ACADEMIC RESEARCH DAY

Program & Abstract Book

June 27, 2019
8:00 am - 4:00 pm
DoubleTree by Hilton
300 King St, London ON
WELCOME TO THE DEPARTMENT OF PSYCHIATRY ACADEMIC RESEARCH DAY

On behalf of the Department of Psychiatry Research Committee, we would like to welcome you to the Annual Academic Research Day.

This learning event showcases research being conducted by Faculty, Clinicians, Researchers, Trainees and Students in the Department of Psychiatry at Western University, and other affiliated Departments and Research Institutes.

Thank you for attending this conference. Please do not forget to fill out the event evaluation, your feedback is greatly appreciated.

Sincerely,

Dr. Marnin J. Heisel
Director of Research
Department of Psychiatry
Schulich School of Medicine & Dentistry
Western University

This event is an Accredited Group Learning Activity (Section 1) as defined by the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada, and approved by Continuing Professional Development, Schulich School of Medicine & Dentistry, Western University. You may claim a maximum of 5.25 hours (credits are automatically calculated).

Each participant should claim only those hours of credit that he/she actually spent participating in the educational program.

This program has no commercial support.
CPD OBJECTIVES

At the end of the Academic Research Day, participants will be able to:

1. Identify and discuss innovative basic, clinical, and population-level mental health research being conducted by our researchers;
2. Demonstrate enhanced familiarity with research being conducted locally on the etiology, pathophysiology, prevention, intervention, service delivery, recovery and rehabilitation of mental disorders;
3. Reflect upon diverse methodological approaches to conducting innovative and impactful research in mental health care;
4. Consider the potential value inherent in academic, healthcare, community, advocacy, and policy partnerships in enhancing mental health care, research, and service delivery.

KEYNOTE LECTURE OBJECTIVES

By the end of the morning keynote lecture, participants will be able to:

1. Learn about Ontario’s psychiatrist human resources issues and the role of incentives to address access to care;
2. Understand the mortality gap associated with schizophrenia;
3. Learn about the quality of medical care for individuals with schizophrenia.

25% of this program is dedicated to participant interaction.
PROGRAM

8:00 a.m. **Registration and Poster Displays**
Second Floor Lobby | Breakfast provided

8:30 a.m. **Welcome from the Chair of the Department of Psychiatry**
Dr. Chandlee Dickey, Chair/Chief, Department of Psychiatry
Grand Ballroom | Second Floor

8:35 a.m. **Opening Remarks**
Dr. Marnin Heisel, Director of Research, Department of Psychiatry
Grand Ballroom | Second Floor

– ORAL PRESENTATIONS –

*Presentation abstracts begin on page 9*
(25% of these presentations are dedicated to participant interaction)

8:40 a.m. **Management of Physical Health for People with Schizophrenia in Primary Care: A Systematic Review**
*Joshua C. Wiener, Myanca D. Rodrigues & Kelly K. Anderson*

9:00 a.m. **Hippocampal Neuroanatomy in First Episode Psychosis Follows Receptor-specific Morphometric Patterning**
*Min Tae M. Park, Tushar Das, Ali Khan, Kara Dempster, M. Mallar Chakravarty, Jason P. Lerch, Michael Mackinley & Lena Palaniyappan*

9:20 a.m. **The Lived Experience of Community Treatment Orders (CTOs) from Three Perspectives: A Constant Comparative Analysis of the Results of Three Systematic Reviews of Published Qualitative Research**
*Deborah Corring*

9:40 a.m. **Process Evaluation of a Treatment Program for Mood and Anxiety Disorders Among Emerging Adults: Preentry Factors, Engagement, and Outcomes**
*Elizabeth Osuch, Evelyn Vingilis, Carolyn Summerhurst, Jazzmin Demy, Michael Wammes & Justin Arcaro*

10:00 a.m. **Break & Poster Display**
Second Floor Lobby | Snacks and Refreshments
10:30 a.m.  Keynote Address  
Grand Ballroom | Second Floor

**DR. PAUL KURDYAK**

**ACCESS AND QUALITY OF CARE IN ONTARIO’S MENTAL HEALTH SYSTEM**

Dr. Paul Kurdyak is Medical Director of Performance Improvement at the Centre for Addiction and Mental Health and Core Senior Scientist and Lead of the Mental Health and Addiction Program at the Institute for Clinical Evaluative Sciences.

He is an Associate Professor and Co-Director of the Adult and Health Systems Division in the Department of Psychiatry and Associate Professor affiliated with the Institute for Health Policy, Management and Evaluation and the Dalla Lana School of Public Health at the University of Toronto.

By the end of the morning keynote lecture, participants will be able to:

1. Learn about Ontario’s psychiatrist human resources issues and the role of incentives to address access to care;
2. Understand the mortality gap associated with schizophrenia;
3. Learn about the quality of medical care for individuals with schizophrenia

12:00 p.m.  Lunch & Poster Display  
Second Floor Lobby & Grand Ballroom | Posters will remain on display
1:00 p.m.  **Metabolic Monitoring and Intervention: How Are We Doing?**  
*Lauren Riggin, Cara Collins & Priya Subramanian*

1:20 p.m.  **Emotion Under- and Overmodulation Through the Lens of the Insula: Anterior and Posterior Insula Resting-state Connectivity and Machine Learning in PTSD and its Dissociative Subtype**  
*Sherain Harricharan, Andrew A. Nicholson, Janine Thome, Maria Densmore, Margaret C. McKinnon, Jean Théberge, Paul A. Frewen & Ruth A. Lanius*

1:40 p.m.  **Measuring Glutamate and Glutathione Dynamics in First-Episode Schizophrenia Using 7.0-Tesla Functional Magnetic Resonance Spectroscopy**  
*Peter Jeon, Michael MacKinley, Kara Dempster, Lena Palaniyappan & Jean Théberge*

2:00 p.m.  **Magnetic Resonance Spectroscopy, Functional Magnetic Resonance Imaging, and Computational Models Confirm the Link Between Predictive Coding and the Glutamate Hypothesis of Schizophrenia**  
*Robero Limongi & Lena Palaniyappan*

2:20 p.m.  **Break & Final Poster Display**  
Second Floor Lobby | Snacks and Refreshments

2:50 p.m.  **A Randomized, Placebo-Controlled Study of Tideglusib in the Treatment of Adolescents with Autism Spectrum Disorder**  
*Rob Nicolson, Teresa Ann Bennett, Kevin Thorpe & Evdokia Anagnostou*

3:10 p.m.  **Violence Against Women with Intellectual Disabilities in Canada: A Systematic Review**  
*Sarah O'Flanagan, Gabriel Boldt & Rob Nicolson*

3:30 p.m.  **Awards Presentation & Concluding Remarks**  
Dr. Marnin Heisel, Director of Research, Department of Psychiatry  
Grand Ballroom | Second Floor

3:45 p.m.  **Completion of Evaluation Forms**  
Grand Ballroom | Second Floor

4:00 p.m.  **End of Academic Research Day**
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Myanca Rodrigues, Joshua C. Wiener, Saverio Stranges, Bridget L. Ryan & Kelly K. Anderson

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Kaitlin G. Saxton, Kelly K. Anderson, David Barrett, Steve Lee, Anabel Quan-Hasse, Sarah Woloschuk & Matthew Meyer

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Management of Physical Health for People with Schizophrenia in Primary Care: A Systematic Review
Joshua C. Wiener, Myanca D. Rodrigues & Kelly K. Anderson

Objective: To determine how the physical health of people with schizophrenia is managed by family physicians in a primary care setting relative to those without schizophrenia. Methods: A comprehensive literature search was conducted in three electronic databases for articles published in English up to January 2019. Studies were included if: (1) study design was observational; (2) population was patients receiving primary care from family physicians; (3) exposure was schizophrenia; (4) comparison was no schizophrenia; and (5) outcome was management of physical health condition. Study details, subject characteristics, methods, and results were extracted from each study and summarized in a qualitative manner. Risk of bias (RoB) for each study was assessed using the CLARITY tool. Results: A total of 12 articles met inclusion criteria, including 9 retrospective cohort studies with low RoB and 3 case control studies with moderate RoB. Among patients with diabetes (5 studies), those with schizophrenia received lower rates of guideline-recommended monitoring. Among patients with cardiovascular disease (2 studies), those with schizophrenia received lower rates of guideline-recommended prescriptions (e.g., statins). Among patients at risk for cardiovascular disease (3 studies), those with schizophrenia received lower rates of guideline-recommended screening (e.g., serum cholesterol levels). Among patients at risk for cancer (2 studies), those with schizophrenia received lower rates of guideline-recommended screening (e.g., Papnicolaou test). Conclusions: Physical health management is an ongoing concern for individuals living with schizophrenia. These individuals often receive poorer care of their physical health by family physicians when compared to individuals without schizophrenia.

