and risk of bias assessment.

Randomized controlled trials of buprenorphine compared to methadone or compared to placebo or waitlist control are eligible for inclusion. Trial exclusion criteria are: detoxification-only trials, trials with co-intervention applicable to only one group, and trials solely including individuals with non-opioid substance dependence without a primary study-defined diagnosis of opioid dependence. Trials will not be excluded on the basis of medication dosing/preparation, patient age, pregnancy status, or type of opioid use. Our primary outcome measures are: 1) urine toxicology results for opioid and non-opioid substances, 2) self-reported substance use, 3) mortality, and 4) emergency room visits. Subgroup analyses will be conducted for low, medium, and high medication dosing, and sensitivity analysis will be conducted for low risk of bias versus high risk of bias trials.

Results: Results are in process.

Conclusion: This systematic review will clarify the evidence landscape regarding outcomes in non-opioid substance use for patients with OUD receiving buprenorphine maintenance therapy.

References:
Do Posttraumatic Stress Symptoms Impact the Effectiveness of Dialectical Behaviour Therapy for Borderline Personality Disorder?

Boyd J., PhD Candidate, Carrigan, M., RN, Logan, T., RN, DeKort E., RP, Dunne L., RSW, RP; Raymond H., MSW, RSW, Holshausen K., PhD, C.Psych

Introduction: Posttraumatic Stress Disorder (PTSD) and Borderline Personality Disorder (BPD) are highly comorbid psychiatric conditions, where as many as 50% of individuals with BPD also meet criteria for PTSD. Comorbid BPD and PTSD is associated with greater odds of a lifetime suicide attempt, more comorbidity, and greater impairments in quality of life. Dialectical Behaviour Therapy (DBT) targets symptoms of behavioural and emotional dysregulation, and interpersonal difficulties. Given the association between comorbid BPD and PTSD and increased symptom severity, it has been suggested that PTSD symptoms may impact response to treatment with DBT. To date, limited research has investigated this question, with mixed findings.

Purpose: The purpose of this study was to assess changes in PTSD and BPD symptoms and investigate the impact of PTSD symptoms on treatment outcome of DBT for BPD over the first four months of treatment.

Methods: Twenty-seven individuals with BPD and comorbid PTSD symptoms participated in four months of standard DBT (group and individual therapy and phone coaching). Participants completed baseline and 4-month self-report assessment of BPD and PTSD symptoms and emotion regulation difficulties (ERD). Correlational analyses were used to examine the relation between BPD symptoms, PTSD symptoms, and ERD at baseline. Paired sample t-tests were used to examine changes in symptom severity over the 4-month period. Linear regressions were used to determine if baseline PTSD symptoms predicted change in BPD and ERD symptoms using residualized change scores. Results: At baseline, PTSD symptoms were significantly positively correlated with BPD symptoms and ERD (p < .01). PTSD symptoms did not improve over the 4-month treatment period (p > .05), while BPD symptoms and ERD significantly improved (p < .05). Linear regressions revealed that PTSD symptom severity at baseline did not predict change in BPD symptoms or ERD (p > .05). Discussion: Higher PTSD symptoms were associated with higher levels of BPD symptoms and ERD and DBT was associated with a significant improvement in BPD symptoms and ERD, but not PTSD symptoms. However, baseline PTSD symptom severity did not predict change in BPD symptoms or ERD. Taken together, these results indicate that although individuals with higher levels of PTSD symptoms have higher levels of BPD symptoms and ERD at baseline, this does not impact their ability to benefit from treatment with DBT. Future work should determine when, in the course of treatment for BPD, is optimal to employ additional treatment for PTSD.

Continuous Quality Improvement – Handover in a Busy Psychiatric Emergency Service

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**Background:** Handover is an important aspect of patient care that occurs multiple times per day in the Psychiatric Emergency Service (PES). Handover has been recognized as an area of patient care that is particularly vulnerable to communication errors that may lead to adverse events\(^1\)\(^2\). There are also environmental and systemic factors that make this a vulnerable time for errors and missed information that can lead to adverse events. There is a body of research that has examined aspects of successful and efficient handover and teaching this as a skill in an academic setting\(^1\)\(^2\).

