


# Editorial Perspective: Challenges of research focusing on child and adolescent mental health during the COVID-19 era: what studies are needed?

Marco Solmi,<sup>1,2</sup>  Samuele Cortese,<sup>3,4,5,6,7</sup> and Christoph U. Correll<sup>8,9,10</sup>

<sup>1</sup>Neurosciences Department, University of Padua, Padua, Italy; <sup>2</sup>Padua Neuroscience Center, University of Padua, Padua, Italy; <sup>3</sup>Centre for Innovation in Mental Health, School of Psychology, Life and Environmental Sciences, University of Southampton, Southampton, UK; <sup>4</sup>Clinical and Experimental Sciences (CNS and Psychiatry), Faculty of Medicine, University of Southampton, Southampton, UK; <sup>5</sup>Division of Psychiatry and Applied Psychology, School of Medicine, University of Nottingham, Nottingham, UK; <sup>6</sup>National Institute for Health Research (NIHR), Nottingham Biomedical Research Centre, Nottingham, UK; <sup>7</sup>Hassenfeld Children's Hospital at NYU Langone, New York, NY, USA; <sup>8</sup>Department of Psychiatry, Zucker Hillside Hospital, Northwell Health, Glen Oaks, NY, USA; <sup>9</sup>Department of Psychiatry and Molecular Medicine, Donald and Barbara Zucker School of Medicine at Hofstra/Northwell, Hempstead, NY, USA; <sup>10</sup>Department of Child and Adolescent Psychiatry, Charité Universitätsmedizin, Berlin, Germany

Since March 2020, when the World Health Organization (WHO) declared the COVID-19 virus infection that causes COVID-19 respiratory disease (SARS-CoV-2) a global pandemic, over 100 million people worldwide have been infected, and close to 3 million died because of COVID-19 infection (Johns Hopkins University, 2020). As a result, restrictions have been issued in many countries to control the pandemic and limit its spread. Health services have changed substantially, shifting resources towards the COVID-19 emergency, creating shortages in non-COVID-19 services and massively moving access to care towards telemedicine (Kinoshita et al., 2020). Among the first restrictions, schools have been temporarily, but often recurrently, closed in many countries. Many children and adolescents, as well as their families, have witnessed a disruption in their routines. Physical contacts have been limited, with physical distancing being promoted and prescribed on the large scale. Home-schooling for protracted periods has become the rule for many families, forcing prolonged and continuous co-living, with many parents dealing, at the same time, with home-working and home-schooling. Given such complex interactions among massively strained environmental, family-related and clinical factors across generations, research on the impact of COVID-19 and related restrictions on children, adolescents and future generations has become a crucial need.

Various studies on the mental health correlates of the COVID-19 pandemic in youth and their families have been published or are ongoing. Alongside some strengths related to the unique opportunities offered by conducting research during a pandemic, these studies present with a number of limitations, in part reflecting constraints related to the pandemic.

First, most studies have been conducted in one or only a few countries (CO-SPACE; McElroy et al., 2020). As pointed out in a recent Editorial in the Journal (Sonuga-Barke, 2021), 'Even when full

experiments are not possible, some degree of "natural" experimental control may be gained by assessing and exploiting variability in mental health outcomes in children and adolescents as well as their families across many countries where measures to face the pandemic have differed'. Thus, leveraging data from a large number of countries could advance our understanding of possible causal links and mechanisms underlying mental illness development or worsening that would otherwise not be captured. Indeed, analysing how different policies, implemented in different ways and at different time points, are associated with different outcomes across countries may shed light on possible risk/protective factors for mental and physical health during the pandemic.

Second, the availability of surveys in only one or few languages (Ma et al., 2021) hampers the participation of ethnic minorities in national surveys. This is a serious constraint, as language and ethnic minorities may be particularly impacted by COVID-19 and related restrictions (Iacobucci, 2020).

Third, currently available studies have generally focused on subgroups, for example, clinical populations or health workers (Vogel et al., 2021) rather than the general population with all of its relevant subgroups.

Fourth, even more importantly, currently available studies have generally included samples recruited via snowball or other non-representative methodologies. As recently highlighted, the lack of representative samples is a major concern, due to the biases that selective sampling inevitably introduces (Pierce et al., 2020).

