



COVGEN

COVGEN ALLIANCE SUMMIT 2021

**ANCILLARY EVENT WITH THE INTERNATIONAL
SOCIETY FOR DEVELOPMENTAL PSYCHOBIOLOGY**

NOVEMBER 10TH, 2021 | 9:00AM- 12:00PM CST

2021 COVGEN Summit ISDP Preconference Workshop

*Emerging results from global studies of the
COVID generation*

November 10th, 2021

SLIDO Code: 733235

OPENING REMARKS

9:00am - Nicki Jariwala

SESSION 1: KEYNOTE SPEAKERS

9:10am - Catherine Lebel, Ph.D.

"Pregnancy during the COVID-19 Pandemic study and early infant outcomes"

9:35am - Livio Provenzi, Ph.D.

"The hidden pandemic: Psychobiological footprints of prenatal COVID-related stress"

SESSION 2: RESEARCH LIGHTNING ROUND

10:00am - Moriah Thomason, Ph.D.

10:10am - 1st Flash Talk Series

Presley Nichols, MD

"Impact of Maternal SARS-CoV-2 Status on Breastfeeding Practices in the COMBO Cohort"

Elizabeth K. Wood, Ph.D.

"COVID-19 Pandemic Exposure is Associated with Increased Gestational Weight Gain"

Michele Stites, Ed.D.

"It just doesn't work:

Parents' views about distance learning for young children with special needs"

Rachel Pride, MPH

"Neurodevelopmental differences in infants exposed to SARS-CoV-2 in utero: Preliminary findings from the ACEND Study"

Karen G. Martinez-Gonzalez, MD, M.Sc.

"Findings from the Puerto Rico COVGEN Hub"

Note: times are given in US Central Standard Time (CST)



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ROUNDTABLE: AIMS FOR THE FUTURE

10:45am - Moderated by Amy Elliott, Ph.D.

How will international alliance in response to a global event advance science, practice or policy about children and families?

Panelists: Stacy S. Drury, MD, Ph.D.; Dani Dumitriu, MD, Ph.D.; Mia Mclean, Ph.D.; William (Bill) Fifer, Ph.D.

SESSION 3: RESEARCH LIGHTNING ROUND

11:10am - 2nd Flash Talk Series

Elysia Larson, Sc.D., MPH

"Douglas provide needed emotional support during the perinatal period"

Renee Tristano, BSPH

"Investigating the effects of the COVID-19 pandemic on very low birthweight infants in southeast Louisiana NICUs"

Gerry Giesbrecht, Ph.D.

"Stress susceptibility and resilience in the Canadian Pregnancy During the COVID-19 Pandemic study"

Morgan Firestein, Ph.D.

"Maternal SARS CoV-2 infection during pregnancy and infant neurodevelopment at 8-11 months of age"

Tzipi Horowitz-Kraus, Ph.D.

"Learning in COVID-19 era: Is reading from a screen similar to reading from a printed paper? An electroencephalograph study"

11:45am - Infographic virtual wall presentation discussion

Virtual
Wall 1



Virtual
Wall 2



CLOSING REMARKS

Note: times are given in US Central Standard Time (CST)



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INFOGRAPHIC VIRTUAL WALL

Virtual Wall 1



Virtual Wall 2



Please scan the above codes to access both of our infographic walls. Once you are on Padlet, please engage with the infographics by liking and commenting. Feel free to ask questions and share your thoughts. Please make sure to leave your name and email with your comments so that the infographic presenter knows who it is coming from / can email you with a response if needed.



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ABSTRACT BOOKLET

Note: Abstract titles associated with the
conference flash talks have a COVGEN logo
next to them.



State Predictors of Internalizing Symptoms in New-and-Expectant Mothers during the COVID-19 Pandemic

Ryan Conaghan¹ and Jennifer C. Ablow¹

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The COVID-19 pandemic has been associated with widespread distress and a heightened incidence of both depression and anxiety. One group faced with an increased risk of distress and psychological deterioration during times of widespread precarity are new-and-expectant mothers. Psychological research has often investigated factors that may protect at-risk groups from the deleterious effects of widespread stressful events, such as natural disasters or disease outbreaks. Prior research has identified both emotional dysregulation and the inability to tolerate uncertain and ambiguous circumstances, or intolerance of uncertainty (IU), as two primary factors that may exacerbate anxiety and depressive symptoms when one is faced with stressful life situations. The current investigation explored how levels of these two individual traits impacted the self-reported symptomology of pregnant women and new mothers during the peak of the 2020 coronavirus outbreak. It was hypothesized that women who reported higher emotional dysregulation and higher IU would also report higher internalizing symptoms throughout the COVID-19 pandemic. We also sought to determine whether two means of coping, mindfulness and perceived social support, would moderate the observed association between women's emotional dysregulation or IU and changes in their levels of internalizing symptoms over time.

Data was acquired remotely through online surveys of new mothers and pregnant women. Preliminary results suggest that both baseline emotional dysregulation and intolerance of uncertainty are positively related to reported symptoms of depression and anxiety (r 's range from .55 to .77, p 's < .001) throughout the perinatal period. These findings suggest that the ability to emotionally regulate oneself and to tolerate uncertain situations likely play a crucial role in the reduction of anxiety and depressive symptoms in the face of the COVID-19 pandemic.

Further analysis will investigate the degree to which different coping styles enhance or hinder the effects of ER and UT on women's internalizing symptoms. Given that both forms of coping are teachable, evidence of their role in dampening the effects of stress on mental health may prove to be valuable tools for obstetric care.



Maternal SARS CoV-2 infection during pregnancy and infant neurodevelopment at 9 months

Morgan Firestein¹; Yunzhe Hu¹; Lauren Shuffrey¹; Jennifer Barbosa¹; Violet Hott¹; Catherine Bianco¹; Cynthia Rodriguez^{1,2}; Sabrina Hyman¹; Maha Hussain¹; Mary Bence¹; Melanie Tejada

Romero¹; Helen Tzul Lopez¹; Grace Smotrich¹; Mia Kyler¹; Kally O'Reily¹; William Fifer¹; Catherine Monk¹; and Dani Dumitriu¹

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Background: Neurodevelopment is strongly influenced by the intrauterine environment. Adverse maternal and neonatal outcomes have been identified as a result of the COVID-19 pandemic, but the neurodevelopmental effects of *in utero* exposure to maternal SARS-CoV-2 infection during pregnancy are currently unknown.

Methods: Sixty-three mother-infant dyads at Columbia University Irving Medical Center affiliated hospitals and who were enrolled in the COVID-19 Mother Baby Outcomes (COMBO) Study participated in a neurodevelopmental assessment between eight and ten months of age. We administered an adapted version of the Developmental Assessment of Young Children, 2nd Edition (DAYC-2) via Zoom. The adapted administration involves direct observation, caregiver interviewing, and prompted evaluation of child neurobehavior. Raw scores on each of the five domains (Cognitive, Gross Motor, Fine Motor, Receptive Language, Expressive Language) were converted to standard scores and percentile scores, which adjust for age at assessment.

Results: Student's t-tests revealed that the two study groups did not differ significantly on either the standard scores or percentile scores across any of the five DAYC-2 subdomains ($p>0.05$). After collapsing across exposed and unexposed infants, we determined the percent of with standard scores ≤ 1 standard deviation below the mean. Overall, 3% met this cutoff on the cognitive subdomain, 14% on the gross motor subdomain, 5% on the fine motor subdomain, 13% on the receptive language subdomain, and 22% on the expressive language subdomain.

Conclusion: In contrast to the widely-hypothesized neurodevelopmental effects of exposure to maternal SARS-CoV-2 infection, we report no significant association between exposure and infant neurodevelopment as measured by the DAYC-2 at 9-months of age. However, regardless of exposure status, a higher-than-expected proportion of infants born during the COVID-19 pandemic scored ≤ 1 standard deviation below the normative mean on all DAYC-2 subdomains, most strikingly on the gross motor, receptive language, and expressive language subdomains. These early findings suggest significantly higher public health impact for the generation born during the COVID-19 pandemic than previously anticipated.



