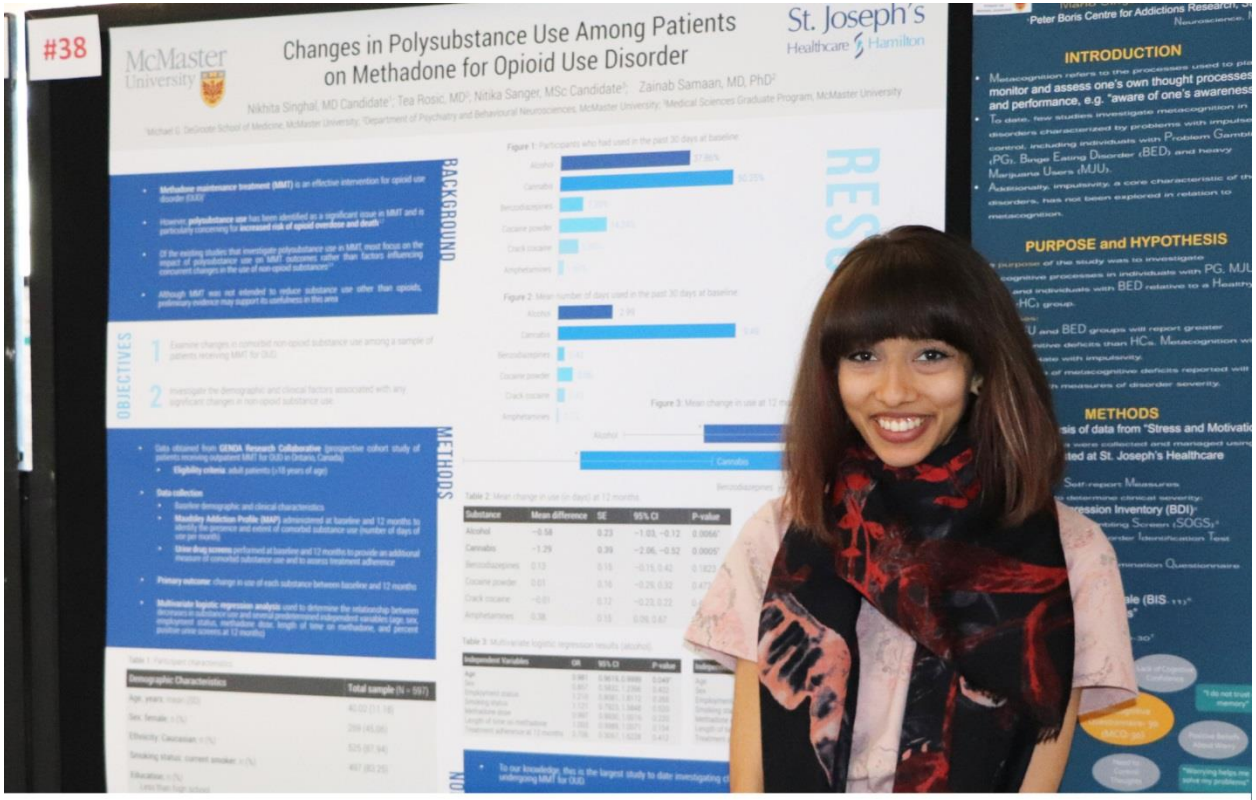
Research Day Top 3 Posters: Undergraduate – Clinical/Education



First place Research Day poster competition award winner:
Nikhita A. Singhal - Undergraduate (clinical/education) - supervisor: Zena Samaan

1st Place

Name: Nikhita Singhal

Supervisor: Dr. Zainab (Zena) Samaan

Education Program and Level: Undergraduate MD program, Year 2

About Nikhita:

As a second-year medical student, I have had the privilege of meeting patients, staff physicians, residents, and allied health professionals who have fueled my passion to pursue a career in psychiatry. Though I initially gravitated toward this specialty based on my interest in mental health and a fascination with the perceived dichotomy between mind and body, various experiences along my educational trajectory have intensified my desire to work in the field.

Being able to collaborate with peers in the Psychiatry Interest Group to encourage exposure to this specialty and plan educational events has been incredibly rewarding, as has exploring various facets of mental illness through research projects under Dr. Samaan's supervision. Working with excellent mentors has been invaluable, and I hope to continue challenging the stigma that shrouds this area of medicine as I strive for a career as a psychiatrist involved in both clinical practice and research!

Nikhita's Project:

Opioids, a class of analgesic medications commonly prescribed to treat moderate to severe chronic pain, are known to have a high potential for abuse and addiction. Examples include morphine, codeine, hydrocodone, oxycodone, hydromorphone, and fentanyl, among others. Unfortunately, an increase in the availability and use of opioids has led to an upsurge in the prevalence of opioid use disorder (OUD) in Canada and is causing an epidemic-like number of overdose deaths across the country.