Hippocampal Neuroanatomy in First Episode Psychosis Follows Receptor-Specific Morphometric Patterning
Min Tae M. Park, Tushar Das, Ali Khan, Kara Dempster, M. Mallar Chakravarty, Jason P. Lerch, Michael Mackinley & Lena Palaniyappan

Study Objectives: The hippocampus is considered a putative marker in schizophrenia with early volume deficits in select subfields demonstrated in literature. Certain subregions are known to be more vulnerable to early atrophy due glutamate-driven mechanism of excitotoxicity, hypermetabolism, and then degeneration. Here, we explored whether hippocampal anomalies in first-episode psychosis (FEP) correlate with glutamate receptor density by leveraging structural neuroimaging, spectroscopy (MRS), and gene expression. Methods: 27 control, 41 FEP participants were included in this analysis. T1-weighted brain MRIs were used to analyze the hippocampus, along with MRS measures of glutamate and GSH. MRI-based atlases of the serotonin receptors were used to map distributions across the hippocampus. We used gene expression data from the Allen Human Brain Atlas to test for correlations between serotonin and glutamate receptor genes. Results: We found reduced hippocampal volumes in FEP, replicating with previous findings. Amongst the subfields, CA4-dentate showed greatest reductions. Gene expression analysis indicated 5-HTR1A and 5-HTR4 receptor subtypes as predictors of AMPA and NMDA expression, respectively. Volumetric differences in the subfields correlated most strongly with 5-HT1A (R=0.64, p=4.09E-03) and 5-HT4 (R=0.54, p=0.02) densities as expected. Individual measures of structure-receptor (5-HT4) alignment was correlated with glutamate (R=0.357, p=0.048) and GSH (R=0.432, p=0.015). Cluster analysis demonstrated 2 biotypes with differences in glutamate and varying glutamate-symptomatology correlations. Conclusions: We showed glutamate-driven hippocampal remodelling in FEP, and biotypes based on structure-receptor alignment with glutamate differentially predicting depression an positive symptom severity between biotypes. This provides structural evidence for the redox subtype of schizophrenia which has therapeutic and prognostic utility given novel treatment options.

The Lived Experience of Community Treatment Orders (CTOs) from Three Perspectives: A Constant Comparative Analysis of the Results of Three Systematic Reviews of Published Qualitative Research
Deborah Corring

Objective: The use of community treatment orders (CTOs) has been controversial and the subject of considerable research. Qualitative research provides a rich understanding of stakeholder experiences of a phenomenon. This paper reports on the constant comparative analysis of the themes noted in three systematic reviews of qualitative research focusing on stakeholder perspectives. Methods: The constant comparative method is a structured data gathering and analytic process. Each piece of data is compared and contrasted with other data to determine similarities and differences (DePoy & Gitlin, 1994). Results: Four themes were identified: 1. Benefits versus drawbacks of CTOs, 2. Medication adherence often the primary focus for CTOs, 3. Relationships that help and hinder and 4. Recommendations for improvement in the design, implementation and monitoring of CTOs. Themes 1 and 4 were present in all of the three groups. Theme 2 was present in two groups. Conclusions and Implications for Care and Policy Development: We discuss how an understanding of the similarities and differences in the way stakeholder groups view and experience CTOs can inform clinicians regarding practice issues and assist policy makers to improve aspects of the structure of CTO legislation and implementation.
Process Evaluation of a Treatment Program for Mood and Anxiety Disorders Among Emerging Adults: Preentry Factors, Engagement, and Outcomes

Elizabeth Osuch, Evelyn Vingilis, Carolyn Summerhurst, Jazzmin Demy, Michael Wammes & Justin Arcaro

Objective: Effective mental health services for emerging adults are needed. This work evaluated the logic model of one such program and assessed participation and medium-term outcomes. Methods: Baseline data were collected from 398 emerging adults attending an intake appointment at a mood and anxiety disorders treatment program in Canada for persons ages 16–25. Questionnaires about demographic characteristics, prior help seeking, symptoms, functional impairment, and health satisfaction were completed at baseline and at follow-up, approximately 2 to 10 months later (mean=6 months), depending on participants’ availability and willingness. Program satisfaction was also assessed. Preentry characteristics and disengagement were evaluated. Repeated-measures analyses were used to evaluate outcomes. Results: The program did not require physician referral; however, emerging adults who contacted the program had extensive prior help seeking: 73% had seen a family doctor and 32% had visited an emergency department. Among 370 individuals for whom full intake data were available, scores indicated moderate depression, moderate anxiety, and low satisfaction with quality of health. They reported either not functioning or underfunctioning for a mean of 4.3 days per week. Follow-up data indicated significant improvement on all measures, including clinically significant improvement in both depression and functioning. Patient satisfaction was high, and quality of health improved significantly. Conclusions: Results indicate that the model studied, which emphasizes early-stage intervention for mood and anxiety disorders among emerging adults, was associated with statistical and clinical improvement at intermediate follow-up. Outputs and medium-term outcomes of the model were satisfied.

Metabolic Monitoring and Intervention: How Are We Doing?

Lauren Riggin, Cara Collins & Priya Subramanian

Background: Patients with psychosis are at a significantly increased risk of cardiovascular disease related to metabolic syndrome, often due to antipsychotic use. Canadian Schizophrenia Guidelines recommend regular monitoring, and intervention with metformin for antipsychotic medication-related weight gain. Aim: To determine the proportion of patients within a first-episode psychosis program (PEPP) who are receiving the gold standard of metabolic monitoring and intervention. Methods: We carried out a preliminary review and analysis of 60 clinical records at PEPP. Demographic, treatment, and physical health information was collected. Descriptive statistics were used. Results: Mean age was 32 years, 98% were prescribed antipsychotics, 50% used a long-acting injectable, 42% were on polypharmacy. 57% had an annual weight, 60% blood pressure, 57% glucose monitoring and 72% lipid monitoring. 20% of patients gained weight and had an appropriate intervention (referral to endocrinology/dietitian). 27% of patients gained weight and did not have any intervention. Other patients either did not gain weight or did not have their weight recorded. The involvement of a case manager or an injection nurse improved rates of monitoring and intervention. Additional charts are being reviewed to determine consistency across clinicians and physicians in the program. Conclusions: There remains room for improvement in metabolic monitoring and intervention. Ideas proposed include having a kiosk in the outpatient wait room where patients may be weighed, and blood pressure taken. Additionally, using a reminder within the electronic medical records may be possible to ensure improved physical health monitoring. Recommend continuous quality improvement measures.