Stress susceptibility and resilience in the Canadian Pregnancy During the COVID-19 Pandemic study

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Background: The COVID-19 pandemic presents a novel and unprecedented opportunity to study stress and resilience in humans. The current situation replicates important features of well-established paradigms to study stress susceptibility and resilience in animal models. Stress-susceptible individuals exhibit considerable changes in behavioral and neurobiological responses, whereas stress-resilient individuals exhibit small or temporary changes in behavior and neurobiology. We propose that objective exposure to pandemic hardships constitute a major prenatal stressor and that outcomes in children will differ as a function of maternal susceptibility or resilience.

Methods: The Pregnancy During the COVID-19 Pandemic (PdP) study comprises a prospective longitudinal cohort of pregnant Canadian individuals (at enrollment) with repeated follow-ups during pregnancy and postpartum. Participants reported demographic, socioeconomic, and obstetric characteristics, exposure to objective hardship because of the pandemic (eg, job loss, social isolation, and disrupted access to health care), and anxiety (PROMIS Anxiety) and depression (EPDS) symptoms. Pregnancy outcomes and child outcomes were self-reported. Based on exposure to objective hardship and anxiety and depression symptoms, participants were classified as stress-resilient or stress-susceptible. Resilient individuals had high objective hardship but were below the clinical cut off on both anxiety and depression. Susceptible individuals had high objective hardship exposure and were above the clinical cut off for anxiety or depression.

Results: Of 9948 pregnant individuals available for this analysis, 535 were stress resilient and 1009 stress susceptible. Resilient individuals were older, had higher parity, fewer preexisting health conditions, higher socioeconomic status, higher social support, less fear of COVID-19, less sleep disturbance, and longer sleep duration. Infants of resilient individuals had longer duration of gestation, but birthweight did not differ. At 3 months of age, infants of resilient individuals had greater total sleep time, longer duration of consolidated sleep at night and fewer episodes of persistent crying.

Conclusion: Stress resiliency is associated with improved pregnancy and infant outcomes.

Pregnancy, mental health and the COVID-19 pandemic- mental health symptoms over time and the moderation of state incidence of coronavirus cases and maternal emotional dysregulation

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Background: Cross-sectional data has shown that pregnant and postpartum women have increased mental health symptoms during the COVID-19 pandemic. Less research has focused on which subgroup of women may be most at risk for these putative increases in mental health symptoms. This study examined the longitudinal change in mental health symptoms in pregnant and postpartum women at the beginning of the pandemic, and investigated moderation by maternal emotional dysregulation and the incidence of coronavirus in the state of Utah.

Methods: Pregnant and postpartum women at the University of Utah were invited to join the COVID-19 and Perinatal Experiences (COPE) Study. Beginning on April 23, 2020, participants were sent a survey where they filled out demographics, pregnancy information and self assessments (Round 1). A second survey was sent out 3 months later in addition to a separate postnatal survey (Round 2). A mental health symptom score (MHSS) was defined using a subset of questions from the Brief Symptom Inventory. Emotion dysregulation was defined using the DERS short form. Coronavirus case counts per day were accessed from the state of Utah and a 7-day moving average calculated. Confounders, such as substance abuse, history of mental health disorders and coronavirus impact, were identified prior to analysis.

Results: 270 women filled out surveys for Round 1 and Round 2 between April 23rd, 2020 to July 15th, 2021. A total of 243 women were included for analysis. MHSS in the same participant decreased by 2 points $p < 0.001$ from Round 1 to Round 2. No statistically significant difference in the MHSS was seen between Round 1 participants over time. Emotion dysregulation moderated the association between MHSS and time; higher emotional dysregulation was associated with higher MHSS. Incidence of state COVID-19 cases did not moderate this association.

Conclusion: Using longitudinal prospective data of pregnant and postpartum women, mental health symptom scores in the same participant did improve over the course of the pandemic. This does not negate the importance of mental health care during the pandemic given the minimal improvement in scores and prior evidence showing an increase in mental health symptoms overall during the pandemic. Resiliency, adaptability and/or habituation may play a role in acute and chronic stressors in pregnant and postpartum women. Additional research in this area is important.

Prenatal care cancellations and effects on birth outcomes during the COVID-19 pandemic

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Intro: As COVID-19 spread across Canada, provincial governments mandated restrictions to many programs, including health care. These restrictions caused cancellations to prenatal care appointments, impacting individuals' medical support and experiences of pregnancy. Prior studies suggest that inadequate prenatal care and increased stress due to events such as natural disasters, terrorist attacks and pandemics are associated with worse delivery outcomes.

Methods: Data from 1,899 participants who completed the intake portion of the study between April 5 to June 1, 2020, and subsequently answered delivery information, were collected as part of the Canada-wide Pregnancy During the COVID-19 Pandemic study. Participants reported demographic, socioeconomic, obstetric characteristics, depressive symptoms (EPDS) and postpartum birth data including gestational weeks at delivery, mode of delivery (vaginal or c-section) and NICU (Neonatal Intensive Care Unit) admittance.

Results: 34% of pregnant individuals experienced prenatal care appointment cancellations and 30% of participants had clinically elevated symptoms of depression. Cancellations to prenatal care appointments increased the risk of negative birth outcomes, and this relationship was mediated by elevated symptoms of maternal depression. These individuals were more likely to have infants admitted to the NICU, have infants born by C-section and have infants born early. 33% of participants had a C-section, 10% of infants were admitted to the NICU and 12% of infants were born 37 weeks' gestation or earlier.

Conclusions: The results of this study illustrate that pandemic-associated changes to the access and delivery of prenatal care may lead to significant and irreversible effects on the physical development of the child, in addition to the psychological distress experienced by the mother. These findings should be taken into consideration in the development of future response plans to significant global events.

Key words: pregnancy, pandemic, delivery outcomes, maternal depression, infant health

The Direct and Interactive Effects of COVID-19-Related Stressors and Emotion Regulation Strategies on Individuals' Decisions and Motivations Regarding COVID-19 Vaccination

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Background: Compliance with public health measures may be best supported by motivations to protect others than the self (Luttrell & Petty, 2020). Effective emotion regulation strategies (e.g., cognitive reappraisal versus expressive suppression) have been associated with more adaptive functioning during the pandemic (Xu et al., 2020; Zhang et al., 2021), suggesting they may confer greater adherence to public health guidelines for stressed individuals. This study explored the direct and interactive effects of COVID-19-related stressors and emotion regulation strategies on individuals' decisions and motivations regarding COVID-19 vaccination.

Method: 491 undergraduate students participated in an online study for research credit.

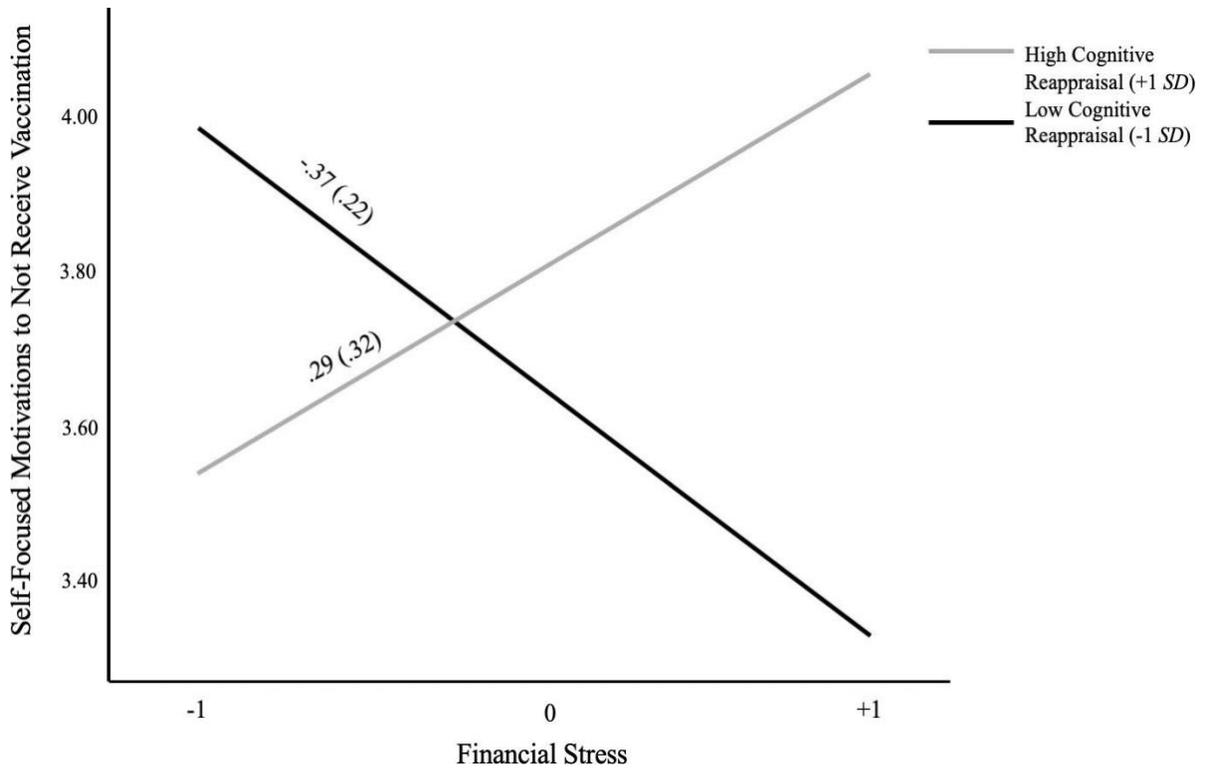
Participants reported on emotion regulation strategies (Gross & John, 2003); personal distress, financial stress and stressful life events related to the COVID-19 pandemic; and intent to get vaccinated and compliance with social distancing guidelines. Reasons for intending to get, versus not get, vaccinated were assessed through self-focused motivations (e.g., protect self from COVID-19; versus fear of vaccine symptoms) and other-oriented motivations (e.g., protect others in the community; versus disbelief in COVID-19 threat).