OUD is characterized as a problematic pattern of opioid use leading to clinically significant impairment or distress; this may involve increased tolerance, repeated withdrawal symptoms, and sustained behavioural changes. The most commonly used intervention for patients with OUD is opioid substitution therapy (OST) with substances such as buprenorphine or methadone. In Canada, the most frequently used OST is methadone as a form of harm reduction through methadone maintenance treatment (MMT). MMT involves the supervised prescription of methadone, a long-acting synthetic opioid agonist, in order to alleviate withdrawal symptoms in dependent patients and reduce drug-seeking behaviour.

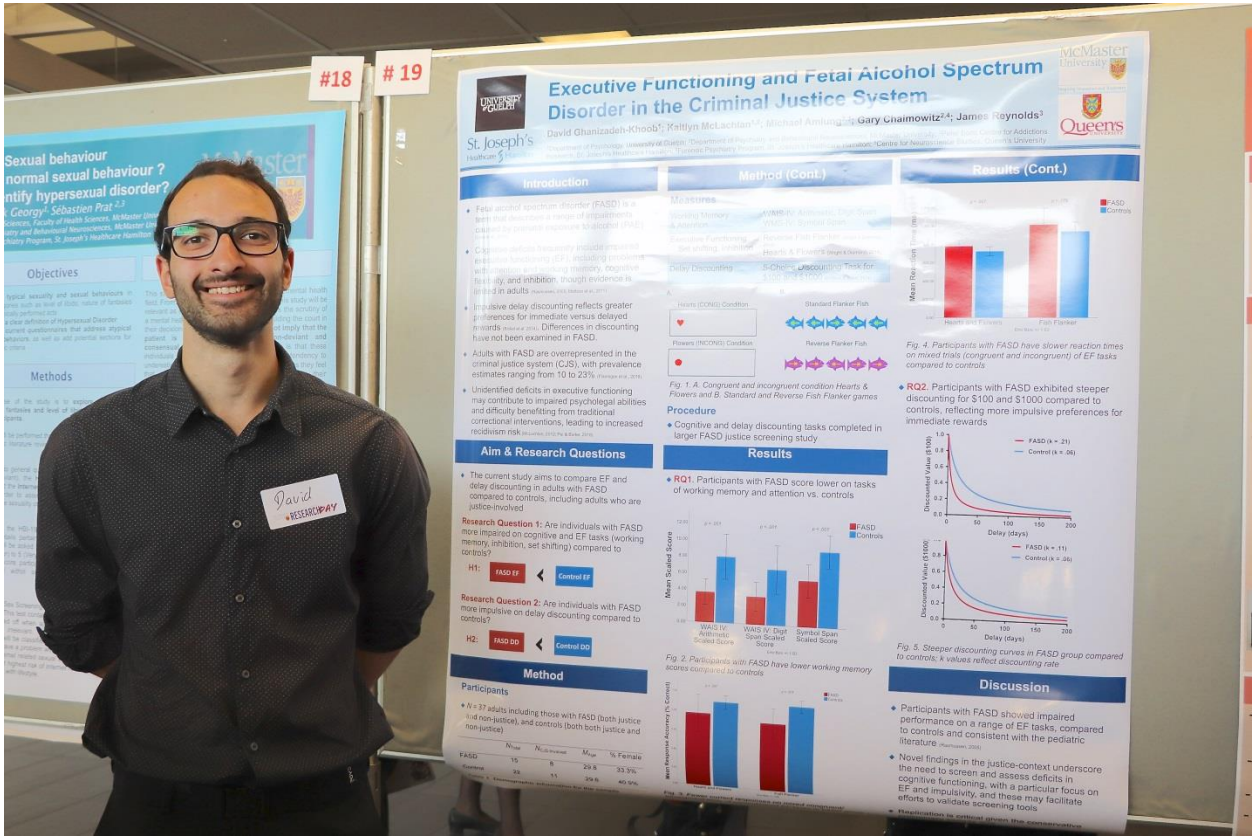
Although MMT is an effective treatment for OUD, there is a significant degree of inter-individual variability in treatment outcomes and side effects — including comorbid substance use. GENOA (Genetics of Opioid Addiction), a prospective research collaborative between the Canadian Addiction Treatment Centre and McMaster University's Population Genomics Program, was conceived to address these differences and the biological, psychological, and social factors which may influence them. With data from over 1500 patients in MMT programs, it seeks to investigate a variety of predictors of treatment outcomes.

