



COVID-19 PANDEMIC AND CHILD MENTAL HEALTH: AN INVITED DISCUSSION SECTION

Response to Rejoinders: The importance of balanced, clear, and specific science communication

**Punit Virk, MSc¹; Melissa L Woodward, PhD^{2,1}; Quynh Doan, MDCM, PhD²;
Tyler R Black, MD, FRCPC³**

We would like to express our gratitude to all authors who took the time to respond to our commentary, in which we discussed issues with emerging data on pandemic-related school closure, youth mental health, and the need for rigorous scientific inquiry (1-3). We welcome the opportunity to engage in a constructive and meaningful dialogue on this crucial and timely subject. Based on the responses we received, we have identified three overarching themes by which we will address this feedback. First, we reiterate the need for a balanced interpretation of data and outcome measures. Second, we probe deeper into the relationship between school closures and student mental health, with careful attention to the extant literature. Third, we stress the need for scientific claims and interpretations to be carefully grounded in the collected data.

We will start by elaborating on several aspects of our commentary that would benefit from additional clarity. We recognize that scientific evidence has been rapidly emerging throughout the pandemic. A handful of articles that authors cited in their responses were only recently published. Our understanding of many pandemic-related phenomena, including youth mental health, will continue to evolve and grow. We acknowledged this point in our commentary where we stated, “*the growing knowledge of the mental health impacts of school closures and other pandemic measures is nuanced and far from fully elucidated.*” It also appears that the intention behind our critical appraisal of

articles cited by two major Canadian medical professional organisations may have been misunderstood. We critiqued these articles as these appeared to form the basis for the organisations’ claims. We would also like to clarify that our response about the statement by the Canadian Pediatric Society was not meant to make claims about the the implications of the pandemic in a global setting, but to refer specifically to the claims made by the Canadian Pediatric Society in their statement about the universal harm of online learning for Canadian children.

THEME ONE: Engagement with research data requires careful reporting and interpretation of positive, negative, and null findings. As stated in our commentary, our re-analysis of Cost et al. was intended to challenge broad generalisations of “worsened” youth mental health during the pandemic, given youth are not a homogenous group, and that the study identified different mental health trajectories and outcomes (e.g., improved, no change) (4). We are not advocating that mental health outcomes did not worsen during the pandemic, rather, we encourage a wider lens to analysis, that discusses and situates the experiences of those who saw mental health “improvement”, “deterioration”, and/or “no change.” In fact, we commend Vaillancourt et al. (1) on their additional statistical analysis of Cost et al.’s data, as it demonstrates a key point we were trying to convey with our example—data are nuanced and those nuances need to be

¹School of Population and Public Health, Faculty of Medicine, University of British Columbia, Vancouver, British Columbia, Canada

²Department of Pediatrics, Faculty of Medicine, University of British Columbia, Vancouver, British Columbia, Canada

³Department of Psychiatry, Faculty of Medicine, University of British Columbia, Vancouver, British Columbia, Canada

reflected in how we interpret them, given their potential to shape policy and further research.

We found Vaillancourt et al.'s and Vidal et al.'s (1,3) reference to Madigan et al.'s systematic review and meta-analysis as evidence of rising rates of youth mental health deterioration to be quite curious (5). Rejoinder 1 highlights the study's reported "22% increase in ED visits for attempted suicide visits." There is no doubt we are all concerned for the health and well-being of Canadian youth, but some degree of caution should be taken, and uncertainty recognized, with interpreting this study. First, the authors report 90% confidence intervals as opposed to the more commonly used 95% confidence intervals which increases the chances of type I errors. Second, the conclusion of "an exacerbation of severe mental distress" appears to be derived from a "slight-to-small" increase in presentations for suicide ideation and attempts, even though self-harm presentations had a "slight-to-small" decrease and other mental health presentations had a "small decrease" according to their meta-analysis. While suicide ideation and attempts can be indicative of underlying severe mental health concerns, clinically, not all ideation and attempts are necessarily categorized at the highest severity of emergency presentation, and many "other mental health disorders," including self-harm, psychosis, bipolar disorder, depression, and anxiety presentations, can present at the highest acuity classifications. Interestingly, the way our colleagues situate this study's findings within their argument highlights yet another instance where the precision of language and balanced description can have consequences on knowledge mobilisation and policy planning. The fixation on highlighting findings of harm makes our point that reporting needs to be balanced and we should be cautious not to mould data to our predispositions.