Results: Greater emotional distress predicted greater likelihood of intent to get vaccinated and adherence to social distancing measures. Those intending to get vaccinated reported more other-than self-focused motivations for their decision, whereas the opposite was true for those not intending to get vaccinated. For those intending to get vaccinated, less financial distress, greater emotional distress, and greater cognitive reappraisal predicted more of both self- and other-focused motivations. Conversely, for those not intending to get vaccinated, the interaction of cognitive reappraisal and financial distress predicted self-focused motivations. For those experiencing more financial stress, self-focused motivations for not getting vaccinated were endorsed most by individuals who reported greater use of cognitive reappraisal, and least by individuals who engaged in less cognitive reappraisal.

Conclusion: These preliminary findings suggest that efforts to increase other-oriented motivations could increase compliance with public health measures. As greater cognitive reappraisal supports motivations for both vaccination and social distancing, it may be one competency that is particularly important to promote in order to foster compliance.

Figure 1

Cognitive Reappraisal Moderates the Association Between Financial Stress and Self-Focused Motivations to Not Receive Vaccination





Learning in COVID-19 era: Is reading from a screen similar to reading from a printed paper? An electroencephalograph study

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Background: COVID-19 has forced social isolation and remote learning, leading to increased screen exposure in children and reported screen-exposure fatigue. The current study aimed to reveal the differences in reading from a screen versus a printed paper in 6-8- year-old using EEG.

Methods: Fifteen children read two different expository paragraphs presented on the screen and a printed paper, while EEG data was collected. Data were processed using a spectral analysis approach focusing on theta vs. beta waveforms ratio (representing attention allocation towards a given task) in language and cognitive control regions. The ratio between theta vs. beta waveforms was associated with cognitive measures, including attention abilities.

Results: Despite a similar comprehension level in the screen vs. printed paper-based conditions, higher theta vs. beta ratio was observed in the screen-based reading condition vs. the printed paper condition. A negative correlation between attention abilities and theta vs. beta ratio in both conditions was found.

Discussion: The current study results suggest that although reading comprehension might be similar when reading from a paper vs. a screen, the cognitive effort in processing written information generated from the screen is higher. Previous findings suggest that higher theta vs. beta waveforms ratios represent challenges in attention allocation towards a given task, as observed in the screen-based reading in the current study. The results may provide one possible explanation for the fatigue reported by children resulting from remote learning during COVID times. Possible neurobiological reasons for this challenge in attention allocation will be discussed.

Birth outcomes and infant behavior after prenatal alcohol and substance exposure

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Introduction: Alcohol and substance use during pregnancy have significant implications for both the pregnant individual and the child (Cook et al., 2017). During the COVID-19 pandemic, increased financial difficulties and symptoms of maternal depression were associated with more tobacco and cannabis use (Kar et al., 2021). This is concerning as prenatal exposure to tobacco and cannabis have been previously linked to poor birth outcomes (Janisse et al., 2014) and/or altered behavior in infants (Wiebe et al., 2015). We examined associations between alcohol/substance use and birth and infant behavior outcomes in the Pregnancy during the COVID-19 Pandemic (PdP) cohort.

Methods: 2954 pregnant individuals and their infants were included from the Canadian PdP study (Giesbrecht et al., 2021). Pregnant individuals (<35 weeks gestation) were asked about their current use of alcohol, cannabis, and tobacco at the intake survey. Postpartum surveys asked about birth outcomes (birthweight, birth length, gestational age at birth) and infant behavior at 6 months of age using the Infant Behavior Questionnaire-Revised (IBQ-R) very short form. Mothers reported on infant Orienting/Regulation, Surgency/Extraversion, and Negative Affectivity (Gartstein et al., 2003). Linear regression was used to study associations between amount of alcohol/substance use and infant outcomes controlling for potentially confounding maternal (e.g. education, income, ethnicity, other substances) and infant (e.g. gestational age at birth, sex) variables.

Results: 6.0% of pregnant individuals were using alcohol (3.1±3.9 drinks/week; 0.25–24), 3.2% were using cannabis (5.9±8.4 products/week; 1–42), and 2.5% were using tobacco (30.8±30.0 products/week; 1–175); 1.5% were co-using substances. Prenatal tobacco use was related to lower birthweight (p=0.009), shorter gestation (p=0.033), and worse infant Orienting/Regulation on the IBQ-R (p=0.007). No associations were observed with cannabis or alcohol use with birth outcomes or infant behavior.

Discussion: These results align well with previous work showing lower birthweight, preterm births, and altered infant self-regulation after prenatal tobacco exposure (Cook et al., 2017). Poor orienting and regulation at 6 months may have implications for future self-regulation of emotions, behavior, and attention too (Wiebe et al., 2015). Next steps involve investigating how longitudinal alcohol and substance use throughout pregnancy associate with infant outcomes.

References

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Educator Response to Children's Trauma in the Midst of the COVID-19 Pandemic

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In the past 18 months, school-age children have been exposed to new and heightened sources of trauma, including the COVID-19 pandemic, and ongoing U.S. racial strife. Forced virtual schooling increased the levels at which children were exposed to domestic violence at home (Phelps & Sperry, 2020). Police violence created trauma for families that was likely felt by children.

Given that educators are frontline workers for children experiencing trauma, it is critical that educators recognize the signs of trauma and that they are equipped with the tools necessary to assist children in need. This study collected survey data from 72 educators in five midwestern U.S. public school districts in order to analyze: 1) whether teachers can identify signs of trauma in their students, 2) whether teachers believe that there are sufficient resources for students experiencing trauma, and 3) whether teachers believe that individuals outside of the classroom should be responsible for improving resources for students experiencing trauma.

Qualitative results revealed that teachers know the signs of trauma in children. Six out of ten teachers were concerned and wanted to do more for their students. Four out of ten; however, stated that they could not do more to help students and stated that some entity outside the classroom, including school or district administrators, parents, or student support offices, was responsible for assisting students. There was a general agreement on the need for mental health support for students and families, but respondents were split on whether schools should intervene in the family. Although respondents did not reach consensus regarding solutions for providing additional trauma resources, some respondents suggested creating liaisons between schools and service providers for families and embedding mental health strategies into classroom curricula.

In upcoming months, the survey from this study will be disseminated more widely across more school districts. Results from this larger sample size will shed additional light on teachers' response to student trauma.