**Purpose:** The aim of this CQI project was to assess areas of vulnerability in the current handover system and implement measures to improve the efficiency and accuracy of patient care handover.

**Methods:** Several Plan-Do-Study-Act (PDSA) cycles were undertaken as part of this CQI project. First, a needs assessment was conducted through focused interviews with staff and residents about handover in PES. A literature search was conducted to review research about handover processes in academic medical centers and also to review Canadian practice standards regarding handover of patient care. The solution identified was development of a tool to assist residents in tracking key patient information to help focus handover. Once the first PDSA cycle was completed, the tool was changed in several iterations with feedback sought from residents and from staff working in PES.

**Results:** Discussion with staff working in PES and residents highlighted the following main problems with the current handover system: lack of standardized, organized presentations, differences in expectations regarding the purpose of handover, key information is being missed, and that the length of handover is too long and interfering with patient care. Literature review found several systems that have been developed to improve organization of handover and one that is currently being used and taught in PES was used to develop a handover tool. This tool was then tested with a small group of residents and feedback sought for future PDSA cycles. At the time of this abstract submission, the fourth version of this tool is being tested.

**Conclusions/Future Directions:** Handover remains an area of vulnerability to errors in providing good patient care. This is especially challenging in an environment as busy as PES with increasing patient volumes. This project chose to address a resident tool for use at times of handover to assist with providing organized and focused handover in this challenging setting. There are still a number of areas to improve with this tool and future directions include providing handover specific education to residents and staff who work in this environment.

**References:**


Facilitating Difficult Conversations and Decisions: Development of an information sheet for the use of antipsychotics in Major Neurocognitive Disorder.

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**Purpose and rationale:** Up to 70-80\% of individuals with dementia will develop a behavioral disturbance as part of the course of their disease\textsuperscript{1}. These behaviors can cause significant distress and risk for both the patient and their families. Some behaviors can be treated by non-medication strategies. However, if behaviors continue, despite non-medication strategies, the addition of antipsychotics can help reduce behaviors.

The decision for families to start antipsychotics for their loved ones is often very difficult. This decision is associated with high responsibility and emotion. As well, the benefits versus risks must be weighed before starting any medication. Family members often feel overwhelmed with processing information from multiple sources, some more reliable than others.

We hypothesize that a well-constructed information sheet for the use of antipsychotics in major neurocognitive disorder will improve the quality of conversations with family members and positively impact the quality of our patient care.

**Methods:** The PDSA model was used to develop the information sheet. The need for improved information delivery was identified through focus groups and one-on-one interviews with key stakeholders in the Seniors Mental Health department (case managers, physicians, and residents). Creating an information sheet on the use of antipsychotics for families of individuals with major neurocognitive disorder was chosen as a pilot project. An initial information sheet was created, and subsequently modified based on feedback from key stakeholders. We are currently in the process of collecting feedback for the refined version of this information sheet from family members of individuals with major neurocognitive disorder being treated with antipsychotics.

**Results/conclusions:** Both healthcare professionals and family members have identified the information sheet as a useful complement to discussions with their health care team. It has increased patient and family understanding of the rationale for antipsychotic use, as well as the risks and benefits. The importance of targeting language used in the handout to the target population, as well as an emphasis on quality of life will be discussed.

Violent Video Games, Aggression, and Underlying Motivations to Play

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Rationale: Over the past half century, Video game play has become increasingly popular and their content has become increasingly violent (a term deferentially defined by industry review bodies, expert opinion, self report or genre). However, the association between video game play and subsequent violent behaviour is less clear. Several different motivations to play video games have been validated in the literature. Therefore, in an effort to clarify the relationship between video games and violence, the authors looked to examine the connection between motivations for playing video games and violence.

Methods: We conducted narrative reviews of the motivations to play video games and of meta-analyses examining the connection between violent video games and aggressive behaviours. Finally, we searched for studies that directly addressed possible associations between motivations to play video games and aggression in players.