Fifth, studies so far have generally included a limited number of outcomes related to mental health (Vogel et al., 2021). Reliance on validated questionnaires maximises the psychometric validity of the tools used in the study and keeps the response time of the survey manageable. However, this approach

inevitably restricts the number of variables and domains that can be captured. Importantly, it has been shown that focusing on a limited set of symptoms might hamper the understanding of complex and heterogeneous dimensions of psychological difficulties. As this complexity is the rule rather than the exception in the development or exacerbation of psychological problems in children and adolescents with or without a mental disorder, failing to take into account this complexity may lead to inaccurate conclusions. Using broader and richer metrics, such as well-being and a composite psychopathology or P-Factor, represents a more differentiated and clinically relevant approach. Furthermore, given the plethora of biological, environmental and psychosocial risk factors related to child and adolescent mental health, it seems crucial to explore additional psychosocial factors such as the type of restrictions, health-services functioning and size of the household.

Sixth, whilst, in some families, the lockdown has been associated with positive experiences (e.g., increased and/or enriched family time and aggregation), in other cases, such substantial change has generated difficulties. For instance, if parents have poor physical or mental health and well-being, this might impact their interactions with their children/adolescents, potentially reversing the roles, with children needing to take care of parents, or increasing the risk of domestic conflict and violence. In families with pre-existing dysfunctional dynamics and communication, forced prolonged co-living, reduced external structure and assistance as well as psychological and/or economic stressors, in addition to reduced support and monitoring from children's social services might further aggravate the situation. Therefore, when reporting on self-rated or parental ratings of minors' mental health, physical health and well-being, it is paramount to measure family functioning as well as parental well-being and health. In addition to the need of rating the family functioning, adding parental rating to self-report of children and adolescents increases the validity of the measured outcome and could also shed light on which rating (self-rating vs. parental rating) is more sensitive to poor functioning and well-being, possibly informing future screening strategies during the current or future infection times. This approach has been implemented in some available surveys in the field. For instance, the CoRonaVirus Health Impact Survey (CRISIS; Nikolaidis et al., 2020) and CO-SPACE have been collecting information from both parents and children, providing a more balanced and valid measure of what is going on in each household as a consequence of the pandemic.

Seventh, many studies have focused on psychological/mental health outcomes (Ma et al., 2021), but have not concurrently explored the possible physical impact of the pandemic in children and

adolescents, thus overlooking the well-established links between body and mind.

Eighth, whilst there has been a predominant focus on the acute effects during the early phase of the pandemic, the risk factors and the negative impact of the pandemic in children, adolescents and their family members in the longer term throughout and after the pandemic, as well as protective factors and resilience have been incorporated by few studies, such as CRISIS, which assesses youth at baseline and plans to follow them up (Nikolaidis et al., 2020).

Finally, it is encouraging that some studies have addressed families rather than children/adolescents in isolation. For instance, "CO-SPACE" assesses mental health and stress of parents and their kids. It showed that, between January and February 2021, behavioural, emotional and restless/attentional difficulties of kids as well as parent's anxiety, depression and stress have peaked beyond the first lockdown levels. It also showed that parents who have to work from home and home-school kids at the same time do not feel able to do justice to both. In addition, expanding this perspective by employing a transgenerational focus, including pregnant women, in surveys to explore the impact of the pandemic on prenatal development of children and on families is crucial. Indeed, according to a recent large-scale meta-analysis of COVID-related studies, pregnant women were among the population groups with the highest prevalence of anxiety and depression, with pooled prevalence estimates between 30 and 40% for both, being also the group with highest prevalence of stress that was above 80%.

Several of the outlined limitations in the ongoing research may be related, at least in part, to the limited funding that many researchers in the field of child and adolescent mental health have sadly experienced, due to COVID funding priorities in other areas of health and fierce competition for funding among many researchers proposing similar projects (e.g., national surveys exploring well-being/psychological variables or social mobility such as the Covid Social Mobility and Opportunities study, COSMO).