Postpartum Depression and Anxiety: Longitudinal Protective and Risk Factors from the Pregnancy During the Covid-19 Pandemic Cohort Study

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Background: The COVID-19 pandemic and resulting public health measures have led to elevated psychological distress among diverse and vulnerable populations, especially pregnant individuals. Given that pregnant individuals represent a demographic that is most affected by disasters and pregnancy entails life changes which require major adjustments, pregnancy and the post-partum period are important timepoints to explore. Elevated mental health concerns among post-partum mothers poses the potential for both short term and long-lasting impacts on the mother and fetus. As such, the present study utilizes data to determine the prevalence of depression and anxiety at 3-months postpartum during the COVID-19 pandemic and explores the potential risk and resilience factors of postpartum depression and anxiety during the pandemic.

Methods: The Pregnancy During the COVID-19 Pandemic (PdP) study is a longitudinal cohort study of mental health among pregnant Canadians. The primary outcomes were the Edinburgh Postpartum Depression Scale (EPDS) and the Patient-Reported Outcomes Measurement Information System (PROMIS) Anxiety-Adult Short Form at 3-months postpartum. Participants provided comprehensive demographic information and also completed the Social Support Effectiveness Questionnaire (SSEQ) and the Godin-Shepard Leisure-Time Exercise Questionnaire (GLTEQ), to determine participants' social support and physical activity.

Results: Participants were N=2630 mothers at 3-months postpartum. The mean depression raw score was 9.17 (SD: 5.23) and 25.1% (N=2630) of participants had clinically elevated depression symptoms. The mean anxiety T-score was 55.77 (SD: 8.40) and 34.1% (N=2624) of participants had clinically elevated anxiety symptoms. Preliminary results revealed a significant correlation between depression and anxiety symptoms and perceived social support ($r=-.23$, $p=.01$; $r=-.16$, $p=.01$, respectively). While significant, there was not a strong correlation between depression and anxiety symptoms and physical activity ($r=-.06$, $p=.01$; $r=-.05$, $p=.01$, respectively).

Conclusion: The psychological consequences of the COVID-19 pandemic on pregnant individuals point toward prevention targets to effectively address the needs of this population, including early detection measures and accessible resources for mothers. These preliminary results help create interventions to prevent both the short- and long-term effects of COVID-19 on pregnant individuals.



Doulas provide needed emotional support during the perinatal period

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Background: While prevention and treatment of perinatal mood disorders can be effective, interventions are often under-utilized. We investigated doulas' and birthing people's views on how doulas can fill this gap.

Methods: A stakeholder meeting with doulas, obstetricians, and a social worker informed a semi-structured interview guide that was used to conduct four focus group discussions (FGDs) with doulas (n=18) and three with perinatal people (n=9). We transcribed and coded the FGDs and conducted a thematic analysis using a modified grounded theory approach with Dedoose software.

Results: Participants reported that birthing people's need for social and emotional support increased during the COVID-19 pandemic. COVID-19 related restrictions at hospitals and birthing centers, as well as on travel and gatherings, meant that birthing people could not have their full support network present during labor, delivery, and postpartum. In some instances doulas filled that gap, for example supporting a birthing person while at the hospital when the client's partner had to care for their older child at home. Both doulas and birthing people agreed that there were two main ways doulas could support perinatal mental health: first, by acting as a bridge to mental health services and resources, and second, through providing direct emotional support by listening and validating the client's experiences and emotions. Because doulas are able to spend more time conversing with birthing people than obstetricians they may be more likely to identify social and emotional issues. Multiple birthing people spoke of feeling more comfortable disclosing their stress, anxiety, or depression to doulas than to their medical providers. However, many doulas stated they often lacked formal training in how to provide mental health support.

Conclusions: The COVID-19 pandemic and corresponding restrictions affected birthing people's usual support networks and exacerbated their stress. As social and emotional support can mitigate perinatal mood disorders, doula roles became even more essential. Doulas are a trusted, professional resource for social and emotional support. Providing doulas with additional skills to provide emotional support and identify when support from a mental health professional is needed has the potential to improve prevention and access to treatment for perinatal mood disorders.

Transitions: understanding and promoting healthy digital media use and well-being amongst adolescents in Perú

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Background: Despite the increase in digital media adoption among youth growing up in low and middle income countries, there is an insufficient understanding of adaptive and risky online practices within these settings. There is also a dearth of programs adapted to youth's contextualized needs that can promote adaptive use of technologies in these settings. The Transitions project aims to (1) understand how children and adolescents access, use and appropriate digital media in Perú, and (2) use this information to adapt a culturally and developmentally appropriate digital citizenship program.

Methods: The Transitions project is a researcher-practitioner collaboration between the Adolescent Research Collaborative (ARC) at UC Berkeley, Innova Schools in Latin America, and U.S.-based Common Sense Education. In this multiple wave project, we will work with up to 24, 500 children and adolescents aged 9 to 17 years, and 1,021 tutors within a large, low-cost school network that serves low to middle income urban families across Perú. To date, there are 5 waves of this project. Each wave includes surveys on digital media use, well-being and mental health. In each wave, participants also complete a short course on digital citizenship as part of the school advisory or homeroom period. Some waves have included qualitative data collection, gathered from focus groups and workshops.

Results and Conclusion: This study will shed light on how youth in Perú access, use and appropriate digital media. This knowledge will enhance our global conceptualization of the relationship between digital media and youth well-being by providing cultural specificity to our general understanding of the developmental science principles at play. In addition, this project will inform the ongoing development of evidence-based programs that can empower youth online.



Findings from the Puerto Rico COVGEN Hub

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Background: The Puerto Rico COVGEN hub aims to study the role of disaster and pandemic related prenatal maternal stress experienced by pregnant women and evaluate their relationship with child temperament. We have already established a cohort of women who were pregnant during Hurricane María (HELiOS) and are now recruiting a cohort of women who have been pregnant during the COVID-19 pandemic (COPE).

Methods: We will present data of 113 mother-child dyads from the ongoing Project HELiOS (Hurricane Exposures and Long-term Infant Outcomes Study). Mothers enrolled in the study were living in PR during Hurricane Maria, and their children (12-36 months old) were born between September 20, 2017-September 21, 2018. Hurricane exposures were evaluated using the Exposure to Disaster Scale (EDS). Maternal depressive symptoms were measured using the Patient Health Questionnaire-9 (PHQ- 9), Post-Traumatic Stress Disorder (PTSD) symptoms using the PTSD Checklist for DSM-5 (PCL5), and perceived stress using the Perceived Stress Scale-10 (PSS-10). Infant temperament was evaluated with the Rothbart Childhood Behavior Questionnaires [Infant (IBQ) or Early Childhood (ECBQ)]. Associations between child temperament and maternal mental health were assessed using Spearman's correlation coefficients. For our COPE study, we are using similar instruments (GAD-7 instead of PTSD measure) in addition to the COPE questionnaire. We have already recruited 71 mothers for the COPE study.

Results: In the HELiOS cohort, 19.45% of mothers exhibited symptoms of depression (moderate, moderate-to-severe, or severe), 38% had high levels of perceived stress, and 26.55% had PTSD. In the COPE cohort, 12.67% showed symptoms of depression while 18.31% presented generalized anxiety symptoms. In the HELiOS cohort, mother's depression symptoms were negatively correlated with child's effortful control ($r = -0.198$, $p = 0.038$). Perceived stress scores were also negatively correlated with surgency/positive affect ($r = -0.225$, $p = 0.016$) and effortful control ($r = -0.334$, $p < 0.000$).

Conclusions: Preliminary data shows that the hurricane related stress had more negative effects on maternal mental health than the COVID-19 pandemic. It will be relevant to evaluate if the same relationship between maternal mental health and infant temperament is seen in the COPE cohort.

Impact of COVID-19 pandemic in perinatal mental health: international study Riseup-PPD-COVID

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COVID-19 is a new pandemic with potential negative consequences for women in the perinatal period. In order to reduce the risk of transmission of the novel coronavirus, significant changes in healthcare practices were implemented worldwide that may have affected this population. For example, adjustments to prenatal and postpartum appointments, restrictions to the partner’s presence during childbirth and postpartum visitation and, in some cases, face-to-face consultations were replaced by teleconsultations. Additionally, the confinement and social distancing measures implemented have also been particularly challenging for women during this period.