Results: There are three main theories describing motivation for video game play: social cognitive theory (SCT) (De Grove, 2016), uses and gratification theory (Sherry, 2012), and self-determination theory (SDT) (Ryan, 2006). Each of these is grounded in an historical theoretical framework with validated scales (“Digital Games Motivation Scale”, “Video Games Uses and Gratification Scale”, and “Player Experience of Needs Satisfaction”, respectively). A review of meta-analyses since 2000 revealed the following: r= 0.15 (Sherry, 2001), r+=0.10 95% CI [0.15-0.22] (Anderson, 2001), r+=0.20 95% CI [0.17 -0.22] (Anderson, 2004), r+=0.14 95% CI [0.08-0.21] (Ferguson, 2007), r+=0.08 95% CI [0.03-0.13] (Ferguson, 2009), r+=0.189 95% CI [0.182-0.196] (Anderson, 2010), r+=0.19 95% CI [0.16-0.22] (Greitemeyer, 2014), and β=0.113 95% CI [0.098-0.128] using a fixed effect model and β=0.103 95% CI [ 0.076-0.130] using a random-effects model (Prescott, 2018). The literature on how motivation might moderate the effect between violent video game play and aggression is limited, and a call for more research has been placed. We found one series of studies which looked at goals as they relate to accessibility of aggressive cognitions (SCT) (Denzler, 2011) and one which looked at impedance of mastery as a source of aggressive behaviour (SDT) (Przybylski, 2014). Those studies suggest that a person’s aggression following play is related in part to their motivation.

Conclusions & Future Directions: Existing evidence suggests a low positive correlation between violent video game exposure and aggressive behaviour. Studies also suggest reasons for playing can as they relate to goal fulfillment or competence can also affect a person’s aggression. To better characterize the association between video games and violence, future prospective longitudinal research should study the possible moderating effects of the motivation to play video games on violence.

A Novel Approach to the Assessment of Concussion: Visual Memory, Mood Parameters and Electrophysiology for Predicting Recovery

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Background: Concussion is a form of mild traumatic brain injury (mTBI). Sport-related concussions are some of the most common and significant injuries sustained by youth and varsity athletes. Recently, attention has been paid to the potential cognitive effects of “sub-concussive injuries,” which may result during contact sport participation in the absence of a sustained concussion. Some studies have shown that the hippocampus in particular may be vulnerable to head injury. There is a test known as the mnemonic similarity test (MST) which involves high memory interference. This test may be sensitive to hippocampal neurogenesis.

Purpose: In this study, our purpose was to determine which psychological, electrophysiological, and psychiatric variables predict the risk of a concussion, and what factors are associated with recovery.

Methods: We assessed various measures of brain function in thirty (30) high impact sport players (rugby) using the MST as well as electroencephalography, other cognitive testing, and mood assessments during the pre-season, mid-season and post-season to twenty (20) male collegiate-level rugby players were assessed four times during the course of their season, including pre-season, mid-season, end-season and post-season. At each of these testing session, we conducted the following assessments: visual-evoked potentials, visual memory tests, visuo-spatial memory test with high interference, a digit-span test, colour-word naming task (“Stroop” Task), Rapid Visual Presentation Task, a resting state EEG, and mood and anxiety screening (PHQ-9 and GAD-7).

Results: The final post-season testing is scheduled for the near future, therefore results are forthcoming and will be available by the date of Research Day. We hope that this study will add to the expanding body of knowledge around sub-concussive head injury, and the roles of cognitive assessments, mood factors and electrophysiology in predicting vulnerability or recovery from sub-concussive injuries and mTBI.

References:
4. McCradden MD, Becker S, Rosebush PI, Mazurek MF. (2017) The neuropsychiatric sequelae of concussion: towards an understanding of the neurobiology; Chapter 4: Contact Sport Participation and Concussion Effects on a High Memory Interference Task. Retrieved from MacSphere. (Note: This study builds off of the previous work of McCradden, 2017).
Problematic Sexual Behaviours and Sexual Psychosis in Individuals with a Primary Psychotic Disorder

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Background: Populations-based surveys show that atypical sexual interests are related to problematic sexual behaviours (e.g., exhibitionism, voyeurism; Långström & Seto, 2006), though the presence of a sexual interests does not necessarily result in concomitant sexual behaviours. For individuals diagnosed with a psychotic disorder, problematic sexual behaviours may be motivated by delusions and hallucinations with sexual themes, termed sexual psychosis (Moulden & Marshall, 2017). Unlike the link between atypical sexual interests and behaviours, little is known about the correspondence between sexual psychosis and problematic sexual behaviours in psychiatric patients.