Sherain Harricharan, Andrew A. Nicholson, Janine Thome, Maria Densmore, Margaret C. McKinnon, Jean Théberge, Paul A. Frewen & Ruth A. Lanius

Background: Post-traumatic stress disorder (PTSD) is characterized by emotion dysregulation, giving rise to contrasting symptoms profiles of emotional under- and over-modulation that are evident at rest. Although the insula is critical to emotion processing, its association with these contrasting symptom profiles is yet to be fully delineated. Accordingly, we investigated resting-state insula subregion functional connectivity patterns in individuals with PTSD and its dissociative subtype (PTSD+DS) during rest. Methods: Using SPM12 and PRONTO software, we implemented a seed-based approach and multiclass gaussian process classification machine learning to evaluate patterns and the predictive validity of resting-state insula subregion functional connectivity among individuals with PTSD (n=84), with PTSD+DS (n=49) and healthy controls (n=51). Results: As compared to PTSD and PTSD+DS, controls showed increased right anterior and posterior insula connectivity with frontal lobe structures. Conversely, as compared to PTSD+DS and controls, PTSD showed increased bilateral posterior insula connectivity with subcortical structures, including the periaqueductal gray. Strikingly, as compared to PTSD and controls, PTSD+DS showed increased bilateral anterior and posterior insula connectivity with posterior cortices, including the left lingual gyrus and the left precuneus. Moreover, machine learning analyses were able to classify PTSD, PTSD+DS and controls using insula connectivity patterns with 80.2% balanced accuracy (p<0.01). Discussion: These findings point to the pivotal role of insula subregions in shaping the contrasting symptom profiles of emotion under- and overmodulation observed across individuals with PTSD and PTSD+DS. Machine learning also emerged as a useful tool in identifying insula resting-state functional connectivity patterns that discriminate between PTSD and PTSD+DS.
Measuring Glutamate and Glutathione Dynamics in First-Episode Schizophrenia Using 7.0-Tesla Functional Magnetic Resonance Spectroscopy
Peter Jeon, Michael MacKinley, Kara Dempster, Lena Palaniyappan & Jean Théberge

Study Objectives: Recent findings that glutamate N-methyl-D-Aspartate receptor antagonists are able to replicate the full range of schizophrenia symptoms show promise of glutamate and glutathione research explaining the mechanisms behind schizophrenia symptoms. This research proposes dynamic glutamate and glutathione measurements may be a more sensitive early marker in schizophrenia treatment outcome and aims to show abnormal metabolite dynamics in individuals with first-episode schizophrenia compared to healthy controls. Methods: Glutamate and glutathione dynamics were measured using a 7-Tesla proton functional magnetic resonance spectroscopy (fMRS) semi-LASER pulse sequence in the dorsal anterior cingulate cortex for 21 first-episode schizophrenia (FES) and 25 healthy control (HC) participants. The Stroop task performed during the fMRS data acquisition consisted of rest, active, and two recovery periods. Results: No significant changes were observed for both FES and HC during the Stroop activation for glutamate but a significant decrease in glutamate concentration was observed during the second recovery period of the fMRS paradigm for HC and during the first recovery period for FES. Glutathione concentrations showed significant increase only for HC. A strong increasing trend was observed for glutamate concentration upon Stroop activation for FES. Conclusions: Results from this work will help develop approaches to identify patients who will experience poor outcome and/or treatment resistance early in the course of illness so that alternative to standard treatment algorithms can be considered. Stratification of patients entering a drug trial is another foreseeable application.

Magnetic Resonance Spectroscopy, Functional Magnetic Resonance Imaging, and Computational Models Confirm the Link between Predictive Coding and the Glutamate Hypothesis of Schizophrenia
Roberto Limongi & Lena Palaniyappan

The predictive coding version of the dysconnection hypothesis, a Bayesian hypothesis about the pathophysiology of schizophrenia, states that cognitive symptoms of schizophrenia (e.g., poor executive functioning) result from aberrant bidirectional connections in the cortical hierarchy (e.g., between the anterior cingulate cortex, ACC, and the anterior insula, AI). At a computational (Bayesian) level, this corresponds to undue confidence that subjects afford to both sensory information and prior beliefs. At a synaptic level, the theory links aberrant connectivity to the long-standing glutamate hypothesis. We aimed to provide the first evidence of this link at computational, behavioral, and neural levels of analysis. In a sample of 20 first-episode-psychosis (FEP) subjects matched on age and gender with healthy controls (HC), we combined ultra-high field (7 Tesla) magnetic resonance spectroscopy measures of glutamate in the ACC, resting-state (fMRI) effective connectivity between the ACC and the AI, and a refined assessment of prior beliefs via computational modelling of Stroop-task performance. In the FEP subjects, we confirmed aberrant bidirectional ACC-Al connections, negative correlation between glutamate concentration and the connectivity strength of AI afferents, and negative correlation between this connectivity strength and the confidence that subjects afforded to prior beliefs while performing the Stroop task. Crucially, we found positive correlation between prior beliefs and glutamate concentration. Theoretically, the results support the dysconnection hypothesis. Clinically, they allow us to understand the neurocircuitry responsible for symptom formation and speak to the ACC-Al circuitry as a target for brain stimulation paradigms (e.g., tRMS and tDCS), leading to the remission of symptoms.

A Randomized, Placebo-Controlled Study of Tideglusib in the Treatment of Adolescents with Autism Spectrum Disorder
Rob Nicolson, Teresa Ann Bennett, Kevin Thorpe & Evdokia Anagnostou

Objectives: Autism Spectrum Disorder (ASD) is a common neurodevelopmental disorder that is characterized by social deficits and repetitive behaviors. No medications have been approved for the treatment of the core symptoms of ASD. Recent preclinical studies indicate that GSK3b is an enzyme that is overactive in key molecular pathways that are germane to neuronal functioning and neuronal plasticity in neurodevelopmental disorders. The purpose of this study was to assess the safety and efficacy of a GSK3b inhibitor in the treatment of adolescents with ASD. Methods: The study used a 3-center Canadian clinical trial network. 83 adolescents between the ages of 12 and 18 years were randomized in a 1:1 double-blinded manner to tideglusib or placebo across a 12-week treatment period. For individuals blindly randomized to tideglusib, the dose was commenced at 400 mg each morning and then uptitrated to 1000 mg each morning. Outcome measures included caregiver- and clinician-completed rating scales. Results: Tideglusib was generally safe and well tolerated, with adverse event rates that were generally similar between tideglusib and placebo. There were no treatment-associated serious adverse events. Most measures trended for greater improvement with tideglusib than placebo including measures of social withdrawal and repetitive behaviors. Statistically significant improvement was seen in overall adaptive functioning and social functioning. Conclusions: In this trial, tideglusib was well-tolerated. Treatment with tideglusib resulted in significant improvements in functioning, suggesting that further study of tideglusib in patients with autism is warranted.
Violence Against Women with Intellectual Disabilities in Canada: A Systematic Review
Sarah O’Flanagan, Gabriel Boldt & Rob Nicolson

Background: The government of Canada reports that 1 in 3 Canadian women will be the victims of sexual assault or Intimate Partner Violence (IPV) in their lifetime. Women with Intellectual Disabilities are reported to be the victims of sexual assault or IPV 7 to 8 times more than the typically developed population. Objectives: The objective of this review was to investigate prevalence rates of sexual assault and IPV against adult women with Intellectual Disabilities (ID) in Canada, and to examine reasons behind the increased rates of violence against this population. Methods: This systematic literature review was guided by the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA). A search of multiple electronic databases was conducted (e.g., PubMed, PsycINFO, MEDLINE, OVID, CINAHL, Gender Studies Database, COCHRANE, SCOPUS, Web of Science, etc.) and manual searches of journals (e.g., Canadian Journal of Disability Studies) were used to locate articles written in English and published in peer-reviewed journals up to the present. The search strategy included terms for violence, disability and Canada. Articles included met the following criteria: 1) Specific to Canada, 2) focused exclusively on, or included data specific to women with ID. Results: The search yielded 2,948 record hits and the full text of 26 articles were screened. After full text screening, 11 articles met all criteria. All excluded articles were either not specific to Canada, or focused only on physical disability. Conclusions and Implications: The findings from this systematic literature review indicate that women in Canada with ID are at a higher risk of being the victims of sexual assault or IPV than women in Canada with no disability, and then men with ID. The findings also indicate that women with ID face multiple barriers to reporting violence to authorities that women with no disability do not face. It also indicates that these women are the victims of violence more often than the other two groups previously mentioned because of the intersection of sexism and ableism.
Board #1
The Impact of Violent Gaming on Social Cognition as a Function of Trait Empathy

The debate over whether violent videogames affect social behaviour has been ongoing for decades while videogames become increasingly immersive, realistic, and accessible. While the literature on the affects of violent gaming on behaviour is extensive, the proposition that it increases the risk for aggressions remains controversial. Furthermore, there is a lack of research on how individual differences can affect susceptibility to these influences. Callous traits are one of the strongest predictors of antisocial behaviour and yet there is limited research on how differences in these traits interact with violent gaming to affect risk for antisocial behaviours. The present study will determine the impact of violent gaming on social cognition as a function of individual differences in trait empathy. Our hypothesis is that violent gaming will interact with callous traits to increase the risk of antisocial behaviour by disrupting aspects of social cognition that have been implicated in prosocial behaviours. Participants will complete a series of measures to assess psychopathy, autism, state aggression and anxiety, and videogame usage before being randomly assigned to play a violent, nonviolent, or prosocial videogame. Periodically, participants will engage in tests of social cognition, including measures of emotion recognition and emotional and cognitive empathy. We predict that violent gaming will selectively disrupt emotional empathy, and fear recognition. Preliminary data will be discussed. Findings from this study will assist in discussions of public policy surrounding videogame regulations and provide a novel line of research for work on disorders featuring empathy deficits including conduct disorder and psychopathy.