Thus, members of the “Research Innovation and Sustainable Pan-European Network in Peripartum Depression Disorder – Riseup-PPD” (Cost Action 18138), funded by the H2020 of the European Union, established the “Perinatal Mental Health and COVID-19 Pandemic” Task Force. Currently, the research team is conducting an international prospective cohort study, carried out in 14 countries aiming at filling the gaps in research on the impact of the COVID-19 pandemic on perinatal mental health. In this symposium we will present: 1) a detailed description of the study protocol; 2) an assessment of the mismatch between perinatal expectations and experiences of women and its impact on mental health symptomatology; 3) an evaluation of the psychological impact of the pandemic and its related risk factors, and 4) a comparison of clinically significant depressive symptoms with a pre-pandemic cohort in the Portuguese women. Results will be discussed in light of their implications for the implementation of large-scale interventions and provide empirical evidence for policymakers on future decisions in similar scenarios.



Impact of Maternal SARS-CoV-2 Status on Breastfeeding Practices in the COMBO Cohort

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Background: Direct breastfeeding has well-established benefits including bonding, passive immunity, and infant growth and metabolism. The COVID-19 pandemic disrupted hospital-based maternity and newborn care models as well as post-discharge professional and peer breastfeeding support. We sought to better understand the impact of the pandemic on breastfeeding practices in our population in Northern Manhattan which was one of the first and hardest-hit hot spots of the pandemic in the United States.

Methods: The study population is a part of Columbia University's COVID-19 Mother Baby Outcomes (COMBO) initiative. Mother-infant dyads were recruited to COMBO as three groups: pre- pandemic February deliveries, SARS-CoV-2 unexposed, and SARS-CoV-2 exposed. SARS-CoV-2 exposure was defined as a positive PCR or serology during pregnancy. Breastfeeding practice surveys were completed at approximately one-, two-, four-, and six-months post-partum. Logistic regression was used to predict the outcome of not exclusively or mostly breastfeeding at the 4-month time point with variables of maternal SARS-CoV-2 status, maternal ethnicity, and the interaction between infection status and ethnicity.

Results: 557 dyads responded to the survey: 69 pre-pandemic controls, 267 SARS-CoV-2 unexposed, and 221 SARS-CoV-2 exposed. These groups differed by maternal ethnicity (56% Latinx in the pre- pandemic group vs. 42% Latinx in the unexposed group vs. 73% Latinx in the exposed group, $p < 0.001$) and medical coverage (49% Medicaid in the pre-pandemic group vs. 39% Medicaid in the unexposed group vs. 57% Medicaid in the exposed group, $p < 0.001$). More unexposed dyads reported a feeding type of exclusively or mostly breastmilk at the one-, two-, and four- month time points. In the logistic regression model, the interaction between infection status and ethnicity was the significant predictor of less breastfeeding (Table 1).

Conclusion: In this longitudinal cohort study of feeding practices during the COVID-19 pandemic in New York City, women who were exposed to SARS-CoV-2 during pregnancy breastfed less than their unexposed peers. Mothers of Latinx ethnicity were less likely to breastfeed regardless of exposure. This, combined with increased SARS-CoV-2 exposure in the Latinx group, resulted in a "two-hit" decrease in breastfeeding and an additional example of health inequities brought to light and exacerbated by the pandemic.

Characteristic	OR ¹	95% CI ¹	p-value
Maternal SARS-CoV-2 Status			
Negative	—	—	
Positive	0.76	0.33, 1.68	0.5
Maternal Ethnicity			
Not Latinx	—	—	
Latinx	1.55	0.85, 2.86	0.2
Maternal SARS-CoV-2 Status * Maternal Ethnicity			
Positive * Latinx	2.98	1.06, 8.65	0.041

¹ OR = Odds Ratio, CI = Confidence Interval

Table 1. Binomial logistic regression model predicting the outcome of not mostly or exclusively breastfeeding at the 4-month study time point using predictor variables of maternal SARS-CoV-2 Status, maternal ethnicity and the interaction between these two variables.

Maternal depression predicts motor abilities in newborns born during the COVID-19 pandemic

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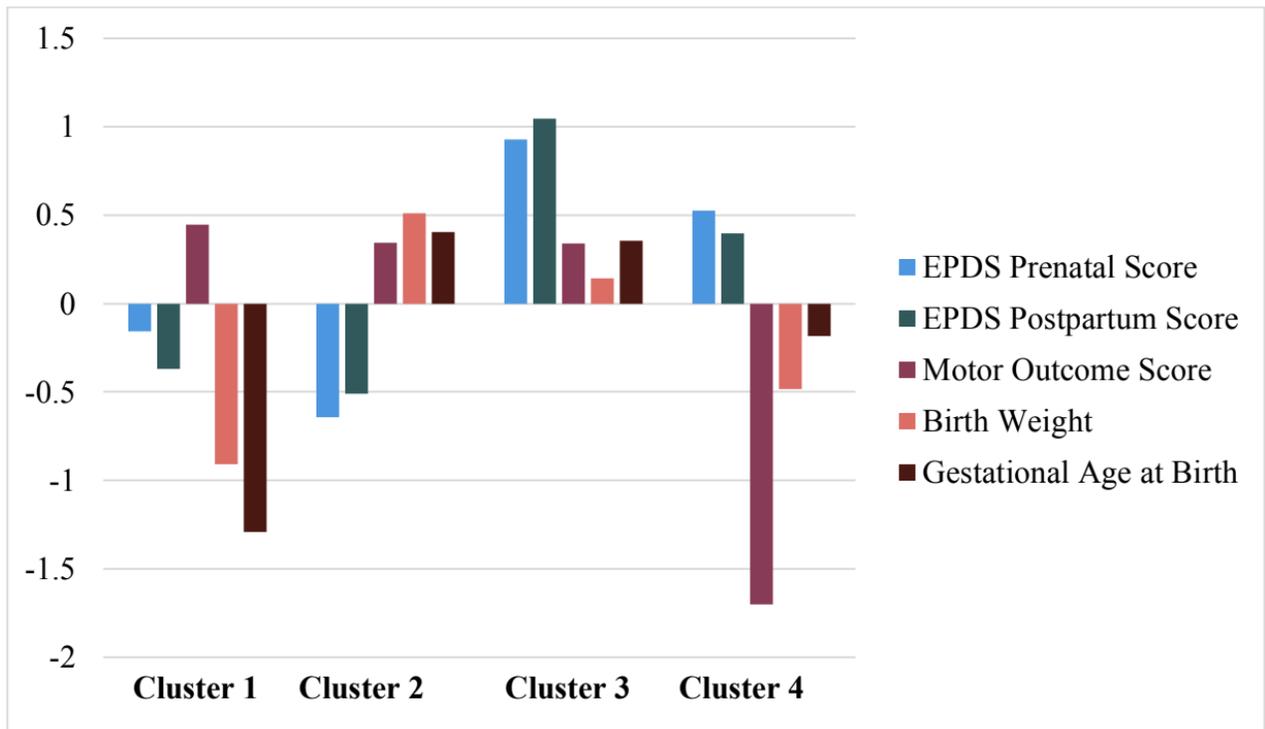
Background: Rates of prenatal and postpartum depression in women have increased during the COVID-19 pandemic worldwide. Previous evidence from pre-clinical and human studies has indicated that high levels of prenatal distress (i.e., stress, depression) is associated with adverse motor outcomes at birth. We aimed to examine the relationship among maternal prenatal/postpartum depression and stress and motor outcomes in newborns born during the COVID-19 pandemic.

Methods: 117 women participated in an online survey at two timepoints, once during their pregnancy and once within 2 months after giving birth. The Edinburgh Perinatal/Postpartum Depression Scale (EPDS) was used to measure depression and the Perceived Stress Scale (PSS) was used to measure perceived stress at both timepoints. The interRAI 0-3 Developmental Domains questionnaire was used to assess newborn motor abilities at the second timepoint.

Results: Prenatal ($B=-0.035$, $p=0.014$) and postpartum maternal depression ($B=-0.037$, $p=0.012$) were both significant negative predictors of infant motor ability. Neither pre- or postnatal stress was associated with newborn motor outcomes (both, $p>0.05$). A post-hoc cluster analysis revealed that neonates with the poorest motor outcomes were born with low birth weight, at earlier gestational ages, and were born to mothers depressed *both* prenatally and in the postpartum period (Figure 1, cluster 4).