Purpose: To characterize the prevalence of sexual psychosis and problematic sexual behaviours in a sample of psychiatric patients diagnosed with a psychotic disorder. To examine whether individuals with symptoms of sexual psychosis exhibit higher rates of problematic sexual behaviours than patients with hallucinations and/or delusions devoid of sexual themes.

Methods: A retrospective chart review was conducted for a random selection of 132 patients from the Forensic Psychiatry Program (n = 76) and the Schizophrenia Outpatient Clinic (n = 56) at St. Joseph’s Healthcare Hamilton. Files were coded for history of problematic sexual behaviours and sexual psychosis as well as demographic, medical, psychiatric, and criminal history. Only patients with a primary diagnosis of a psychotic disorder were included in the analyses (N = 115).

Results: Nearly half of the total sample (48%) experienced some form of sexual psychosis, which could include sexually-themed delusions, hallucinations, or both. Almost one third of the total sample (29%) exhibited a history of engaging in at least one problematic sexual behaviour, with the majority of this subsample (64%) exhibiting multiple occurrences of problematic sexual behaviours. As expected, individuals with sexual psychosis were more likely to exhibit problematic sexual behaviours than individuals without sexual psychosis, (p = .003, φ = .28). Result were consistent when sexual delusions and hallucinations were considered separately.

Conclusions: Preliminary results from this study suggest that sexual psychosis is significantly related to problematic sexual behaviours in a sample of psychiatric patients. The outcome of this study points to the potential benefit of querying for sexual themes in the context of assessing psychotic symptoms. Further research is needed to examine the effect of paraphilic interests, personality disorders, and neurological impairment on problematic sexual behaviours in individuals diagnosed with a psychotic disorder.

References:
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Child Sexual Abuse, Disclosure, and PTSD – Does Disclosure Help Children?

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Rationale: Child sexual abuse (CSA) is a prevalent exposure with potentially serious, negative health consequences, including post-traumatic stress disorder (PTSD) and its symptomatology. While there are a number of theories that account for how PTSD can develop post-trauma, if and how disclosure processes mediate or moderate PTSD responses is not always clear. The aim of this systematic review is investigate the relationship between CSA disclosure patterns and PTSD.

Methods: We searched across six databases (Medline, Embase, PsycINFO, CINAHL, Sociological Abstracts, ERIC) from database inception to October 17, 2017 for articles that explored adults’ or children’s child sexual abuse disclosure patterns in relation to PTSD symptoms or diagnosis. Calculations were completed in order to compare how different characteristics of disclosure or reactions to disclosure were related to PTSD diagnosis or symptoms, including odds ratios for dichotomous outcomes, standardized mean difference for continuous outcomes, and Fisher’s Z when only correlations were provided. Study quality was assessed using Quality in Prognosis Studies (QUIP) criteria and certainty of evidence was assessed using Grading of Assessment, Development, and Evaluations (GRADE) criteria.

Results: Twenty-two articles (representing 20 studies) were included in this review. Overall, included studies had either moderate (n=3) or high risk of bias (n=17). When assessing the relationship between CSA and PTSD, study authors tended to account for personal (e.g., gender) and CSA exposure variables (e.g., severity of CSA) only. While authors generally used validated measures to assess for PTSD symptoms and disorders, they tended to use author-generated or unvalidated measures to assess for disclosure process variables.