Similarly, Rejoinder 1's comments on effect size reflect our concern that the interpretation of evidence requires careful consideration. The cited finding from Duckworth et al. was described in the Royal Society of Canada briefing without mentioning the small effect size or what its size means for interpretation (6,7). While certainly a small effect size can be important to large populations as Vaillancourt et al. rightly state, it is important to recognize that knowing the effect size is small is crucially important when considering other risks or harms which may have greater effect sizes. For example, the effect size of a death in the family on internalising problems for adolescents was found to be "medium" according to the Cohen classification system (Cohen's $d = 0.37$) (8). Although we could not find a direct effect size for the impact of severe illness in a family member, teacher, or classmate on a child's emotional state, as mental health clinicians and researchers, we believe that the effect size is likely to be greater than "small." Through mid-2022, Hillis

et al. estimated that over seven million children worldwide experienced COVID-associated orphanhood (9). It could be that even mild mitigation of COVID could have substantial benefits on a child's mental health.

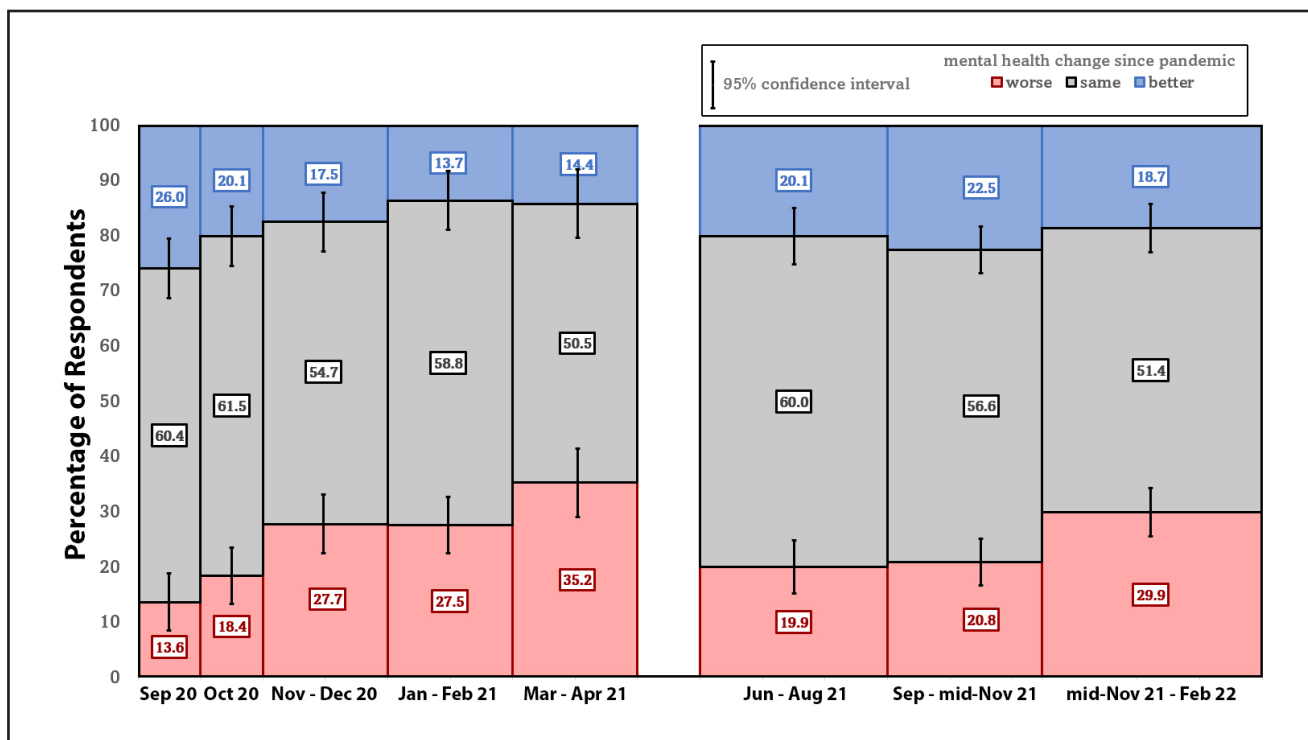
THEME TWO: The *isolated* relationship between school closures and youth mental health remains largely unclear based on the current scientific and empirical evidence. We agree that there is a need for further research that explores the various factors that may mediate the relationship between school closures and mental health outcomes. However, in reviewing the references cited by Rejoinder 1 and Rejoinder 3, we stand by our statement that this debate is unresolved.