Conclusion: This study highlights the importance of maternal mental health care during pregnancy and in the postpartum period during the ongoing pandemic and identifies a group of infants who are at risk of atypical motor development.

Figure 1. K-means clustering based on pre- and post-natal depression, neonatal motor outcome, birth weight, and gestational age at birth.



Hippocampal-Prefrontal Connectivity Prior to COVID-19 Pandemic Predicts Stress Reactivity

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Background: By adolescence, foundational cognitive and affective neurobehavioral processes specialize based on environmental demands, such as stress, to determine the basis of adult trajectories. The ongoing COVID-19 pandemic has increased stress for everyone, but particularly adolescents who face unique stressors such as restrictions in socialization and education.

However, variability in brain processes supporting stress reactivity is not well understood. Here, we leverage pre-pandemic brain development studies to identify how maturity of prefrontal connectivity with the amygdala (AMY) and hippocampus (HPC) is associated with response to COVID-19. We hypothesized that age-related change in connectivity of affective and cognitive brain systems may underlie the emotional response of adolescents during the pandemic.

Methods: 111 10-31 year olds completed resting state fMRI scans prior to the pandemic and then completed a questionnaire nine months into the pandemic measuring worry, COVID-related stress, sadness, perceived stress, and positive affect. Associations between pairwise functional connectivity of HPC/AMY subregions with prefrontal cortex (PFC) subdivisions and affective reactivity during the pandemic were examined.

Results: Regression analyses indicated that both worry and COVID-related stress increased with age ($p < 0.05$ FDR corrected). Furthermore, greater connectivity between anterior ventromedial PFC (vmPFC) and posterior HPC (pHPC) was associated with greater worry and COVID-related stress ($p < 0.05$ FDR corrected), which was primarily driven by individuals under 18.

Conclusion: Taken together, our results indicate that increases in stress reactivity to the COVID-19 pandemic across the transition to adulthood are driven by maturation of pHPC-vmPFC coupling, which integrates stress response and emotional memory processing.



Assessing COVID-19 Effects on NeuroDevelopment (ACEND): Preliminary findings in infants exposed to maternal SARS-CoV-2 infection during pregnancy

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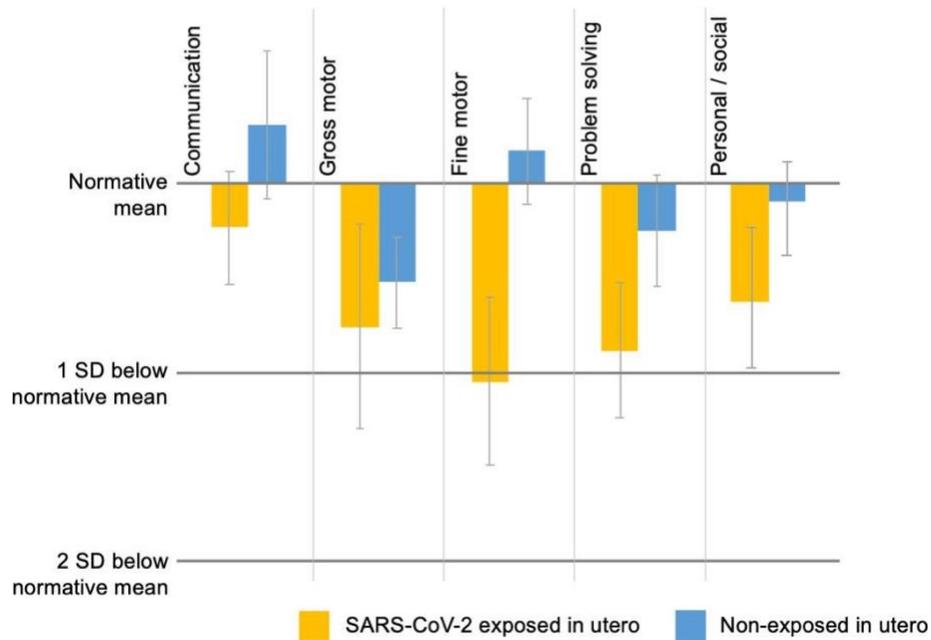
Introduction: Exposure to viral illnesses and maternal stress *in utero* have both been associated with adverse fetal brain development and risk for mental health problems in childhood. As such, the COVID-19 pandemic poses dual concerns for the long-term brain health of this new generation of children. The Assessing COVID-19 Effects on NeuroDevelopment (ACEND) study at Massachusetts General Hospital combines maternal survey data and perinatal biospecimens to identify direct effects of prenatal SARS-CoV-2 exposure, as well as broader psychosocial effects of the pandemic, on neurodevelopment through age 2.

Methods: Participants in the ACEND Study consist of mothers who either tested positive for SARS-CoV-2 during pregnancy or had no known SARS-CoV-2 positivity during pregnancy. Mothers enrolled in ACEND complete assessments of their child's development at 6, 12, 18, and 24 months of age; their mental health; and the effects of the COVID-19 on their pre- and postnatal care, stress levels, and socioeconomic status. At present, 53 mother-infant dyads have been enrolled, and recruitment is ongoing until enrollment has reached at least 250 mother-infant dyads.

Results: Initial analysis of the Ages and Stages Questionnaire at 12-months show 73.3% (n=11) of children born to SARS-CoV-2-exposed mothers and 58.3% (n=7) of children born to SARS-CoV-2-unexposed mothers performed at least 1 SD below the normative mean for at least 1 of the 5 constructs (communication, gross motor, fine motor, problem-solving, and personal-social) at 12 months. Deficits were most widespread in the gross motor domain (41% of all children fell at least 1 SD below the normative mean); however, children exposed to SARS-CoV-2 were significantly more likely than unexposed children to score ≥ 1 SD below normative means across all remaining domains ($X^2=4.62$, $p=.031$, Figure A).

A. Ages and Stages Questionnaire – 12 months

Subscale scores



Conclusion: Preliminary data suggest that SARS-CoV-2 exposure *in utero* may correlate with deficits in fine motor, problem solving, and personal-social skills, while exposure to both SARS-CoV-2 and broader COVID-19 pandemic-related stressors may be associated with worsened gross motor skills at 12 months of age. Ongoing recruitment will further explore effects of SARS-CoV-2 on neurodevelopmental outcomes; disambiguate effects of SARS-CoV-2 from broader pandemic-related stressors; and delineate underlying biological mechanisms through perinatal biospecimen collection.

From full day learning to 30 minutes a day: Examining educators' concerns about kindergarten students' development and well-being during the COVID-19 pandemic in Ontario, Canada

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Background: From March to June 2020, schools in Ontario, Canada went from in-person to virtual learning, necessitating a rapid adjustment for everyone involved. Considering the full-day, play-based nature of the kindergarten curriculum, teaching online posed significant challenges for educators, students, and families. Data from the U.S. suggest that school closures have had a detrimental impact on young children's physical, social, and mental health (Zimmerman et al., 2021). The purpose of this observational, descriptive study was to provide an educator-reported snapshot of the learning, health, and well-being of kindergarten students during the first COVID-19 pandemic-related school closures in Ontario, Canada. Gathering information on the learning context of young children during the pandemic is necessary to better understand the potential implications on young children's development.

Methods: A total of 2,569 kindergarten educators (early childhood educators and teachers) from 74 out of the 75 school districts in Ontario completed a web-based survey entitled "Hidden Future Front Line: Educators' perspective on the impact of the COVID-19 pandemic on kindergarten children (HiFLEC)" from May to July 2020. The survey was comprised of multiple-response items and open-ended questions, and data were analyzed both quantitatively and qualitatively.

Results: Educators reported that due to the students' young age, they were often unable to complete learning tasks on their own from home and educators were concerned about the level of learning that was taking place during this time. The biggest reported barrier to online learning was a lack of involvement from parents/guardians. Educators also discussed being unable to carry out the play-based learning curriculum, resulting in concerns surrounding children's social and emotional development. Educators expressed apprehensions about returning to school in the fall, including concerns about children's inability to follow public health protocols and the mental health and well-being of themselves and their students.