Board #2
Susceptibility to Violence: Exploring the Impact of Violent Media Exposure on Social Cognition as a Function of Coldhearted Traits
Mary B. Ritchie, Richard W.J. Neufeld, & Derek G.V. Mitchell

While studies associate violent media exposure with increased aggression, it remains fervently debated whether a causal influence exists due to the use of correlational analysis and poorly validated lab measures of aggression. Further, previous work has not adequately considered the possibility that individual differences in empathy may interact with exposure to determine susceptibility to the effects of violent media. To overcome these concerns, we are using an experimental approach to examine the impact of violent film exposure on indices of social cognition related to aggression and to determine whether these effects vary as a function of psychopathy, specifically coldhearted traits. We predict that acute exposure to violent film will selectively impact affective empathy and fear recognition, and that the impairment will be greatest among those high in coldheartedness. With data collection ongoing, a sample of 26 adults have been randomly assigned to watch violent (n = 15) or nonviolent films (n = 11) and complete a series of social cognition tasks as well as the PPI (Lilienfeld & Widows, 2005). Preliminary results indicate that violent film exposure reduced levels of empathic concern (d = 0.54) and impaired recognition of fear cues (d = 0.38) relative to nonviolent film exposure. As expected, the effect of violent media was largest among those with low trait empathy for both empathic concern (d = 1.91) and fear recognition (d = 0.69). Results will be discussed with reference to the potential for individual differences in susceptibility to the effects of violent media exposure.

Board #3
An Evaluation of Theory, Simulation, and Gentle Persuasive Approach (GPA) Training on First Year BScN Students’ Clinical Competency
Cathleen Fleury, Mary Ritchie, Derek Mitchell

Using electromyography (EMG), it has been shown that facial muscles imperceptibly mirror the facial expressions of others, a phenomenon referred to as spontaneous facial mimicry. Facial mimicry may be involved in empathy processing, and is impaired in several empathy deficit disorders. It was previously believed to follow the direct-matching principle, a theory postulating that spontaneous facial mimicry involves the observer mirroring their partner’s expression exactly and automatically. However, several recent studies have demonstrated that context and individual differences may be influencing factors of spontaneous facial mimicry. At the present, it is unclear to what extent mimicry can be modulated, and thus the exact mechanisms of the mimicry and empathy relationship are still unknown. In the present study, we propose to determine the relationship between facial mimicry and empathy through measuring the EMG response of participants with high and low trait sadism. The participants will observe dynamic facial expression videos to measure their mimicry response, as well as images of limbs in painful situations to assess the specificity of this effect. EMG recordings will be measured from the corrugator supercilii, zygomaticus major, medial frontalis, and depressor anguli oris. We hypothesize that mimicry does not follow the direct-matching principle, but will be altered by individual differences in trait sadism. This study will allow for a better understanding of the mechanisms of empathy, and may potentially distinguish a biomarker for disorders featuring empathic deficits.
Board #4
The Impact of Auditory vs. Visual Emotional Cues on Visual Processing
Emma K. Stewart & Derek G.V. Mitchell

Emotional information has privileged access to processing resources, causing it to have either a distracting or facilitating effect on task performance for reasons that are poorly understood. Emerging evidence suggests that the sensory modality of the task-irrelevant emotional stimuli is one factor that determines the nature of the effect. Some findings suggest that auditory stimuli facilitate visual task performance while visual stimuli interfere with it, but there are conflicting findings. We hypothesize that emotional content of a different sensory modality from the task improves task performance via a general alerting and arousing effect for all stimuli. In the case of emotional content of the same modality, this effect is outweighed by increased competition for representation, resulting in an interference effect. Participants will attempt to identify the location of a symbol, either on the left or right side of a computer screen, while a negative or neutral image or sound is presented. Their reaction times will be compared across conditions. We predict that task-irrelevant emotional content presented through the auditory modality will result in faster responses compared to auditory neutral content. Conversely, emotional content presented visually will lead to slower responses compared to visual neutral content. This research will lead to a better understanding of how the way emotional information is presented can determine its effect on task performance. It will also lay the groundwork for fMRI studies delineating the neurocognitive signatures of these effects.

Board #5
First Symptoms in Genetic Frontotemporal Dementia
Tamara P. Tavare, Derek G.V. Mitchell, Christen Shoesmith, Kristy Coleman, Brenda Coleman, Elizabeth Finger & The Genetic Frontotemporal Dementia Consortium

Frontotemporal Dementia (FTD) is a heterogeneous neurodegenerative disorder that features changes in behaviour and or language. Approximately 40% of FTD is strongly hereditary, and mutations in the C9orf72, GRN and MAPT genes are the most common cause of genetic FTD. As clinical trials of disease modifying treatments are underway it is essential to identify markers that can track and assess the effectiveness of treatments. Designing a primary outcome measure for symptomatic and pre-symptomatic individuals is challenging, as the symptoms can differ widely between patients. Current studies of the predominant initial symptoms are limited to examining small samples and have not compared genetic groups. The current study aims to evaluate and compare the initial symptoms across the three main FTD-causing gene mutations in the international GENFI cohort of patients and in genetically at-risk individuals. Caregivers of symptomatic mutation carriers reported up to three initial symptoms. Informants of genetically at-risk family members (N=588) completed the Cambridge Behavioural Inventory-Revised at baseline and at a one-year follow-up to assess symptom occurrence and severity. Preliminary results suggest different endorsement of initial symptoms across the FTD-causing mutations. Generalized linear mixed models are currently being conducted to assess differences in symptom endorsement between pre-symptomatic and non-mutation carriers.

Board #6
Meditating in Virtual Reality: Variability in Affective Response Correlates with Trauma History and Symptoms
Divya Mistry, Jenney Zhu, Paul Tremblay, Christine Wekerle, Ruth Lanius, Rakesh Jetley & Paul Frewen

Literature broadly supports the efficacy of meditation practices as interventions for persons experiencing symptoms of posttraumatic stress (PTS), although persons with PTS often experience PTS during meditation practice. Virtual reality (VR) technology has been used as a form of exposure therapy for PTS, although researchers have not yet evaluated the therapeutic application of VR to meditation practice for persons with PTS, hence the objective of the current study. In a within-group study of 80 undergraduates, participants engaged in a VR guided meditation and a non-VR guided meditation and reported their affective, satisfaction, and meditative experiences, respectively. It was found that participants generally reported experiencing more positive affect, less negative affect and PTS, greater satisfaction, and more desirable meditative experiences following guided meditations practiced in VR as compared to eyes-open and eyes-closed non-VR guided meditations. Further, whereas increased PTS were associated with increased distress during both VR and non-VR meditation, the correlation was significantly less for VR meditation. Further study of therapeutic applications of VR for meditation practice for PTS is warranted as a means of targeting distress experienced during traditional meditation or to be applied as a supplemental intervention to existing treatment approaches in clinical populations with PTS.