Discussion: Studies assessing the relationship between disclosure processes and PTSD show an inclusive relationship at this point in time – it is unclear if, when and how disclosure of CSA results in reduced PTSD. Notably absent from many of the studies in the present review is any indication of the child’s safety in the context of CSA experiences. Research led by Turner and colleagues (2010) has shown that, in a national sample addressing adolescents’ experiences of violence, 92% of rape victims were victims of other forms of violence and that poly-victimization is a key predictor of trauma responses. As such, it is unclear if samples with high trauma responses in the present review are qualitatively different (i.e., experiencing poly-victimization) or if disclosure processes are different for children who experience multiple forms of violence. The findings of this review suggest that research investigating the relationship between disclosure processes and PTSD responses is in the early stages of development and additional research is needed in order to better understand if, when and why CSA disclosure is beneficial.

References

Screen Time and Adolescent Mood and Anxiety Disorders: Differential Effects by TV and Online Type of Screen Time, Over and Above Sleep Quality and Physical Activities


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Background: The early emergence of depressive and anxiety disorders and temporal trends suggestive of increasing prevalence of depression during adolescence (Georgiades, Duncan, Wang, Comeau, & Boyle, 2018) signify a need to identify and mitigate modifiable risk factors for these conditions. Excessive use of electronic devices among adolescents may represent one such risk factor (Twenge, Martin, & Campbell, 2018).

Purpose: This study aimed to 1) quantify the strength of association between TV type and online type of screen time and adolescent major depressive episode and anxiety disorders (i.e. social phobia, generalized anxiety disorder, specific phobia), and 2) determine if the association persists over and above known correlates such as sleep quality and physical activity.

Methods: Data from the 2014 Ontario Child Health Study, a representative sample of 2,320 adolescents aged 12 to 17 years in Ontario (mean age= 14.58, male=50.7%) was used. Past 6-month DSM-IV-TR major depressive episode and anxiety disorders (i.e. social phobia, generalized anxiety disorder, and specific phobia) were assessed using the Mini International Neuropsychiatric Interview for Children and Adolescents administered separately to the primary caregiver and adolescent in the family’s home. Adolescents reported on screen time (TV type and online type), sleep quality and physical activity using a computer-assisted self-administered questionnaire. Binary logistic regression models were used to address the study objectives.

Result: Adolescents reporting 4 or more hours of TV type of screen time per day, compared to those reporting less than 2 hours, were three times as likely to meet criteria for major depressive episode [OR=3.28(95% CI=1.71-6.28)], social phobia [OR=3.15 (95% CI=1.57-6.30)] and generalized anxiety disorder [OR=2.92 (95% CI=1.64-5.20)], but not specific phobia. Adjusting for online type of screen time, sleep quality, physical activity and other covariates did not have a discernible impact on the magnitude of the odds ratios. In contrast, online type of screen time adjusting for the covariates was not associated with increased odds of mood or anxiety disorders.

Conclusions: Excessive exposure to TV type of screen time was more robustly associated with major depressive episode, generalized anxiety disorder and social phobia than online type of screen time. A more passive type of screen time (e.g. TV, video) may be linked with adolescent major depressive episodes and anxiety disorders. Spending 4 or more hours passively watching screens may be taken as an alarming indicator signalling the need for a careful attention and support.

References:
Diagnosis of Major Depression Disorder Using Features of Cross-Frequency Coupling

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Rationale: Diagnosis of psychiatric illnesses such as major depression (MDD) can take anywhere from months to several years. Even with application of specific diagnostic criteria, accurate diagnosis can be difficult as specific symptoms can appear in more than one diagnostic category. Diagnostic criteria can overlap to the point where confident differentiation can be very difficult, particularly for the non-specialist family physicians who deliver the majority of psychiatric care. Recent work has demonstrated that Machine Learning (ML) has the capacity to rapidly discover biomarkers for diagnosis and prediction of treatment response at the individual patient level that could greatly improve, and accelerate, the diagnosis of mental illness (Khodayari-Rostamabad et. al., 2013).

Purpose: In this study we present a novel technique using cross-frequency coupling (CFC) features (Colic et. al., 2016) obtained from electroencephalogram (EEG) recordings in combination with ML methods to improve the diagnosis of MDD.