Conclusion: Our results illustrate the concerns expressed by kindergarten educators during the first few months of the COVID-19 pandemic, most regarding their students' development and well-being. They highlight the need for continued supports for the youngest learners and the need to monitor the development of students in kindergarten during the pandemic, as well as after.

Prenatal Maternal Stress during the COVID19 Pandemic and Subcortical Brain Volumes in 3-Month-Old Infants

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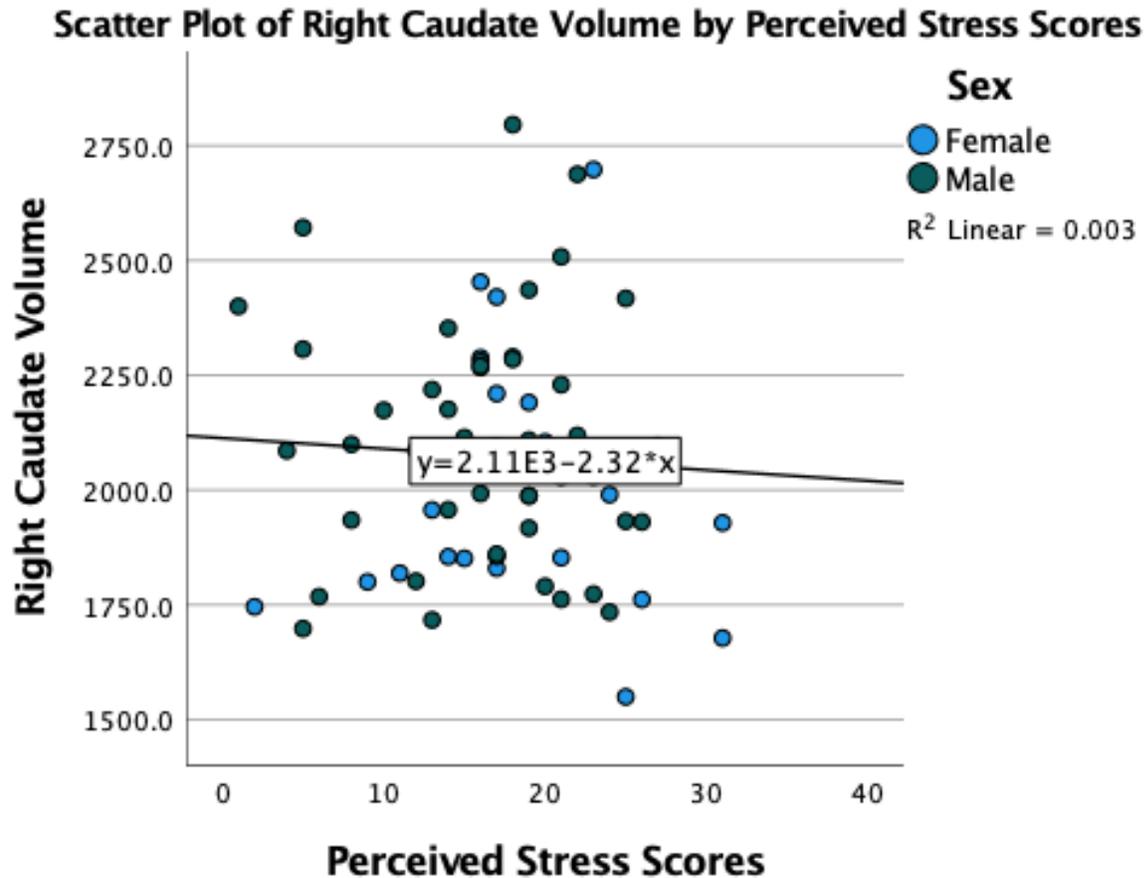
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Background: Pregnant people have had higher rates of stress, depression, and anxiety during the COVID-19 pandemic. Previous studies of natural disasters have shown changes in subcortical limbic volumes in infants whose mothers were exposed to stressors during natural disasters during pregnancy; therefore pandemic-related distress may be associated with altered brain volumes in infants born during the pandemic. The purpose of this study was to use magnetic resonance imaging (MRI) to examine how psychological distress experienced by pregnant individuals during the COVID-19 pandemic is associated with infant brain grey matter volumes.

Methods: As part of a larger study (Pregnancy During the Covid-19 Pandemic), women completed the 10-item Perceived Stress Scale (PSS) during pregnancy at a mean gestational age of 29.8 weeks (6.9 +/- st. dev). T1- and T2-weighted magnetic resonance imaging (MRI) was collected on 67 infants aged 3 months (45M/22F), on a GE MR750w scanner at the Alberta Children's Hospital. Images were segmented using iBEAT to provide amygdala, caudate, and hippocampal volumes for each hemisphere. We tested for a relationship between infant brain volumes and perceived stress scores using multiple regression and an alpha level of < 0.05. Multiple regression was done in SPSS, with sex, household income, maternal education and total intra-cranial volume included as covariates.

Results: Subcortical volumes in the right caudate were significantly negatively related to perceived stress scores ($B = -8.063$, $\beta = -0.196$; $p = 0.048$). Mothers who reported higher prenatal stress were more likely to have infants with smaller caudate volumes. Perceived stress scores were not significantly related to other subcortical volumes in this sample.



Conclusion: Volume changes to caudate nuclei are associated with more externalizing behaviours during adolescence and increased severity of symptoms in clinical attention deficit hyperactivity disorder (ADHD). In this cohort, there was a negative association between caudate volume changes and higher perceived stress levels. These changes may underlie future behavioural problems within this population. Future studies should examine caudate hemisphere function concerning varying levels of prenatal stress exposure to explore this relationship further.

COVID-19 and Student Well-being Study

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Background: Students have been multiply impacted by the COVID-19 pandemic: Threats to their own and their family's health, the closure of schools, adjusting and readjusting to curriculum delivery changes, social distancing from friends, loss of extracurricular activities, and changes in family employment (Schwartz et al., 2021). We were interested in how the mental and behavioral health of junior and senior high school students would be impacted by pandemic effects throughout the 2020-21 school year. This lightning talk will explore the impact of the pandemic on self-reported behavioural functioning as a function of their previous diagnostic history (e.g., learning, cognitive, social-emotional).

Methods: Students (age 12-18 years; $M_{age} = 14.8$; 56% female) were recruited from four metropolitan school districts – two separate (Catholic) and two public – in two major western Canadian cities. In all waves of the study (September, $N = 2,310$, and December, $N = 1,598$, 2020; March, $N = 1,662$; June, $N = 1,478$, 2021), students in grades 6-12 completed the *Children's Impact of Events Scale* (CRIES-13; Horowitz et al., 1979) and the *Behavior Intervention Monitoring Assessment System* (BIMAS-2; McDougal et al., 2011). They also provided demographic information (e.g., age, gender, family economic changes) and answered the question: Prior to COVID-19, were you diagnosed with a learning, cognitive, or psychological disorder by a psychologist or medical professional?

Results: There was a significant effect of previous diagnosis and of a family member experiencing job loss/reduced hours on their self-reported conduct, negative affect, and cognition/attention, although neither interacted with time nor were moderators on stress. There was a significant moderation effect of age and gender on overall stress in predicting all outcomes (i.e., females and older youth reported higher stress reactions). See Table 1 for negative affect results.

Conclusions: In 2020-21, the COVID-19 pandemic did not equally impact all students; females, older youth, and those students who had a previous psychological and changes in family economics reported higher conduct problems, negative affect, and attention difficulties compared to males, younger youth, and youth who did not report pre-pandemic diagnoses or economic change. Results are discussed relative to strategic supports necessary for improving student functioning.

Table 1. Fixed effect coefficients of the final mixed-effect model for BIMAS Negative Affect T- scores.