The Collaborative Outcomes Study on Health and Functioning during Infection Times (COH-FIT) ([www.coh-fit.com](http://www.coh-fit.com)) addresses several, but not all, of these limitations. It is an anonymous on-line survey targeting the general population including pregnant women and children aged 6–13, adolescents aged 14–17 as well as adults. COH-FIT involves over 220 researchers from 49 different countries, with different areas of expertise, including adult psychiatrists, child and adolescent psychiatrists, psychologists, physicians from other specialties, epidemiologists, neuroscientists and statisticians. The survey is available in 30 languages and has been disseminated via both snowball and representative sample recruitment via polling agencies. However, COH-FIT is not without limitations. Two of these are its

cross-sectional and anonymous nature, which prevent the investigation of longitudinal associations at the individual level. It is however a longitudinal project at the population level due to long-term data collection at different times of the magnitude of the pandemic and related restrictions. COH-FIT is being conducted in three waves: Wave 1 was launched on 27 April 2020 and will last until the WHO declares the pandemic over; wave 2 will capture data 6–18 months after the end of the pandemic and wave 3 will capture data 24–36 months after the end of the pandemic. COH-FIT collects a broad set of non-modifiable and modifiable personal, family system, social, societal and environmental factors, which encompass all the aforementioned key candidate determinants of mental and physical health and well-being of children and adolescents as well as pregnant women including type and duration of restrictions, pre-COVID family functioning, co-living conditions, pre-existing clinical or mental disorders, access to care, pre-COVID levels of loneliness, resilience and coping strategies, among others. As outcomes, COH-FIT measures well-being, a composite psychopathology P-Factor (composed of items assessing transdiagnostic mental health domains), quality of life and functioning in addition to others, using self-rating, and a focused set of parental ratings of minors' functioning and quality of life. By means of a household code, full parental surveys on their own situation can be linked to the full surveys of their children or adolescents. Minors' and parental responses will be analysed in the context of each specific sociodemographic or relevant subgroup of the general population, within each country, as well as of measures of the pandemic and related restrictions, by means of multivariate inferential statistics, and data-driven approaches, such as network analysis and machine learning. Estimates across countries will also be compared, given that COH-FIT has been collecting data from currently 154 countries with currently around 20 with sufficiently robust paediatric data for between-country comparisons.

In terms of funding, acknowledging that collecting data early and quickly during the pandemic was crucial, COH-FIT has relied on the voluntary work of a large number of unfunded researchers, inviting members of the consortium to prospectively apply for local, national and international funding, with part of this funding used to pay polling companies for representative sampling and/or central costs (e.g., website-related and data storage/management costs). This strategy has been successful so far, with patchwork funding from internal funds, local and national grants.

Although COH-FIT has collected data from currently >128,000 adults (representative sample from 15 countries, including currently >11,000 additional parental ratings of their children and adolescents), collecting data from children and adolescents themselves have proven to be more difficult. To date,

COH-FIT has been able to collect data directly from >10,000 children and adolescents, of which around 5,000 have come from representative sampling via paid polling institutes. These preliminary dissemination and participation results underscore the fact that surveys in children and adolescents requiring guardian/adults/parent e-consent may be more difficult than research in adults, and that such barriers need to be better understood and reduced. In this context, providing dedicated funding for paediatric mental health research during the pandemic, but also in general, is crucial to generate sufficiently large and informative data. It is hoped that COH-FIT will contribute to this goal. Global reports of the COH-FIT study are being prepared and should be expected within 2021.

Taken together, COH-FIT can expand the evidence generated by other ongoing studies by providing comprehensive data on the physical, psychosocial and mental health correlates of the pandemic in children, adolescents and their families, which can inform clinical guidance and health policies, providing the basis for an evidence-based approach to resource allocation and governance, as opposed to current guidance regarding child and adolescent mental health that had to be mostly based on clinical impressions during the early stages of the pandemic and expert consensus.