Board #7
Mindfulness Meditation (MM) and Posttraumatic Stress Disorder (PTSD) Study
Jenney Zhu, & Paul Frewen

Study objectives: Mindfulness meditation (MM) and Posttraumatic Stress Disorder (PTSD) are each associated with alterations in states of consciousness, while MM has been used in treatment for PTSD, with some benefits, although not without reports of distress. The present study evaluated focused attention and participant experiences during a MM exercise, relative to participant exposure to lifetime trauma, life stress experienced in the past year, and PTSD-related symptoms experienced over the past month. Methods: The present study utilized Meditation Breath Attention Scores (MBAS) to assess focused attention (FA) during a brief MM and self-report questionnaires assessing responses to MM among 151 participants recruited from a university introductory psychology course. All participants completed self-report questionnaires assessing trauma exposure, life stress, and trauma-related symptoms prior to the MM. Results: Participant history of stressful and traumatic life events and trauma- and stressor-related symptoms that were assessed prior to the MM were predictive of distress experienced during the MM that was assessed immediately afterward. Conclusions: We conclude that mindfulness meditation-based therapy for persons with trauma-related mental health problems should be trauma-informed. Future research should investigate further the association between brief mindfulness meditation practice and the experience of trauma-related dissociative experiences including depersonalization and derealization. Future studies should also evaluate specific PTSD populations, including veterans.
Board #8
Overactivation and Altered Functional Connectivity of the Periaqueductal Gray in PTSD
Braedon A. Terpou, Maria Densmore, Jean Théberge, Janine Thome, Paul Frewen & Ruth A. Lanius

Introduction: The innate alarm system (IAS) is a subcortical network of inter-connected midbrain, brainstem, and thalamic nuclei which mediate the detection of threat and evolutionarily-relevant stimuli in the environment. The IAS may function during subliminal exposure to stimuli and demonstrates overactivation in PTSD. The periaqueductal gray (PAG) is a midbrain structure innervated by the IAS and is thought to coordinate defensive responses in the wake of a perceived threat. Critically, the PAG is shown to demonstrate aberrant functional characteristics in persons with PTSD which may contribute to increased symptoms of hypervigilance and defensive posturing. Objective: The objective of the study was to investigate the activation and functional connectivity (FC) of the PAG during subliminal threat presentation in individuals with PTSD as compared to controls. Methods: We employed fMRI during a subliminal/supraliminal threat exposure paradigm while implementing an improved normalization standard for subcortical structures. Subtraction as well as psycho-physiological interaction analyses were conducted between the two groups. Results: The results revealed increased activation of the PAG in PTSD as well as increased PAG FC with the default-mode network as compared to controls during processing of trauma-related stimuli. Conclusion: We discuss these results in the context of the overactivation of subcortical threat detection circuitry in PTSD, as well as an increased functional connectivity between large-scale, cortical networks with midbrain, defensive-response networks. Here, coupling between these different levels of neural organization is thought to promote a bias, or reliance towards more evolutionarily-conserved survival strategies while engaging concurrently in self-referential processing.

Board #9
Sudarshan Kriya Yoga (SKY) Program in Post- Traumatic Stress Disorder (PTSD): A Feasibility Study
Kamini Vasudev, Emily Ionson, Samin Inam, Mark Speechley, Sumit Chaudhari, Sheena Ghodasara, Ronnie I. Newman & Akshya Vasudev

Objective: Sudarshan Kriya Yoga (SKY), a breath-based yoga intervention, has demonstrated safety and efficacy in PTSD patients subsequent to natural disaster or war, but has not been explored in civilians with PTSD from a wider range of trauma. We hypothesized that it would be feasible to conduct a clinical trial of SKY in PTSD resulting from a wide range of trauma. Method: Outcomes were feasibility measures including rates of enrollment and retention, adherence to study protocol; as well as changes in PTSD symptoms, other mood symptoms, and physiological measures. Male and female participants aged 18-75 were enrolled in feasibility trial. They attended a 6-day learning phase of SKY followed by 7 sessions over 11 weeks as an adjunct to their usual treatment. Results: Forty-seven participants were screened and 32 were enrolled over 9 months. Consistent with retention rates of other PTSD trials, 13 withdrew from the study prior to week 12. Twenty-one participants met intervention attendance requirements, completed 95% of planned study assessments and were included in final analyses. Participants experienced a clinically significant decrease in PTSD symptoms on the Post-traumatic stress disorder check list (PCL-S) scores at week 12 (-10.19 ± 13.45, p = .002; Cohen’s d = 0.76), which was sustained at week 24 (-13.90 ± 15.34, p < .001; Cohen’s d = 0.91). Conclusions: It is possible to conduct a clinical trial of SKY in a routine psychiatry clinic serving patients with PTSD due to a wide range of trauma. Future studies should include an RCT design.

Board #10
Sahaj Samadhi Meditation vs a Health Enhancement Program in Improving Late-Life Depression Severity and Executive Function: Study Protocol for a Two Site, Randomized-Controlled Trial
S. Benjamin Peckham, Emily Ionson, Marouane Nassim, Kevin Ojha, Lena Palaniyappan, Joe Gati, Jean Thébége, Andrea Lazosky, Mark Speechley, Imants Barušs, Soham Rej & Akshya Vasudev
(Presented by: Christine Watt)

Late-life depression (LLD) has a lifetime prevalence of 16-20%, costs the Canadian healthcare system $5 billion per year, and greatly impacts cognition (nearly doubling the risk of dementia). Treatment as usual (TAU), such as pharmacotherapy and psychotherapy, face issues in tolerability and accessibility, respectively; therefore, novel augmentations to TAU are needed to address this complex illness. Our recent pilot (n=83), randomized controlled trial (RCT) revealed that a 12-week course of Sahaj Samadhi Meditation (SSM) – a well-tolerated and easily adhered-to mind-body intervention – led to significantly greater LLD remission compared to TAU (40.0% vs 16.3%). Our poster would present the protocol for a new study currently underway. This study is comparing SSM to an active control group, the Health Enhancement Program (HEP), in a single-blinded (rater, clinicians, and care providers), two-site (London, ON, and Montreal, QC) RCT. Participants (n=192) will be recruited across both sites and randomized into either SSM or HEP, to be stratified by site and treatment-resistance. Participants will be assessed at 3 time points (Weeks 0, 12, and 26) and we will measure changes in 1) depression scores (Hamilton Rating Scale for Depression [HRSD-17]), 2) executive function battery scores, and 3) a variety of other physiological and psychological outcomes. Results could provide support for the use of SSM as an augmentation to TAU in the treatment of LLD, with potential benefits to executive function as well as physiological and mood outcomes.
Investigating Anxiety’s Short- and Long-Term Contributions to the Onset and Worsening of Suicide Ideation Among Community-Residing Older Adults

S. Benjamin Peckham, Alina Sotskova, Gordon Flett & Marnin J. Heisel

Suicide is a leading cause of death globally, with over 800,000 lives lost every year. One in every five deaths by suicide involves an older adult; a large and rapidly growing demographic with among the highest suicide rates worldwide. Enhanced later-life suicide risk detection and prevention strategies are thus needed. Mood disorders (e.g. depression) are commonly examined with regards to suicide ideation, despite the fact that anxiety considerably contributes to suicide risk, especially in the context of an existing mood disorder. In the present study, we investigated anxiety’s unique contribution to suicide ideation by analyzing data collected in a 2-year longitudinal study among 173 community-residing, cognitively intact older adults (aged 65 years of age and older). Cognitive function was assessed alongside risk (anxiety, depression, social hopelessness, suicide ideation, loneliness, and daily stressors) and resiliency factors (psychological well-being, satisfaction with life, meaning in life, and perceived social support) at 4 time points: baseline, 2-4 weeks, 6-12 months, and 1-2 years. Elevated anxiety scores were significantly associated with current and future suicide ideation and significantly distinguished those who endorsed a history of suicidal behaviour from those that did not. In a linear regression analysis predicting long-term (1-2 years post-baseline) suicide ideation, baseline anxiety scores significantly interacted with depression scores. Anxiety assessment may thus enhance clinical practice and the detection of imminent suicide risk among community-residing older adults.

The Development and Initial Validation of the Brief Adolescent Suicide Ideation Scale (BASIS)

Sarah Fisman, Julie Eichstedt, Kerry Collins, Devita Singh, Stephanie Rabenstein, Brenda Davidson, Samantha Chen, Gorden Flett, Elizabeth Osuch, Carlie Kramer, Heather Jacques, Rahel Eynan, Eva Neufeld & Marnin Heisel

Study objectives: The purpose of this study was to develop and initially validate a Brief Adolescent Suicide Ideation Scale (BASIS) to more accurately assess risk in conjunction with a clinical assessment and/or monitor ongoing clinical risk. Additionally, we hoped to create a Short Form (BASIS-SF) screener, to identify suicidality in youth with other mental health and somatic presentations.