Methods: Clinical EEG data obtained from 220 subjects consisting of 110 with MDD and 110 normal healthy controls is processed to obtain CFC features that represent a profile of the mental state. A feature selection procedure known as minimum redundancy maximum relevance (mRMR) is applied to select the most critical features which are then used in the training of a random forest (RF) algorithm to diagnose MDD. Validation of sensitivity and specificity was performed using receiver operating characteristic (ROC) curves applied over a 5-fold cross-validation. The ROC area under the curve (AUC) was used to evaluate the performance.

Results: Our findings reveal an average AUC diagnosis score of 95% and sensitivity and specificity scores of 90.48% and 80.95%, respectively, as determined using a 5-fold cross-validation approach. Closer examination of the selected features showed that not all electrodes were necessary for making an accurate diagnosis, with 4 of 14 electrodes providing the majority of the selectivity.

Conclusions: The introduction of a simple, personalized, EEG biomarker-based method to accurately establish diagnosis from the beginning could have huge positive impact on the inefficiencies that characterize current psychiatric management.

References


Exploring Trauma-Based Services for Youth Victims of Sexual Abuse - A Qualitative Investigation among Treatment Providers in Ontario

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Background: Sexually victimized youth are at an increased risk for acute and chronic deleterious mental and physical health outcomes, cognitive dysfunction, and substance use. Treatment programs are available to mitigate mental health problems associated with youth trauma. However, limited clinical guidelines exist to address the specific needs of victimized male youth¹. While trauma services may be effective in addressing issues that these victimized youth face, it is unclear whether treatment providers in community settings adhere to a specific treatment model in practice when working with youth victims of varying gender identities, and if specific gender adaptations are being made to address negative sequelae.

Objectives: This qualitative study aims to: 1. understand service provider delivery and experiences with trauma-based services for youth victims of sexual abuse across Ontario, Canada; and 2. strategically identify gender modifications made to trauma-informed modalities that are recognized by providers to successfully address mental, social, emotional and behavioral difficulties among youth victims.

Methods: Individual and group face-to-face and phone audio-recorded, semi-structured interviews were conducted with 50 service providers across nine Ontario community-based organizations offering trauma services to youth victims of sexual abuse. Agencies included child advocacy centres, homeless shelters, and out-patient hospital settings. Interviews are being transcribed verbatim and interpretive content analyses are being conducted using NVivo 12 to analyze interview transcripts.

Results: Emerging themes include trauma-based treatment approaches among youth victims of sexual abuse, the role of youth gender identity in treatment services, treatment service engagement strategies, caregiver involvement, and recommendations to improve trauma-based treatment services for youth victims. Preliminary findings indicate service providers offer multi-modal, client-centered treatment services to meet the individual needs of youth victims of sexual abuse. Providers describe the importance of gender in the youth’s traumatic experiences noting however, that services may not require modifications based on youth gender identity.

Conclusions. This project takes critical first steps to understanding disseminated services across agencies in Ontario to better engage and serve youth of all gender identities suffering from sexual abuse victimization. Early results illustrate the need to consider an integrative trauma treatment framework for victimized youth with the long-term goal of improving mental and overall health trajectories.

Reference:

Modulation of Risk-Taking Using Transcranial Direct Current Stimulation (tDCS)

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Background: Transcranial direct current stimulation (tDCS) is a form of non-invasive neuromodulation in which a weak electrical current is delivered over the scalp [1]. It is used to modulate the excitability of neurons in target brain regions, with the aim of increasing or decreasing activity in those regions [1]. In healthy individuals, tDCS applied over the dorsolateral prefrontal cortex (DLPFC) can reduce risk-taking and impulsivity; however, it is unclear whether a similar effect can be achieved in psychiatric samples. Risk-taking has been shown to be elevated in individuals with substance use disorders [1, 2]—a characteristic that could impede an individual’s ability to moderate their substance use. If tDCS can be used to decrease risk-taking in regular substance users, it is possible that it could improve outcomes individuals seeking treatment for a substance use disorder. As an initial step in exploring the therapeutic potential of tDCS for substance use, the current study will examine the effects of tDCS on risk-taking in a community sample of regular cannabis users.