In a previous study from the GENOA project, polysubstance use was reported to be a significant issue in MMT. Polysubstance use during MMT is particularly concerning for increased risk of opioid overdose and death. Of the current studies that investigate polysubstance use in MMT, most focus on the impact of polysubstance use on MMT outcomes — such as ongoing illicit opioid use — rather than factors influencing concurrent reductions in the use of non-opioid substances. Although methadone was not intended to reduce substance use other than opioids, preliminary evidence may support its usefulness in this area.

Recognizing the importance of identifying useful interventions in the current opioid crisis to minimize health risks, the goal of my project was to examine change in comorbid non-opioid substance use, and the demographic and clinical factors associated with these changes, among patients

on MMT for OUD. Using demographic and clinical data from 597 participants, we found a significant decrease in use of alcohol and cannabis between baseline and 12 months, with a significant association between increasing age and decreasing alcohol use.

Encouragingly, these findings suggest that patients on MMT for OUD may experience concomitant reductions in non-opioid substance use. This could have implications for both health and social outcomes. Determining other key factors associated with these reductions could have a significant impact on clinical thinking regarding polysubstance use in MMT and treatment outcomes, and we hope that future studies will aim to investigate this.



2nd Place

Name: David Ghanizadeh-Khoob

Supervisor: Dr. Kaitlyn McLachlan

Education Program and Level: Honours BA – Psychology at the University of Guelph (graduated)

About David:

I am a recent graduate from the University of Guelph with a Bachelor in Psychology. I am currently doing a bit of research with Dr. McLachlan as we continue to work on a pilot study to improve screening techniques for FASD within the Canadian criminal justice system. As well I work as a coach at Core Climbing Gym in Cambridge.

My career aspirations are still in a state of uncertainty as I try to navigate my way through the world. I am hoping to enter graduate studies in the near future, either in clinical psychology or physiotherapy. I am trying to pursue the larger goal of setting myself up with a career that allows me to help people improve their quality of life.

David's Project:

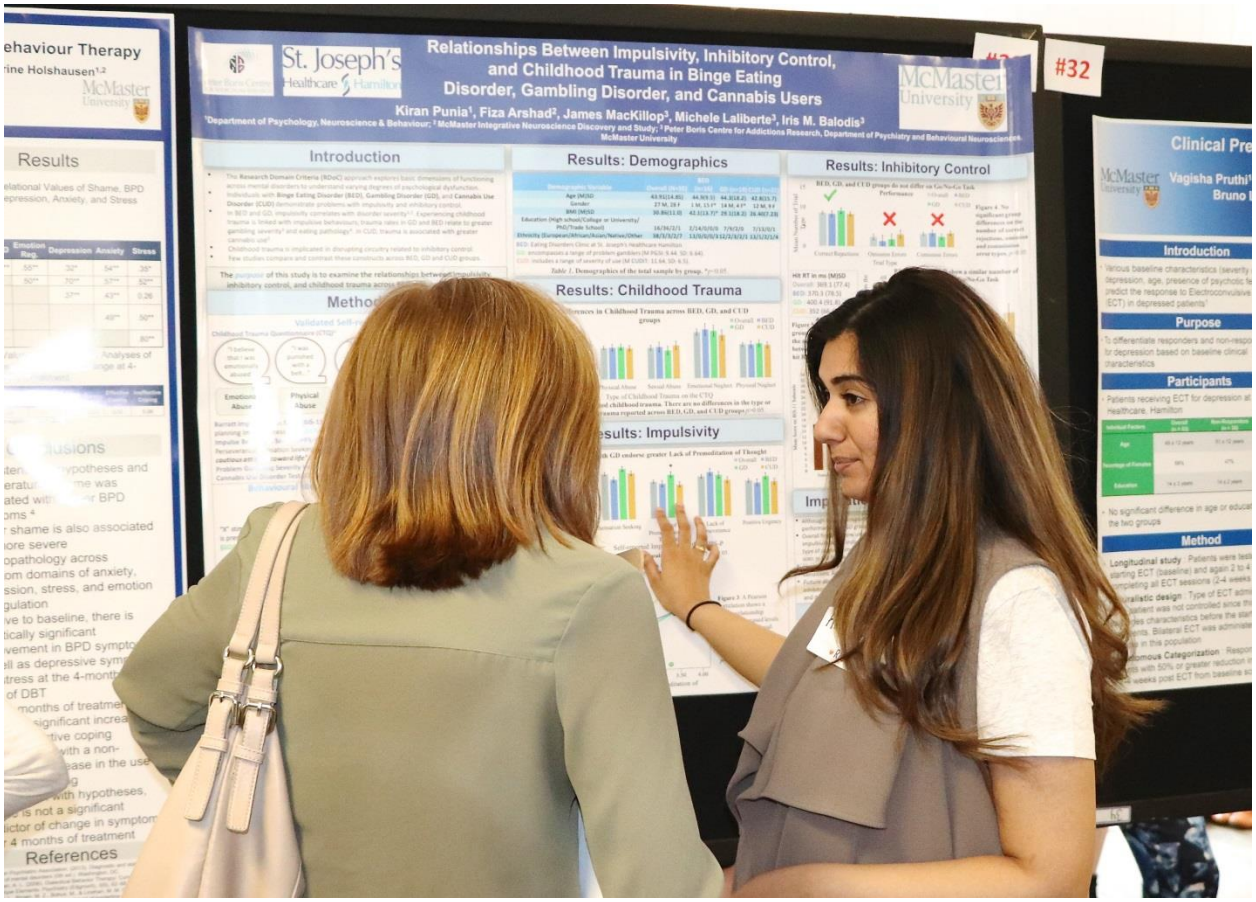
My poster lays out the data from a larger pilot study that is directed at improving screening techniques for Fetal Alcohol Spectrum Disorder (FASD) within the criminal justice system. FASD is a neurodevelopmental disorder that is caused by fetal exposure to alcohol and can lead to a variety of cognitive dysfunctions. The severity of these effects are broad and so any such developmental delay caused by fetal alcohol exposure is classified under the umbrella term, FASD.