Viner et al.'s systematic review evaluated 36 studies, but according to the authors "no studies reported on school closures without broader lockdown (10)." Within the results of this review, in addition to some reports of worsening mental health concerns, were multiple studies that reported reductions in anxiety and depressive symptoms, no change or reductions in emotional and behavioural difficulties, increased sleep duration, as well as no significant increases in suicide rates. The authors acknowledge that they were unable to examine the mitigating effects of online schooling. Discounting the findings of these studies rather than using them as pieces of information to broaden our understanding of the nuance of this situation paints the effects of school lockdown with too broad a brush. The additional works cited by Vidal et al. (3) are also unable to isolate the effects of school closures and many of them found negative mental health effects during times when school closures were no longer in place.

We agree with the point of Rejoinder 3, Vidal et al. (3), that social determinants of health must be considered, and they are multifactorial and existed pre-pandemic. Young people may have many reasons for experiencing greater mental health challenges throughout the pandemic beyond school closures. Some examples of potential social determinants of youth mental health include, but are in no way limited to, students of lower socioeconomic status, Indigenous youth experiencing systemic oppression, youth with caregivers in frontline positions with greater COVID-19 exposure, and Black youth experiencing trauma following the murder of George Floyd (11-14). Ignoring the broader social fabric limits our capacity to truly understand the complexity of the evolving times and the needs of young people.

THEME THREE: Finally, we reiterate our call for scientific claims and interpretations to be grounded in rigorous

Figure 1. Changes to mental health compared to pre-pandemic period as reported by 12-17 year old participants in Statistics Canada's ongoing Canadian Community Health Survey from September 2020 to February 2022.



"Better" includes both "much better" and "somewhat better" responses, "same" categorises the response "about the same," and "worse" includes both "much worse" and "somewhat worse" responses. The black lines represent the 95% confidence interval for each survey. Some surveys spanned multiple or mid-months, so each survey period is outlined, and May 2021 was not surveyed, as indicated by the white section of the graph. Data were derived from Statistic Canada's online "Canadians' health and COVID-19, by age and gender" data available at: <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1310080601> (15)

and transparent empirical evidence. We appreciate the responses that challenged our interpretation of the existing literature on school closures and mental health outcomes. While we stand by our original argument, we acknowledge the complexity of the existing evidence base. Therefore, we urge researchers and policymakers to prioritise transparent and robust research designs that can help to disentangle the complex relationships between pandemic-related stressors, school closures, and mental health outcomes. As the evidence base grows, we encourage researchers to include the voices and lived experiences of young Canadians. Interestingly, ongoing self-report surveys (the most recent being February 2022) of Canadian adolescents by Statistics Canada asking whether they thought their mental health had broadly deteriorated, improved, or remained about the same during the pandemic, show that most youth in Canada have consistently rated their mental health as about the same as

before the pandemic, which we discussed in our original commentary (see Figure 1) (15).

We did not address comments made by Rejoinder 1 and Rejoinder 3 regarding the interpretation of the transmission in schools, or the infection fatality rate, of the SARS-CoV-2 virus. It would be inappropriate for us as clinicians and researchers in mental health to debate or postulate on these highly specialised areas which require expert understanding of developing knowledge. Rather, we keep our focus on the evidence surrounding the mental health of Canadian youth.

Overall, this debate highlights the complex and multifaceted nature of the COVID-19 pandemic and its impact on youth mental health, and the need for ongoing research and discussion to develop effective interventions and support for children and families. We also agree that it is essential to involve children and families in the research and policy development process to ensure that their perspectives and experiences are considered.