Methods: Methodology for scale development and validation was multi-stage and iterative: A set of items from an existing validated measure of suicide ideation (Geriatric Suicide Ideation Scale-GSIS) was revised and adapted for youth. Clinical researchers, (nationally and internationally), experienced in scale development and child and youth mental health, provided initial input on the relevance and content of these items with consensus on 140 items. A focus group (n=10) of child and adolescent mental health providers was invited to provide input on the scope of the project and feedback on this initial set of BASIS items. A sample of nine stabilized adolescents, receiving mental health care provided think-out-loud feedback on the BASIS items. A sample of 100 adolescents, 12-19 years of age, who were actively receiving inpatient or outpatient mental healthcare, completed the BASIS as part of an assessment battery to assess the reliability and initial validity of this measure against other established risk and resilience measures. Results: Short screener (SF) and long assessment (LF) versions emerged. Both the final BASIS-SF and the BASIS-LF items demonstrated high internal consistency (α = .97). The items also demonstrated construct validity: BASIS total score strongly positively correlated with the ASQ-Suicidal Screening Questions total score, r (98) = .71, p < .001; highly correlated with measures of depression (BDI-II; r (98) = .77, p < .001) and hopelessness (CHS; r(98) = .81, p < .001); and moderately correlated with measures of anxiety (RCMAS; r(98) = .39, p < .001) and impulsivity (BIS; r(98) = .31, p < .01). The BASIS showed large negative correlations with measures of subjective well-being (SWLS, r (98) = -.68, p < .001) and reasons for living (RFA-A, r(98) = -.65, p < .001). There was a moderate, negative correlation with self-efficacy (GSE, r (98) = -.42, p < .001). Conclusions: Findings support the internal reliability and initial validity of the BASIS as a measure of suicide ideation in youth aged 12-19 years, including a 5 item BASIS-SF screener to screen for suicidality in youth presenting in a variety of venues with other mental health issues and/or somatic presentations and a 19 item BASIS-LF assessment to more accurately assess risk in conjunction with a clinical assessment and/or monitor ongoing clinical risk. An assessment manual with scoring methodology has been developed for users.

Training in Developmental Disabilities in Canadian Psychiatry Residency Programs

Sarah O’Flanagan, Sandi Hallock & Rob Nicolson

Objectives: Research indicates that rates of Psychiatric Disorders are very high in people with Developmental Disabilities (DD). However, research also suggests that teaching devoted to Developmental Disabilities in Psychiatry Residency Programs in Canada varies significantly in regards to both didactic teaching and supervised clinical rotations. Very little research has examined training in DD from the perspective of psychiatry residents. The purpose of this study is to determine how senior residents perceive their educational experience in regards to developmental disabilities.

Methods: A survey regarding training in developmental disabilities was distributed to senior residents at an exam review course in the final 6 months of their training. Results: 91.5% of respondents reported receiving some lectures or seminars on DD during their residency training. 46.8% of respondents reported that their program required them to complete a rotation in DD, though the length of the rotation, the stage in the lifespan specific to the rotation, and the year in which the rotation was completed varied significantly. 91.5% of respondents also reported that their level of comfort in assessing and treating psychiatric disorders in people with DD was very low.

Discussion/Conclusion: Senior residents report significantly different training experiences in DD, although overall experience with this population is low for most residents. This has an impact on levels of confidence in treating this population, and potentially the quality of care for people with developmental disabilities.
Board #14
False Diagnosis of Malingering of Psychosis
Zack Cernovsky, James D. Mendonça, Jack R. Ferrari, Gurpreet Sidhu, Robbie Campbell & Lamidi Kola Oyewum

Objectives: The Structured Inventory of Malingered Symptomatology (SIMS) is used widely to reject the insanity defence. The SIMS is used not only in the USA, Canada, and other English speaking countries, but also in its translations in German and Spanish speaking countries, and in Italy. The present study examines the content validity of the Psychosis subscale of the SIMS, i.e., items described by the test author and also by the test publisher as not indicative of genuine psychosis and marketed as a validated instrument for detection of malingering. Method: Three clinical psychologists and one clinical psychiatrist, each with more than 36 years of experience, including with severely ill psychotic patients, were evaluating all 15 items of the SIMS psychosis scale to evaluate if these items (a) represented possible symptoms of true psychosis, or (b) would only be endorsed by malingerers, never by truly ill patients. Results: All four clinicians agreed that any of the 15 items could, in fact, be endorsed by a truly psychotic patient. The items appear to have no reasonable potential of differentiating between malingerers and patients with psychosis. Six items refer to auditory hallucinations (voices), five to delusions, and the others to possible misperceptions or misinterpretation of reality, and thought disorder. Conclusions: The Psychosis subscale lacks in content validity: this is consistent with a failure of the SIMS, in a recent study by another team, to statistically differentiate between patients with schizophrenia and malingerers.

Board #15
The Risk of Multimorbidity After a First Episode of Psychosis – Systematic Review and Meta-Analysis
Myanca Rodrigues, Joshua C. Wiener, Saverio Stranges, Bridget L. Ryan & Kelly K. Anderson

Introduction: Multimorbidity, the co-existence of two or more co-occurring chronic health conditions, affects between 12% and 70% of Canadians aged 20 or older. People with psychotic disorders have a reduced life expectancy of up to 20 years compared to the general population, primarily due to differences in chronic health conditions. To date, there has been a paucity of research on the risk of multimorbidity for people with psychotic disorders. Objectives: We conducted a systematic review and meta-analysis of studies that assessed the risk of multimorbidity among patients with psychosis compared to people who do not have psychotic disorders. Methods: Studies were identified through electronic databases searches and manual searching of reference lists. Titles/abstracts of studies were screened by one review author. The full text of potentially eligible studies will be independently assessed for inclusion by two team members. Two review authors will independently extract data and appraise risk of bias. Random-effects meta-analyses will be used to pool incidence or prevalence of multimorbidity. Emerging Findings: Included studies found higher prevalence and effect estimates of multimorbidity among patients with psychosis, compared to people without psychosis. Studies use inconsistent definitions of multimorbidity, both in the number and types of chronic conditions. Some studies reported lower rates of cardiovascular disease among patients with psychosis in primary care, emphasizing its systematic under-recognition among people with psychosis. Conclusions: Studies examining multimorbidity should use similar definitions to better enable cross-study comparisons. Future research is needed on common clusters of chronic conditions among patients with psychotic disorders.

Board #16
Working Together: Using Social Network Analysis to Help Connect Mental Health and Addiction Services in London-Middlesex
Kaitlin G. Saxton, Kelly K. Anderson, David Barrett, Steve Lee, Anabel Quan-Hasse, Sarah Woloschuk & Matthew Meyer

Study Objectives: The first step in addressing system-level challenges amongst mental health, substance use, and addictions services is to describe the system. This has not yet been done in a comprehensive way in London-Middlesex and thus, the objective of this project is to establish a comprehensive inventory of services and create social network maps of services to identify relationships and gaps. Methods: An environmental scan was conducted to compile an inventory of mental health, substance use, and addictions services. An electronic survey was then distributed to each service to gather information regarding relationships with other services, with particular emphasis on the strength of relationships and experience working with these services. Based on survey data, an ego-network approach will be used to create a social network analysis of services and the relationships between them. Results: 370 services, including independent practitioners, were identified. At the time of this submission, 315 surveys have been completed. During May and June 2019, survey results will be cleaned and analysed to produce social network maps of the entire system, as well as maps unique to each service. Conclusions: The findings from this project are intended to identify where strengths and gaps exist in the system, as well as provide recommendations to better connect services to ultimately improve provider experience and client/patient care.
Board #17
Concordance Between Health Administrative Data and Structured Interview Diagnoses for Mood and Anxiety Disorders in Ontario, Canada
Jordan Edwards, Amardeep Thind, Saverio Stranges, Maria Chiu, & Kelly K. Anderson

Background: Mood and anxiety disorders contribute to three-quarters of all mental health service use in Canada. To date, there is limited research evaluating the concordance between diagnoses from structured interview and administrative data on mood and anxiety disorders in Canada. Combining both survey and health administrative data may provide a better estimate of the prevalence of mood and anxiety disorders in the population. Materials and Methods: All Ontario respondents to the 2012 CCHS-MH survey were linked to health administrative databases. Structured interview diagnoses were obtained from the 2012 CCHS-MH survey, and health administrative data diagnoses were obtained using a standardized algorithm. We used modified Poisson regression analyses to assess if socio-demographic factors, including migrant status, were associated with discordance between the two measures. Results: 20.9% of Ontarians had either a structured interview or health administrative diagnosis of a past-year mood or anxiety disorder (14.1% Interview, 11% Admin). There was high discordance between the measures, with only 20.3% overlap. Migrant status, age, employment, and income were associated with discordance between the measures. Discussion and Conclusions: As epidemiologists interested in population-based estimates, we are limited by the potential confines of health administrative data. Understanding these limitations is a key foundation for progress. While we identified similar estimates of mood and anxiety disorders from survey and administrative data, these measures are largely identifying different people. Our findings have important implications for our understanding of the epidemiology of these disorders. Previous estimates of the 12-month prevalence of mood and anxiety disorders in Ontario may be underestimating the true prevalence.