Purpose: The study has three primary aims: (1) to compare risk-taking in cannabis users and non-users; (2) to examine how tDCS over the DLPFC influences risk-taking in cannabis users and non-users; and (3) to explore associations between the effects of tDCS on risk-taking and factors related to personality, mental health, and substance use.

Methods: Sixty participants will be recruited from the community. The sample will be comprised of regular recreational cannabis users and non-substance users (thirty per group). All participants will be screened prior to the study to determine suitability and safety to undergo tDCS. The experiment consists of three phases: Baseline: Participants complete baseline measures of risk-taking (the Risk Task), impulsivity, mood, and craving for cannabis. TDCS: Participants are randomly assigned (double-blind) to receive either active tDCS (2mA stimulation over DLPFC) or sham (placebo) stimulation. During active/sham stimulation (fifteen minutes), the Risk Task is completed again. Post-tDCS: Further ratings of mood and cannabis craving are completed. Participants also complete self-report measures assessing personality, substance use, and mental health.

Planned Analysis: The effects of tDCS on risk-taking will be assessed using a mixed-factor analysis of variance (ANOVA), with the within-subject factor ‘time’ (baseline vs. stimulation) and the between-subject factor ‘stimulation type’ (active vs. sham). Correlational analyses will be conducted to explore relationships between individual characteristics (personality, substance use history, mental health), risk-taking, and responses to tDCS.


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Background: Over the past two decades, a growing body of evidence has supported the role of the cerebellum in modulating cognitive and affective processes via cerebro-cerebellar connectivity (e.g., Schmahmann, 2010). Structural cerebellar damage is frequently associated with motor symptoms (e.g., gait imbalance, limb ataxia, etc.), but is also commonly implicated in affective disturbances (i.e., emotional dysregulation, personality changes, blunted affect, or abnormal behaviour), and cognitive deficits in executive functions, visuospatial functions, working memory, verbal memory, linguistic processing, and attention (e.g., Tedesco, et al., 2011). Individuals with histories of severe alcohol use and/or lithium toxicity have higher risks of cerebellar degeneration and related clinical syndromes.

Purpose: This exploratory study seeks to further characterize the nature and severity of motor, cognitive, and affective symptoms in a small sample of psychiatric inpatients who have undergone neuropsychological evaluation, with (a) documented histories of alcohol use disorder and/or lithium toxicity; and (b) cerebellar atrophy confirmed on previous neuroimaging investigations.

Method: Data collection will be conducted through medical record reviews of a sub-sample of Clinical Neuropsychology Service (CNS) patients of St. Joseph’s Healthcare Hamilton who had previously consented to the use of their personal health information, including neuropsychological data, for CNS research purposes. Data analysis will include single-case triangulation of individual patient medical records, including past medical and psychiatric histories, previous neuroimaging investigations, neuropsychological clinical interviews, objective neuropsychological test results, and psychological screening measures. Medically-documented and self-reported symptoms will be analyzed qualitatively between cases through comparative content analysis. Between-subject comparisons of neuropsychological test results will be analyzed via regularized exploratory factor analysis.

Results: Results will yield comparisons and contrasts between cognitive and psychiatric symptomatology across participants.

Conclusions: Findings will be applied to the current literature on variations of cerebellar syndromes and their distinct etiologies. Potential implications for diagnostic taxonomy, neuropsychological evaluation, and treatment implementation will be considered.

References:

Latent Profile Analysis of Binge Drinking in Emerging Adults

Minhas, M.¹, Goodman, B.¹, De Jesus, J.¹, Fein, A.¹, Gillard, J.¹, Rahman, L.M.¹, Lachhman, R.B.¹, & MacKillop, J.¹,²

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Background: The rates of binge drinking in emerging adults (age 18-25) continue to be a problem that carries serious health and social consequences (Statistics Canada, 2017). Various dispositional characteristics, environmental and behavioral economic variables, as well as the presence of other substance use may act as risk factors for binge drinking/heavy alcohol use (Beseler et al., 2012; Chiauzzi et al., 2013). Many individuals ‘age out’ of binge drinking over time, but the predictors of aging out (and persistent alcohol misuse) have not been well characterized.