<i>Predictors</i>	Negative Affect		
	<i>Estimates</i>	<i>C</i> <i>I</i>	<i>p</i>
(Intercept)	51.73	50.63 – 52.82	< 0.001
Previously diagnosed [Yes]	3.50	2.29 – 4.71	< 0.001
CRIES Total	0.30	0.27 – 0.33	< 0.001
Wave	1.18	0.94 – 1.43	< 0.001
Age [15-18]	3.46	2.21 – 4.70	< 0.001
Gender [Male]	-7.03	-8.19 – -5.86	< 0.001
Family Experienced Job Loss or Reduced Hours [Yes]	0.86	-0.04 – 1.76	0.061
CRIES_Total * Age [15-18]	-0.05	-0.09 – -0.02	0.004
Wave * Age [15-18]	-0.70	-1.01 – -0.38	< 0.001
CRIES Total * Gender [Male]	0.07	0.03 – 0.11	0.001

Is the risk of COVID-19 transmission in schools associated with kindergarten children's developmental health? A population-level study of elementary schools in Toronto, Ontario

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Background: The COVID-19 pandemic has affected the whole world and caused many disruptions to our daily lives over the last 18 months. While the pandemic has impacted everyone, evidence suggests it has disproportionately affected people living in lower socioeconomic status (SES) neighbourhoods. In August 2020, Toronto Public Health released a list of schools considered to be high risk for COVID-19 virus transmission, given the higher rates of community transmission. The current study's objectives were to determine if there was an association between COVID-19 rates in elementary schools in Toronto, Ontario and kindergarten children's developmental outcomes. It was hypothesized that schools at higher risk of COVID-19 transmission would have a greater percentage of children vulnerable in at least one area of their development.

Methods: We compared the developmental vulnerability of children who attended kindergarten in 2017/18 in schools located in areas with either high or low transmission rates of COVID-19 in the first phase of the pandemic (up to August 2020). We examined data from children in 559 schools in the Toronto District School Board. Children's development was measured using the Early Development Instrument (EDI). The EDI measures vulnerability rates of children on five domains (physical health and well-being, social competence, emotional maturity, language and cognitive development, communication skills and general knowledge). Children are considered vulnerable in an area of their development if they score below the 10th percentile based on a provincial baseline cut-off score.

Results: Results indicated that schools in areas with higher rates of COVID-19 had higher percentages of children vulnerable on at least one domain of their development in 2018 (32.1% vs 26.8%, respectively). Further, when examining the individual domains, the high COVID-risk areas also had higher percentages of vulnerability in all five developmental domains (physical health and well-being: 16.5% vs. 14.1%; social competence: 11.3% vs. 8.6%; emotional maturity: 11.0% vs. 8.6%; language and cognitive development: 9.3% vs. 6.7%; communication skills and general knowledge: 12.8% vs. 10.5%).

Conclusion: These findings further support that, not only are certain areas more prone to higher COVID-19 rates than others, but that areas with higher levels of vulnerability rates might also be areas that are at higher risks of COVID-19 transmission. Future research should continue to explore this association including other social determinants of health.



“It just doesn’t work”: Parents’ views about distance learning for young children with special needs

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Parents and teachers of preschoolers without special needs report distance learning during COVID-19 is difficult due to the children’s age and amount of parental support needed (Authors). However, children with special needs have been left out of the conversation despite nearly 7,000,000 children in the U.S. receiving special education services (Pew Research Center, 2020).

This presentation will describe a study which examined perceptions of distance learning during the COVID-19 pandemic with 48 parents of young children (ages 3-8) with special needs. Our primary questions in this mainly descriptive study were: (1) What obstacles do parents of young children with special needs face with distance learning? (2) How do these parents expect schools to support their children’s distance learning? Parents completed an online survey of semi-structured and open-ended questions.

Results indicate parents have concerns about the age/developmental level of the children to engage virtually, lack of socialization opportunities, and the amount of parental support needed. Importantly, their children required specialized therapies and instruction that the parents were not qualified to provide. In qualitative responses, 18% of parents indicated that mandated special education services were not provided and that their children were regressing as a result. Additionally, 31% of parents spontaneously mentioned that the only option for their child was to go back to school or have a teacher come to the house. Parents also expressed a need for more flexibility in scheduling and academic expectations and more school-home communication, neither of which was happening in the virtual setting.



Investigating the effects of the COVID-19 pandemic on very low birthweight infants in southeast Louisiana NICUs

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Background: Maternal breast milk and skin-to-skin have been shown to aid in neurodevelopment and improve health outcomes for preterm and very low birth weight (VLBW) infants. In addition to being heavily impacted by COVID-19, Louisiana continues to have the highest rates of preterm and VLBW births in the country and therefore is an important area of focus for neonatal QI projects. Our original QI collaborative was focused on increasing the provision of maternal milk to VLBW infants in southeast Louisiana NICUs through a multi-hospital collaborative that included a focused key driver model, regular data entry, and quarterly data reports to the individual hospitals, as well as composite reports across hospitals. Due to the COVID-19 pandemic and the resulting changes in hospital visitation policies, we were forced to pivot in our efforts. Despite these unanticipated obstacles, ongoing data collection from this project, beginning in the months immediately preceding the pandemic, provides a unique opportunity to evaluate the impact of the pandemic on breastfeeding rates, NICU visitation, and skin-to-skin care for VLBW infants in SE Louisiana.

Methods: Our current data includes feeding, skin-to-skin care, visitation, and other outcomes collected from the electronic medical records of VLBW infants from 8 level III and IV NICUs in SE Louisiana for the period of July 2019 through April 2021 (n = 268). In addition, mothers of VLBW infants who expressed milk are surveyed by phone following discharge on pump acquisition and visitation barriers (n= 93).

Results: Our included mother-infant dyads are representative of the local population; 56.1% of mothers are non-Hispanic Black, 27.3% are non-Hispanic white, and 10.1% are Hispanic, with 68% covered by Louisiana Medicaid during their pregnancy. We expect to evaluate the following questions: What was the impact of the COVID-19 pandemic on breastfeeding rates for VLBW infants? Did the pandemic result in decreased rates of skin-to-skin care for VLBW infants? Is there a correlation between changing COVID positivity rates and breastfeeding or skin-to-skin rates over the course of the pandemic? Were these effects moderated by maternal race or insurance type?



COVID-19 Pandemic Exposure is Associated with Increased Weight Gain During Pregnancy

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Background: On March 3, 2020, the World Health Organization (WHO) declared the novel coronavirus and its associated disease (COVID-19) a global pandemic. Pregnant women are a high-risk group for infectious disease and tend to be particularly adherent to guidelines prescribed to reduce exposure risk during the pandemic. Other studies show that stressful life events are associated with poorer pregnancy outcomes, including excessive and inadequate weight gain. The COVID-19 pandemic represents a major, chronic stressful life event which may have consequences for mental and physical health, including maternal weight gain during pregnancy.

Methods: Participants were 224 pregnant women (81.33% White; $M_{age}=34.12\pm 4.43$ years) enrolled in an ongoing longitudinal study examining prenatal influences on child development. Participant BMI was measured and recorded at each medical appointment during the course of pregnancy. Participants' pre-gravid BMI and their BMI recorded at the prenatal appointment immediately preceding delivery (typically within one week of delivery) were used in analyses. Using the declaration of the global pandemic by the WHO as the cut-point, pre- and peri-pandemic groups were created and BMI differences were evaluated.

Results: The peri-pandemic group showed higher final BMIs ($n=125$; $M=29.96\pm 4.71$), when compared to the pre-pandemic group ($n=99$; $M=28.89\pm 3.40$; $t(222)=-1.98$, $p=.04$; $d=0.26$). On average, the peri-pandemic group gained more weight ($M=31.17\pm 11.64$ pounds), when compared to the pre-pandemic group ($M=26.70\pm 50.57$ pounds; $t(222)=-2.05$, $p=.04$; $d=.28$). The peri-pandemic ($M=24.88\pm 4.94$) and pre-pandemic groups did not differ in their pre-gravid BMI ($M=24.05\pm 3.96$; $t(222)=-1.36$, $p=.18$).

Conclusion: These findings suggest that the COVID-19 pandemic is associated with increased weight gain during pregnancy, although the mechanism of this effect is yet to be elucidated. For example, the pandemic likely impacted overall mental health, financial security, dietary and physical activity changes, among other things, all of which may be important to understanding these results. As increased weight gain during pregnancy is associated with behavioral, physiological, and psychological outcomes in the child, future studies examining the impact of the COVID-19 pandemic on the weight gain of both post-parturient mothers and their offspring may clarify the extent to which COVID-19 pandemic exposure during pregnancy and its associated weight gain impact long term developmental outcomes.

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