Board #18
The Association Between Age at Migration and the Risk of Psychotic Disorders: A Systematic Review and Meta-Analysis
Kelly K. Anderson & Jordan Edwards

Background: International migration is a well-established risk factor for the onset of psychotic disorders, such as schizophrenia. Migrant groups have been found to have a two- to four-fold greater risk of these conditions, relative to the host population. A subset of studies have examined the role of age at migration on the risk of developing psychosis. The objective of this study was to review the existing evidence on the association between age at migration and the risk of psychotic disorders. Methods: We searched MEDLINE, EMBASE, and PsychINFO databases and conducted forward and backward citation tracing. Articles were eligible for inclusion if they presented data on the association between age at migration and the risk of psychotic disorders among first-generation migrant groups in any country. Study screening, data extraction, and risk of bias assessment were done by two independent reviewers. We used random effects meta-analyses to quantify the association between age at migration and risk of psychotic disorders. Results: After screening nearly 6000 citations, eight studies met the inclusion criteria for our review. Preliminary findings suggest that people who migrate during childhood (<10 years) have an elevated risk of psychotic disorder. Findings from the meta-analyses will be available in time for the conference. Conclusions: Migrant status is one of few well-established risk factors for psychotic disorder, yet we have limited understanding of the underlying etiology. The findings from this review help further our understanding of the mechanisms behind this association, and identify high-risk groups to target with intervention.

Board #19
MINDS of London-Middlesex: Connecting Youth, Systems and Community Towards Mental Health
Arlene MacDougall, Romaisa Pervez & Eugenia Canas

Introduction: Mental and emotional well-being among Transition Age Youth (TAY), defined as youth ages 16-25, has deteriorated significantly in recent years. The current approach to the treatment of TAY mental health fails to address the underlying reasons for this change. The Mental Health INcubator for Disruptive Solutions (MINDS) of London-Middlesex (L-M) is a social innovation lab focused on developing, testing, implementing and evaluating disruptive solutions that promote the mental and emotional well-being of TAY in our community. Objectives: MINDS of L-M believes in the need to go beyond the individually-focused health care system to include family-, community-, and system-level approaches. All our activities — from youth and community engagement to collective sense-making and intervention-testing — enact participatory and systems-oriented thinking to find novel solutions that increase youths’ sense of meaning and purpose, quality relationships and resilience in the context of their communities. Approach: The MINDS team consists of an interdisciplinary group of experts from various sectors including, 15 hospital-, university- and community-based researchers and 5 youth who operate as advisors and co-researchers on all MINDS activities. This poster details how a social innovation lab model combines social, experimental and systemic elements in the processes of testing, prototyping and scaling interventions. As well, we describe findings emergent through our consultation and sense-making processes. Potential Impact: The use of a multi-disciplinary, multi-sectoral and participatory approach to improve the mental and emotional wellbeing of youth will have broad application in other areas of youth health. This approach can also serve to guide efforts towards the mental health and wellbeing of other age groups.
Board #20
Social Connectedness and Mental Well-Being in Transitional Aged Youth: A Comparison Between Canada and London-Middlesex Region
Romaisa Pervez, Arlene MacDougall & Saverio Stranges

Introduction: In Canada, 70% of mental health problems have their onset during childhood or adolescence. Furthermore, transitional aged youth (TAY) (ages 15-24) are more likely to experience mental illness and substance use disorders than any other age group. Objectives: Social connectedness has been explored as a factor to contribute to mental health. In this proposed study, the relationship between social connectedness and mental health among TAY living in Canada will be examined, along with an analysis on youth living in Ontario. Furthermore, the role of socio-demographic factors, geographic location, presence of psychiatric conditions, and self-perceived physical health will be examined to determine the impact the factors have on the association between social connectedness and mental health. Methods: This cross-sectional study will examine the 2016 Annual Canadian Community Health Survey. Logistic regressions will be conducted for the statistical analysis of the dataset, with a subgroup analysis for Ontario stratified by the potential effect modifier, biological sex. Results: In 2016, Canadian TAY rated their mental health to be excellent or very good. For every unit increase in the social provision scale, Canadian youth have a 11% (OR: 0.89, CI [0.87, 0.92], p<0.001) less odds to rate their self-perceived mental health as good or fair/poor and Ontario youth have a 12% (OR: 0.88, CI [0.85, 0.92], p<0.001) less odds. Conclusion: A better understanding of social connectedness and its association with mental health in TAY may allow for implementation of programs and policies that can address lack of social connectedness in Ontario and across the country.

Board #21
Aberrant Sensory Precision in First-Episode Psychosis: A 7-Tesla Resting-State fMRI and Stroop-Task Study
Roberto Limongi, Peter Jeon, Kara Dempster, Michael Mackinley, Tushar Das & Lena Palaniyappan

The dysconnection hypothesis states that subjects with psychotic disorders overly ascribe confidence to both sensory information and prior beliefs, leading to delusions and hallucinations. We predict that this aberrance should map onto strong forward and backward connections between the right inferior occipital gyrus (rIOG) and the right anterior insula (rAI). We tested this prediction in first-episode psychosis (FEP) using both cognitive and neurophysiological data. Twenty FEP and 20 healthy control (HC) subjects performed the Stroop task and were scanned during task-free state with ultra-high-field (7 Tesla) fMRI. We fit hierarchical drift-diffusion models (HDDM) to the reaction time and accuracy data and dynamic causal models (DCM) to the data. In the Stroop task, FEP performed less accurately than HC. The HDDM representing prior and sensory precision accounted for this difference, FEP showed larger prior precision and lower sensory precision than HC. The influence from the sensory area to the insula was negative in both groups during resting state. However, FEP showed less sensory attenuation than HC. Furthermore, in both groups the insular cortex positively influenced the sensory area. However, this effect was weaker in FEP than in HC. We demonstrated that low sensory attenuation in subjects with psychosis is associated with strong forward connections from sensory to higher cortical areas. Contrary to our expectation, we observed a reduction, rather than a compensatory increase in backward connectivity. We conclude that mapping a neurocomputational construct onto effective connectivity provides empirical support to disrupted hierarchical information processing in psychosis.