### Acknowledgements

M.S. has received honoraria from Lundbeck and worked in advisory board of Angelini. S.C. declares honoraria and reimbursement for travel and accommodation expenses for lectures from the following non-profit associations: Association for Child and Adolescent Central Health (ACAMH), Canadian ADHD Alliance Resource (CADDRA), British Association of Pharmacology (BAP) and from Healthcare Convention for educational activity on ADHD. C.U.C. has been a consultant and/or advisor to or has received honoraria from Acadia, Alkermes, Allergan, Angelini, Axsome, Gedeon Richter, Gerson Lehrman Group, Indivior, IntraCellular Therapies, Janssen/J&J, Karuna, LB Pharma, Lundbeck, MedAvante-ProPhase, MedInCell, Medscape, Merck, Mitsubishi Tanabe Pharma, Mylan, Neurocrine, Noven, Otsuka, Pfizer, Recordati, Rovi, Servier, Sumitomo Dainippon, Sunovion, Supernus, Takeda and Teva. He provided expert testimony for Janssen and Otsuka. He served on a Data Safety Monitoring Board for Lundbeck, Rovi, Supernus and Teva. He has received grant support from Bendheim Foundation, Berlin Institute of Health, Janssen, National Institute of Mental Health, USA, Patient Centered Outcomes Research Institute and Takeda. He is also a stock option holder of LB Pharma.

### Correspondence

Marco Solmi, Neurosciences Department, Università degli Studi di Padova, Padova 35122, Italy; Email: marco.solmi83@gmail.com

## References

- CO-SPACE. Available from: [www.psy.ox.ac.uk/research/topic-research-group/supporting-parents-adolescents-and-children-during-epidemics](http://www.psy.ox.ac.uk/research/topic-research-group/supporting-parents-adolescents-and-children-during-epidemics) [last accessed 30 March 2021].
- Iacobucci, G. (2020). Covid-19: Increased risk among ethnic minorities is largely due to poverty and social disparities, review finds. *British Journal of Health Psychology*, *371*, m4099. <https://doi.org/10.1136/bmj.m4099>
- Johns Hopkins University (2020). Coronavirus COVID-19 (2019-nCoV). Available from: [www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6](http://www.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6) [last accessed 30 March 2020].
- Kinoshita, S., Cortright, K., Crawford, A., Mizuno, Y., Yoshida, K., Hilty, D., ... & Kishimoto, T. (2020). Changes in telepsychiatry regulations during the COVID-19 pandemic: 17 countries and regions' approaches to an evolving health-care landscape. *Psychological Medicine*, 1–8. <https://doi.org/10.1017/S0033291720004584>
- Ma, Z., Idris, S., Zhang, Y., Zewen, L., Wali, A., Ji, Y., ... & Baloch, Z. (2021). The impact of COVID-19 pandemic outbreak on education and mental health of Chinese children aged 7–15 years: An online survey. *BMC Pediatrics*, *21*. <https://doi.org/10.1186/s12887-021-02550-1>
- McElroy, E., Patalay, P., Moltrecht, B., Shevlin, M., Shum, A., Creswell, C., & Waite, P. (2020). Demographic and health factors associated with pandemic anxiety in the context of COVID-19. *British Journal of Health Psychology*, *25*, 934–944. <https://doi.org/10.1111/bjhp.12470>
- Nikolaidis, A., Paksarian, D., Alexander, L., Derosa, J., Dunn, J., Nielson, D.M., & Merikangas, K.R. (2020). The Coronavirus Health and Impact Survey (CRISIS) reveals reproducible correlates of pandemic-related mood states across the Atlantic. *medRxiv*. Preprint. <https://doi.org/10.1101/2020.08.24.20181123>
- Pierce, M., McManus, S., Jessop, C., John, A., Hotopf, M., Ford, T., ... & Abel, K.M. (2020). Says who? The significance of sampling in mental health surveys during COVID-19. *The Lancet Psychiatry*, *7*, 567–568. [https://doi.org/10.1016/S2215-0366\(20\)30237-6](https://doi.org/10.1016/S2215-0366(20)30237-6)
- Sonuga-Barke, E.J.S. (2021). “School of hard knocks”—What can mental health researchers learn from the COVID-19 crisis? *Journal of Child Psychology and Psychiatry*, *62*, 1–4. <https://doi.org/10.1111/jcpp.13364>
- Vogel, M., Meigen, C., Sobek, C., Ober, P., Igel, U., Körner, A., ... & Poulain, T. (2021). Well-being and COVID-19-related worries of German children and adolescents: A longitudinal study from pre-COVID to the end of lockdown in Spring 2020. *Journal of Child Psychology and Psychiatry Advances*, *1*, e12004. <https://doi.org/10.1111/jcv2.12004>

Accepted for publication: 4 June 2021