Purpose: The purpose was to examine the predictors of aging out of binge drinking among emerging adults (age 19-24) over a three-year period in a cohort of research participants in the Hamilton region. Specifically, we investigated whether latent subgroups of individuals are present in the baseline cohort.

Methods: A latent profile analysis was conducted on emerging adults (n = 728) to determine whether individuals respond differently to baseline measurements on a variety of standardized instruments that focus on mental health and addictions. The analysis includes the following validated measures of interest: Young Adult Alcohol Consequences Questionnaire (YAACQ), Marijuana Consequences Questionnaire (MACQ), Drug Use Disorder Identification Test (DUDIT), Fagerström Test for Nicotine Dependence (FTND), Generalized Anxiety Disorder (GAD), Patient Health Questionnaire (PHQ), Post-Traumatic Stress Disorders Checklist (PCL), and Attention Deficit Hyperactivity Disorder (ADHD).

Results: Latent profile analysis revealed a 3-class solution was the best fit. The largest class (Class 2; 72.3%) endorsed low levels of substance use and markers of psychopathology. The middle class (Class 3; 21.7%) endorsed moderate levels of substance use and high levels of psychopathology; the smallest class (Class 1; 6%) endorsed moderate levels of substance use with high rates of smoking and moderate levels of psychopathology. Both Class 1 and 3 endorsed significantly higher levels of substance use and markers of psychopathology than those in Class 2. Binge drinking patterns, cannabis use, and negative outcomes from drinking did not differ between Class 1 and 3. Lastly, Class 3 scored higher on measures of GAD, PHQ, PCL, and ADHD compared to Class 1.

Conclusion: These results suggest that meaningfully distinct subgroups exist within this cohort of binge drinkers, and may do so in the general population also. Subsequent analyses will provide insight on how different risk groups score on alcohol motivational measures. These characteristics may ultimately inform the understanding of longitudinal trajectories of binge drinking.

References:
Hazardous Cannabis Use Prior to Legalization of Recreational Cannabis in Canada: Results of the Population Assessment for Tomorrow’s Health Cannabis Follow-Up Study (PATH CANN)

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Background: The landscape of cannabis legalization is evolving in Canada. Worldwide, Canada is the second country to have legalized recreational cannabis at a national level. Given that legalization will increase accessibility, characterizing individuals endorsing problematic cannabis use prior to legalization is of interest.

Methods: An online survey collecting information on pre-legalization attitudes regarding cannabis, personal substance use, and cannabis- and domain-specific factors was sent out to individuals in the Population Assessment for Tomorrow’s Health (PATH) cohort (ages 18-65 at enrollment; Hamilton, ON) between September 16 and October 17, 2018. Prevalence of hazardous cannabis use (Cannabis Use Disorder Identification Test [CUDIT] total ≥8) and possible cannabis use disorder (CUD; CUDIT ≥12) were examined among cannabis users. Demographics, motives for use and psychopathology of those endorsing problematic cannabis use are presented.

Results: Overall, 1480 complete responses were obtained, of whom 709 (47.9%) reported cannabis use in the 6-months prior to legalization (non-medical, medical or both). Hazardous use (CUDIT total ≥8) was identified in 32.4% (n=230) of users, while 16.9% (n=120) screened positively for CUD (CUDIT ≥12). Those screening positively for CUD were more likely to be male (54.2%), single (43.3%), have lower income (<30k = 40.8%), and some college/university education (42.5%). A greater proportion of medical users screened positive for CUD (24.8%, n=68) than recreational users (12.0%, n=52) (p<0.000001). Anxiety (p<0.001) and depressive (p<0.001) symptoms were also higher among those screening positive for CUD. Psychiatric comorbidity and motives for use will be presented.

Conclusion: Prior to legalization of cannabis, almost a third of cannabis users revealed hazardous use behaviours with 16.9% screening positive for CUD. Similar rates have been reported in large cohorts in the United States [1].

References:
ABSTRACT REVIEWERS AND POSTER JUDGES

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