

Editorial: Do lockdowns scar? Three putative mechanisms through which COVID-19 mitigation policies could cause *long-term* harm to young people's mental health

The use of lockdown to slow the spread of COVID-19 and reduce associated morbidity and mortality, has been unprecedented in its scale, scope and duration despite early predictions that such a measure would have a negative impact on the mental health and well-being of many young people and their families (Prime, Wade, & Browne, 2020). In fact, the choice of this public health intervention seems in many cases to have been made without any attempt to formally set its benefits (for instance in terms of disease mitigation) against its costs (for example in terms of quality of life, mental health and wellbeing) by adapting, for instance, health economic concepts such as Quality Adjusted Life Years that have the potential to incorporate life expectancy and quality of life into a single metric to guide decision making (Sonuga-Barke, 2021a). From a developmental psychopathology perspective both direct and indirect effects of lockdown-related harms to young people's mental health were predictable: Direct effects, for instance, being due to the negative psychological impact of social isolation and confinement on children; Indirect effects being exerted via negative impacts on family and parent mental health and wellbeing. That these effects would vary from person-to-person was also predicted from this perspective; with vulnerable individuals with pre-existing conditions and/or living in high-risk settings being at particular risk.

Longitudinal studies, either exploiting data from existing cohorts with prepandemic measures or set up at haste soon after the start of the pandemic, are starting to publish their findings (e.g. Breaux et al., 2021). To date these studies have typically not had the necessary 'natural experimental' control to precisely tie variations in the onset, offset and type of lockdown to mental health fluctuations (Sonuga-Barke, 2021b). However, as predicted, lockdown appears to have been associated with increases in young people's mental health and behavioural difficulties (see Waite et al., this issue) with these associations being strongest in, or even limited to, individuals with pre-existing mental health and neuro-developmental vulnerabilities and/or living in impoverished settings (Newlove-Delgado et al., 2021). Initial data suggests that these effects will be reflected in increased levels of referral to services (NHS England, 2021). More unexpectedly, initial findings suggest that some young people, for instance those who found normal pre-COVID life

outside the home (e.g. in school) stressful, had improved mental health during lockdown (Bruining, Bartels, Polderman, & Popma, 2021).

One might hope that the negative effects of lockdown will be short-lived and transient—with levels of mental health problems returning to baseline once everything gets back to normal. However, this is not necessarily the case and so, in this editorial we ask the question—*Are there scenarios in which lockdowns could create a more lasting impact on young people's biological or psychological functioning, the effects of which would be seen on their mental health over the long term?* Here, we set up three hypotheses, based on existing models from the prepandemic developmental psychopathology literature, describing ways in which time-limited adverse experiences can, in principle, fundamentally change individuals and/or the risks to which they are exposed, creating long-term vulnerability to mental health problems. The first hypothesis builds on neuroscientific evidence about the plasticity of the developing brain and how this can allow exposure to extraordinary social adversity, in this case, lockdown-related adversity, to shape brain development in ways that produce lasting risks to mental health. The second hypothesis exploits the concept of developmental cascades—whereby a series of events may trigger a negative response, in this case, for example, lockdown induced eating disorder or self-harm, which can set in train a set of transactional process within certain environments leading to developmental escalation and transformation of that response—even after the initial provoking factor is no longer present. The third hypothesis focuses on the well-established social and economic

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determinants of health and mental health—a scenario in which lockdown policies impact on wider social inequalities, the effects of which on child and adolescent mental health may be propagated through increased family stress, reduced family resources, education-linked inequalities, and exposure to ongoing maltreatment, domestic violence or family break-up. It goes without saying that these mechanisms, if they operated, would be by no means mutually exclusive or indeed likely to be statistically independent.

Are there circumstances under which lockdown experiences could create neurobiological vulnerability sufficient to lead to persisting mental health problems?

There is a growing body of literature highlighting the way in which maltreatment experienced during childhood, in the form of emotional and physical abuse, can negatively affect the brain, changing the way individuals think and creating a risk for mental health problems later in life (McCrorry, Gerin, & Viding, 2017). Lockdowns created extraordinary social, economic and interpersonal pressures and stressors for individuals within families. Given the power of social context to change the dynamics of family relationships, it would seem plausible that these heightened stressors would increase the risk of conflict between parents and children. Put in everyday terms, frustrated and unhappy children are more likely to push the boundaries and provoke their parents, while worried and stressed-out parents are more likely to react to that provocation. Together these effects could, in turn, create a potentially toxic setting for an escalating pattern of parent-child conflict, a coercive cycle, potentially increasing the risk of harsh and reactive parenting and eventually full-blown physical and emotional abuse. While in many families these patterns of escalating risk will be managed before they get out of control—so avoiding the risk of abuse—in other families, in more challenging settings with pre-existing vulnerabilities and fragilities this may not be the case. Studies of child maltreatment have identified factors likely to create both the context for the initiation of these negative cycles and their escalation to abuse. These include parental and child temperamental traits relating to emotional reactivity and regulation and emotional coping, pre-existing mental health problems, socioeconomic deprivation, lack of education and parenting role models and family composition (Doidge, Higgins, Delfabbro, & Segal, 2017). In families affected by these risks, it is likely that the physical and emotional abuse of children will have increased during lockdown. There are a number of indications that, indeed, lockdown led to marked increases in maltreatment (Loiseau et al., 2021).