My poster highlighted the differences in executive functioning capacity of individuals with a diagnosis of FASD compared to controls. We were the first to do such a comparison within the context of the Canadian criminal justice system and as such have provided evidence that assessment of executive functioning could prove to be a useful tool in the screening procedure.

The current study compared adults with FASD to controls, with roughly half of both groups having current involvement with the Canadian justice system. Participants completed self-report measures of working memory and delay discounting, as well as two computerized executive functioning tasks, the Hearts and Flows and Fish Flanker tasks. The computerized tasks featured alternating test blocks that required participants to press an arrow key that corresponded with the direction of a stimulus. Test blocks featured congruent and incongruent stimuli and so require participants to inhibit their gut reaction and respond according to the rules of each trial.

Results showed that participants with FASD performed worse on measures of working memory, had more errors and slower reaction times on the computerized executive function tasks, and tended to have steeper delay discounting curves. The delay discounting task requires participants to report whether they would prefer an amount of money in the near future, or a larger (double) the amount after a long waiting period. The task then narrows in until we have an understanding of the participant's threshold for hold long they would be willing to wait before taking the larger amount. Results therefore indicate that participants with FASD tended to choose the smaller, immediate, reward more readily than the control group.

This study was the first to assess executive functioning in adults with FASD within a criminal justice context. It was also the first to look at delay discounting in individuals with FASD. Results were in line with what was expected based on previous research and suggest an interesting pattern of cognition in FASD that could be used as a part of a screening procedure, or to validate future procedures. The sample size for this study was small (37) so further research will be needed to help validate these findings.



3rd Place

Name: Kiran Punia

Supervisor: Dr. Iris Balodis

Education Program and Level: Honours Psychology, Neuroscience, & Behaviour Level IV

About Kiran:

I have just completed my undergraduate degree, and am excited to be continuing as a graduate student in the McMaster Integrative Neuroscience Discovery & Study program. I have been an undergraduate learner at St. Joseph's West 5th site for the past two years, and have worked on studies relating to my poster as well as with the Eating Disorders Clinic. This summer, I am working at The Hospital for Sick Children as an electronic medical record support student as they transition to using the new EPIC system. In the future, I see myself actively being involved in a research intensive career in a hospital setting.

Kiran's Project:

My project examines relationships between impulsivity and inhibitory control—two closely related constructs with the experience of childhood trauma across three disorders: Binge Eating Disorder, Gambling Disorder, and Cannabis users. Previous research has shown that in comparison to healthy controls individuals in these groups experiences high levels of impulsivity, which can be defined as one's inability to think about the future consequences of one's actions, and poor inhibitory control, which is an individual's ability to inhibit pre-potent responses. The experience of childhood trauma across multiple populations has also shown to produce negative effects on one's inhibitory control system. Therefore, I was interested in comparing relationships between impulsivity, inhibitory control, and childhood trauma across these three groups. My major findings included relationships between specific types of trauma and impulsivity. Specifically, I found a type of cognitive impulsivity relates to the experience of a type of cognitive form of childhood trauma. Another interesting finding was that step wise increases in severity reports of childhood physical trauma was associated with increases in physical types of impulsivity. In terms of group differences, the Gambling Disorder group showed a trend for greater impulsivity overall. Although groups did not differ in reports of childhood trauma, the most commonly reported forms were emotional abuse and emotional neglect, and these groups reported greater overall levels of childhood trauma than community samples. Another key finding of the study was that individual's self-reports of impulsivity did not correlate with their behavioural measure of impulsivity, which was examined through a computer task.