References

- Vaillancourt T, Korczak D, Racine N, Szatmari P. Rejoinder 1 - Advocating for children in the presence of imperfect evidence: A reply to Black et al. *Journal of the Canadian Academy of Child & Adolescent Psychiatry* 2023;32:79-84.
- Ray J. Rejoinder 2 - Educating kids during a pandemic: more farmers, fewer experts. *Journal of the Canadian Academy of Child & Adolescent Psychiatry* 2023;32:85-87.
- Vidal C, Holland E, Duriseti R. Rejoinder 3 - School closures: The trigger point in the decline in pediatric mental health outcomes during the COVID-19 pandemic. *Journal of the Canadian Academy of Child & Adolescent Psychiatry* 2023;32:88-92.
- Cost KT, Crosbie J, Anagnostou E, Birken CS, Charach A, Monga S, Kelley E, Nicolson R, Maguire JL, Burton CL, Schachar RJ. Mostly worse, occasionally better: impact of COVID-19 pandemic on the mental health of Canadian children and adolescents. *European Child & Adolescent Psychiatry*. 2021 Feb 26:1-4
- Madigan, S., Korczak, D. J., Vaillancourt, T., Racine, N., Hopkins, W. G., Pador, P., ... & Neville, R. D. (2023). Comparison of paediatric emergency department visits for attempted suicide, self-harm, and suicidal ideation before and during the COVID-19 pandemic: a systematic review and meta-analysis. *The Lancet Psychiatry*.
- Duckworth, A. L., Kautz, T., Defnet, A., Satlof-Bedrick, E., Talamas, S., Lira, B., & Steinberg, L. (2021). Students attending school remotely suffer socially, emotionally, and academically. *Educational Researcher*, 50(7), 479-482.
- Vaillancourt T, Beauchamp M, Brown C. Children and Schools During COVID-19 and Beyond: Engagement and Connection Through Opportunity. In *Royal Society of Canada* 2021
- Stikkelbroek, Y., Bodden, D. H., Reitz, E., Vollebergh, W. A., & van Baar, A. L. (2016). Mental health of adolescents before and after the death of a parent or sibling. *European Child & Adolescent Psychiatry*, 25, 49-59.
- Hillis, S., N'konzi, J. P. N., Msemburi, W., Cluver, L., Villaveces, A., Flaxman, S., & Unwin, H. J. T. (2022). Orphanhood and caregiver loss among children based on new global excess COVID-19 death estimates. *JAMA pediatrics*, 176(11), 1145-1148.
- Viner R, Russell S, Saulle R, Croker H, Stansfield C, Packer J, Nicholls D, Goddings AL, Bonell C, Hudson L, Hope S. School Closures During Social Lockdown and Mental Health, Health Behaviors, and Well-being Among Children and Adolescents During the First COVID-19 Wave: A Systematic Review. *JAMA pediatrics*. 2022 Jan 18.
- Fortuna, L. R., Tolou-Shams, M., Robles-Ramamurthy, B., & Porche, M. V. (2020). Inequity and the disproportionate impact of COVID-19 on communities of color in the United States: The need for a trauma-informed social justice response. *Psychological Trauma: Theory, Research, Practice, and Policy*, 12(5), 443.
- Liu, S. R., & Modir, S. (2020). The outbreak that was always here: Racial trauma in the context of COVID-19 and implications for mental health providers. *Psychological Trauma: Theory, Research, Practice, and Policy*, 12(5), 439.
- Ravens-Sieberer, U., Kaman, A., Erhart, M., Devine, J., Schlack, R., & Otto, C. (2022). Impact of the COVID-19 pandemic on quality of life and mental health in children and adolescents in Germany. *European Child & Adolescent Psychiatry*, 31(6), 879-889.
- Reiss, F., Meyrose, A. K., Otto, C., Lampert, T., Klasen, F., & Ravens-Sieberer, U. (2019). Socioeconomic status, stressful life situations and mental health problems in children and adolescents: Results of the German BELLA cohort-study. *PloS one*, 14(3), e0213700.
- Statistics Canada. Table 13-10-0806-01 Canadians' health and COVID-19, by age and gender. Accessed from: <https://www150.statcan.gc.ca/t1/tb11/en/tv.action?pid=1310080601> on March 24, 2023.