There is also evidence that for the most at-risk families social services that perform a vital function

in maintaining family safety have dramatically reduced their support, particularly in the form of in-person contact, which has led to reductions in child protection assessments (Bhopal, Buckland, McCrone, Villis, & Owens, 2021), likely heightening risk for the most vulnerable families. If, as seems likely, it turns out to be true that lockdown increased maltreatment of vulnerable children in fragile families many questions will remain to be answered; was the type, timing (in terms critical or sensitive periods), severity and duration of abuse sufficient to induce brain changes? Were maltreated individuals at particular risk of long-term lockdown-related mental health problems? Did the brain changes mediate that mental health risk? To what extent can postpandemic improvements in family support and conditions mitigate these impacts?

Could long-term mental health consequences cascade via *de novo* onset of mental disorders, such as eating disorder, self-harm and suicidal ideation, triggered by lockdown experiences?

There is extensive evidence that mental health conditions in children and young people show marked continuity over time (e.g., Hofstra, VAN der ENDE, & Verhulst, 2000). They rarely occur as single discrete episodes, but rather demonstrate a pattern of relapsing and remitting symptoms that fluctuate and persist. In addition to possible biological processes, there are important behavioural and psychological mechanisms likely involved in mediating this continuity, including relatively persistent changes in beliefs about self and the world and alterations in patterns of behaviour that have knock-on experiential consequences, such as avoidance of experiences that might disconfirm threat beliefs or stimulate the development of coping skills. Changes in behaviour may also impoverish young people's social relationships, both in terms of quantity (increased social isolation and loneliness) and quality (e.g. more conflict, less confiding and support) and their opportunities for growth and achievement (e.g. due to reduced school attendance or impaired school performance). These kinds of interlinked continuities in psychological structures and experiences provide another set of reasons to be concerned that—once initiated by the stressors associated with lockdowns and the wider pandemic—mental health difficulties in young people may not desist naturally or quickly in all or possibly many cases.

Will long term effects on young people's mental health arise because of lockdown-related impacts on social and economic structures?

While cascading processes may result directly from the initial onset of a mental health condition in young people, it is also plausible that long-term increases in

well-established risk factors are likely to lead to sustained reductions in children and young people's mental health. Many contextual and family level risks are known to have increased during the pandemic, and particularly so for the most already-disadvantaged populations (i.e., financial hardship and uncertainty, family disruption). It is of course difficult to tie these increased risks directly to lockdown policies per se—much of the increase in risk resulting from the pandemic are likely to be a highly complex function of the pandemic itself and policy-related societal processes, with some having a more direct relation to lockdown than others. Nevertheless, many of these heightened risks could persist and exert a continuing influence on the likelihood of children and young people developing mental health problems and on their maintenance over time. Poverty and financial insecurity, for example, have well established associations with mental health (and most likely causal ones, e.g. see Costello, Compton, Keeler, & Angold, 2003) and in addition to the economic impacts that families have already experienced, the pandemic and lockdown measures may bring in their wake considerable long-term financial insecurity, which is likely to increase children's risk of experiencing mental health problems through a host of intermediate mechanisms (e.g. family conflict, parental mental ill-health). Long-term reductions in prevention and inadequate treatment services are also a concern if societies manage pandemic-related economic difficulties through the introduction of austerity measures. We also know that many children around the world have experienced severe disruptions to their education and formal exam outcomes, which may leave them at persistently increased risk of mental health difficulties as a result of the numerous direct and indirect effects of education on long-term outcomes. Unfortunately, these heightened ongoing risks will disproportionately affect children from economically disadvantaged and marginalised communities.

In summary

As many predicted, lockdown appears to have had a short-term impact on the mental health of many children and young people with pre-existing vulnerabilities, often for the worse, though for some individuals, for the better. Based on pre-COVID science, and new data on the link between lockdown and emerging risks for some, we relate here three plausible scenarios by which lockdown-related mental health risks may persist long-term. We argue that these scenarios highlight further the need to focus on individuals with pre-existing vulnerabilities and/or those living in high-risk situations especially, as biological, socioeconomic and psychiatric risks may cluster and concentrate within the same families. Significant investment in research and services will be critical to understand the risk mediating mechanisms and protective factors that can be targeted to

mitigate potential lockdown related long-term harms to children and young people.

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