Board #22
Linguistic Determinants of Formal Thought Disorder in First Episode Psychosis
Michael Mackinley, Jenny Chan, Hannah Ke, Kara Dempster & Lena Palaniyappan

Background: In addition to positive and negative symptoms, patients with schizophrenia have notable disturbances in their ability to produce integrated, complex thoughts. Clinical quantification of thought disorder is a challenging process, with little mechanistic understanding of disorganization seen in early stages of psychosis. We studied the linguistic aspects of thought disorder – especially the dimension of disorganized thinking, in a sample of patients with untreated, first episode psychosis and healthy controls. Methods: Data were collected from a sample of antipsychotic-naive FEPs (n=39) and group matched HCs (n=23) as part of a longitudinal clinical study. Participants were recruited from the Prevention and Early Intervention Program for Psychoses in London, Ontario, Canada (PEPP-London). After completing a comprehensive assessment of clinical symptoms, participants were administered the Thought Language Index (TLI) in which one minute of speech was induced. Analyses of linguistic characteristics were conducted using Coh-Metrix, and patients and controls were compared on their use of linguistic connectives and clinically quantified levels of thought disorder. Results: Compared to HCs, FEPs showed higher overall use of connectives (F=6.7, p=0.012), indicating an increase in the overall linguistic complexity of FEP speech samples. Comparing connectives and thought disorder scores in FEPs showed that linguistic connective factors predicted disorganized thought, but not impoverishment indicating their specificity for ‘positive’ thought disorder. Discussion: Disorganization in psychosis, assessed on the basis of clinical judgement, is likely linked to the excessive or inappropriate use of linguistic connectives leading to an intuitive sense of incoherence to the observer. Future work will assess linguistic connectivity to neurobiological variables.
**Board #23**

**Neurovascular Uncoupling in Schizophrenia: A Bimodal Meta-Analysis of Brain Perfusion and Glucose Metabolism**

*Niron Sukumar, Priyadharshini Sabesan, Udunna Anazodo & Lena Palaniyappan*

The use of modern neuroimaging approaches has demonstrated resting-state regional cerebral blood flow (rCBF) to be tightly coupled to resting cerebral glucose metabolism (rCMRglu) in healthy brains, a phenomenon known as neurovascular coupling. In schizophrenia, several lines of evidence point towards aberrant neurovascular coupling, especially in the prefrontal regions. To investigate this, we used Signed Differential Mapping to undertake a voxel-based bimodal meta-analysis examining the relationship between rCBF and rCMRglu changes in schizophrenia, as measured by Arterial Spin Labeling (ASL) and 18Fluorodeoxyglucose Positron Emission Tomography (FDG-PET) respectively. We hypothesized that several brain regions would show combined abnormalities of perfusion and metabolism, while uncoupling of these two parameters will be observed in prefrontal regions. We used 19 studies comprised of data from 557 patients and 584 controls. We used conjunction and moderator analyses to evaluate areas with concordant and discordant abnormalities in rCBF and rCMRglu respectively. We also undertook meta-regression analyses to study the effect of age, gender, duration of illness, anti-psychotic dosage, and illness severity on the illness-related changes in rCBF and rCMRglu. Our results suggest that several key regions implicated in the pathophysiology of schizophrenia such as the frontoinsular cortex, dorsal ACC, putamen, and temporal pole show conjoint metabolic and perfusion abnormalities in patients. In contrast, discordance between metabolism and perfusion were seen in superior frontal gyrus and cerebellum, indicating that factors contributing to neurovascular uncoupling (e.g. inflammation, mitochondrial dysfunction, oxidative stress) are likely operates at these loci. Hybrid ASL-PET studies focusing on these regions could confirm our proposition.

**Board #24**

**An Effect-Size Meta-Analysis of White Matter Damage Related to Cannabis Use: Relevance to the Anatomy of Psychosis**

*Kishore Basu & Lena Palaniyappan*

Cannabis appears to have a distinct effect on cortical and subcortical white matter, possibly mediated by altered oligodendrocyte function. We undertook a coordinates-based effect size meta-analysis to locate tracts that are maximally affected by cannabis as well as the diagnosis of schizophrenia and studied the overlapping effects of these two factors. Seven regions showed significant reduction in the FA in the cannabis user group and only one region showed a significant increase in FA compared to the non-users. The corpus callosum, right pons, left inferior network (inferior longitudinal fasciculus), left cortico-spinal projections, right superior longitudinal fasciculus III, left anterior thalamic projections, and the left frontal orbito-polar tract all showed FA reduction in cannabis users. The right inferior fronto-occipital fasciculus showed higher FA in cannabis users. We demonstrate that the corpus callosum is the most vulnerable brain region to the effects of recreational cannabis use. In long term cannabis users, longitudinal tracking of the integrity of corpus callosum can provide valuable insights to the relationship with emergence of psychosis as well as cognitive impairment related to the use of cannabis.

**Board #25**

**Acute Conceptual Disorganization in Untreated First-Episode Psychosis: A 7T DTI Study of Cingulum Tract**

*Pan Yunzhi, Tushar Das, Ali Khan, Kara Dempster, Michael Mackinley & Lena Palaniyappan*

Background: The structural integrity of the anterior cingulum has been repeatedly observed to be abnormal in psychosis. Cingulum-tract carries fibers that connect medial prefrontal structures with precuneus, thus serving as the major pathway within the default mode network, critical for self-related processing. Persistent disorganization is largely considered to be a language-related dysfunction, though the neural basis of acute disorganization is yet unknown. We studied bilateral cingulum tract to identify if fractional anisotropy differed between patients with high vs. low levels of conceptual disorganization at first presentation, before initiating treatment. Methods: We used ultra-high resolution (7 Tesla) diffusion weighted imaging in 40 patients with first-episode psychosis and 25 controls, to investigate bilateral cingulum, defined according to JHU white matter atlas. Based on the conceptual disorganization scores of PANSS, we divided patients in to 2 groups, low (P2=1,2,3) and high (P2=4,5,6) groups. These two groups were not different in their severity of other positive and negative symptoms. TBSS was applied to compare fractional anisotropy (FA) values using FSL software and permutation (5000) correction was used within the selected tract. F-tests were used for group comparisons. We undertook post-hoc comparisons of radial diffusivity (reflecting myelin content), axial diffusivity (reflecting axonal integrity) and mode of anisotropy (reflecting fiber organization) for the regions showing significant FA abnormalities. Results: There was a significant reduction in FA (p=0.036) in a cluster in left cingulum, with high-P2 groups showing lower values than low-P2 and controls. Post hoc showed that high P2 group had lower AD values compared to low P2 group (P=0.021). Interestingly, we also noted that patients with low P2 group had significantly higher AD values than healthy controls, indicating resilience from disorganization conferred by increased cingulum integrity. We did not find any significant difference in RD and MO value among the 3 groups. These FA differences were not explained by the distribution of other symptom scores. Discussion: Our findings suggest that acute conceptual disorganization may relate to white matter damage of cingulum, the microstructural organization of which is critical for functional synchronization within the default mode network. We propose that the neural correlates of acute conceptual disorganization may differ from those of chronic, persistent formal thought disorder, in that language areas are less likely to be involved in acute disorganization.
Background: The clinical diagnosis of schizophrenia is suspected to include several distinct subgroups of patients, but reliable neurobiological boundaries to differentiate the subgroups remain elusive. These unknown subgroups increase the variance of biological measures within the clinically identified patient group, deflating the group-level estimates of causal factors and treatment effects. A major limitation in prior studies is the assumption that healthy controls form a relatively homogeneous group, which deviates biologically from the patient subgroups. As a result, cluster solutions have been generally sought only within patient samples, without pooling the patient and control data. In the current study, we assessed whether the regional values of cortical thickness estimated from structural MRI are sufficiently sensitive to identify subgroups of patients and healthy controls. Methods: We used high resolution (3 Tesla) imaging in 179 patients with schizophrenia and 77 healthy controls, to investigate possible subtypes of schizophrenia. K-means algorithm was applied to perform clustering analysis on cortical thickness data from 68 regions in Desikan-Killiany Atlas using Freesurfer, and gap statistics was used to find best cluster solution. General linear models were used to compare cortical thickness, cognitive performance and symptom severity among the identified clusters. Results: A 3-cluster solution provided the most optimal clustering, with the first cluster (C1) comprised almost entirely of patients, while the other 2 clusters (C2 and C3) including a substantial number of patients as well as control subjects. C1 was the most morphologically impoverished group with significantly thinning cortex in multiple brain regions but had no more symptom/cognitive burden than other subtypes. C2 was an intermediate group with significant thinning in selected brain regions, with higher burden of negative symptoms. C3 was the morphologically most intact subgroup with a cortical thickness profile like healthy controls, despite having more severe delusions. In addition, C1 also had higher duration of exposure to medication among the 3 patient groups, with longer illness duration. Discussion: We report 3 major findings. 1) 3 distinct morphological profiles are observed 2) A large number of patients with schizophrenia have the cortical morphological profiles of apparently normal healthy controls 3) cortical thickness profiles do not map well to cognitive and symptomatic profiles in schizophrenia. Interestingly, we observed a pattern of morphological preservation among patients with higher levels of delusion. We provide evidence for the presence of morphological subgroups of schizophrenia, the delineation of which may help stratifying patients for future prognostic studies.
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The Department of Psychiatry Research Committee Members:
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