

# Effects of childhood trauma on health and wellbeing: Many questions remain unanswered

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## Introduction

It was an honour, pleasure and a delight to deliver a keynote at the 35th Annual Conference of the European Health Psychology Society (EHPS) in August 2021. I've been a regular attendee at EHPS conferences for many years, and despite this year's being entirely online, it was a huge success. The fantastic organising team managed to deliver a great mix of live and recorded talks, stimulating roundtable and workshop events, special interest group sessions and state of the art lectures, opportunities for networking and discussion and much more. In sum, it was a masterclass in remote delivery of an international conference under pandemic conditions.

## Stress: The Quiet Killer

My keynote presentation was entitled "Stress: The Quiet Killer" and in the talk I argued that psychological stress can contribute to health risk and reduced longevity in two main ways. Directly: stress can adversely influence biological processes across the life span (e.g., blood pressure, hypothalamic-pituitary-adrenal (HPA) axis functioning, immune functioning) that can lead to excessive wear and tear of these basic physiological systems that ultimately lead to dysregulation and health vulnerability (See O'Connor, Thayer & Vedhara, 2021). Indirectly: stress can influence health to the extent that it produces deleterious changes in health behaviours that if maintained over time may be damaging for one's health. In the first half of the talk, I presented studies that

investigated the relationship between acute, chronic and daily stressors, perseverative cognition (i.e., the cognitive representation of past stressful events [rumination] or feared future events [worry]) and a range of health outcomes including diurnal cortisol levels and health behaviours with a particular focus on eating, together with some very recent work in the context of COVID-19 (e.g., Clancy et al., 2016; 2020; Hill et al., in press; Moss, Conner & O'Connor, 2021). The second half of the talk provided an overview of our work that has demonstrated that stress and dysregulated HPA axis activity, as measured by cortisol levels, are important additional risk factors for suicide and suicide vulnerability. Evidence for other putative stress-related suicide risk factors such childhood trauma was also described confirming the important role played by the HPA axis in understanding vulnerability to suicide (e.g., O'Connor et al., 2020a; b; O'Connor et al., 2016). The talk concluded with a number of take home messages including "Effects of stress are real and if maintained overtime may have substantial health and wellbeing implications", "Perseverative cognition confirmed as an important stress vulnerability variable" and "Psychological interventions are required to enable healthy, stress-protected, ageing trajectories".

## Early adversity, health and wellbeing

Planning and delivering a keynote or any presentation longer than 15 minutes often triggers reflections on one's past, current and future

research plans and can also help crystallise one's thinking on a particular issue or identify important themes in your work. In the case of my EHPS keynote, I was left thinking about the overwhelming significance of early adversity on an individual's life and future health and wellbeing prospects. Gouin and colleagues (2012) have shown that childhood abuse history substantially enhances inflammatory responses to daily stressors in adulthood. Findings from a New Zealand birth cohort, the Christchurch Health and Development Study, found that childhood sexual abuse had serious negative consequences for mental and physical health, psychological wellbeing and sexual risk-taking (Fergusson, McLeod & Horwood, 2013). In Europe, the Netherlands Mental Health Survey found that childhood trauma predicted a range of chronic physical disorders in adulthood, which even held after controlling for sociodemographic and lifestyle factors (Nobelsma et al., 2021). Another recent study found that childhood abuse was significantly associated with difficulties in emotion regulation, self-reported and objectively measured pre-sleep arousal, sleep quality, daily hassles, perceived and objective executive function difficulties (Tinajero et al., 2020). However, we are left thinking - how does childhood trauma have such serious consequences for mental and physical ill-health in adulthood? What are the precise biological, psychological, social and behavioural mechanisms of action?

## The role of stress and cortisol in suicide vulnerability

In our own work we have recently turned our attention to exploring the role of stress and cortisol in suicide vulnerability. In a study in 2017, we showed that the stress response system may be impaired in individuals vulnerable to suicide. Specifically, we found that individuals who had made a previous suicide attempt exhibited a

significantly lower cortisol response to a laboratory stressor compared to participants who had previously thought about suicide, but do not enact, and control participants (O'Connor et al., 2017). In the same study we also found that individuals who had made an attempt within the past year exhibited a blunted cortisol response to the laboratory stressor compared to participants with a more distant history of attempt. In addition, lower levels of cortisol in response to the stressor were associated with higher levels of suicidal ideation 1-month later. More recently, we also found evidence of HPA axis dysregulation in individuals vulnerable to suicide in a real world setting (O'Connor et al., 2020). In a 7 day study, we found that individuals with a history of suicide attempt or previously had thoughts of ending their life released lower cortisol upon awakening (known as the cortisol awakening response, CAR) and had a tendency toward flatter diurnal cortisol slopes across the day compared to individuals with no history of attempt or ideation. These, and other findings, clearly implicate dysregulation of the HPA axis in suicide vulnerability. However, they also motivate an obvious next question - what factors contribute to or cause these levels of dysregulation and increase future risks to health and wellbeing?

## The importance of childhood trauma

Childhood trauma is an obvious candidate variable and has been identified as an important variable in the development of suicide risk. For example, Marshall et al. (2013) found high levels of moderate and severe childhood trauma were associated with suicide attempt in a prospective cohort study of illicit drug users. In particular, they showed that severe sexual, physical and emotional childhood abuse conferred a substantial increased repeated suicide risk in adulthood. Alarming, we have found that 80% of individuals

who have previously attempted to end their own lives have reported experiencing at least one moderate to severe type of childhood trauma (O'Connor et al., 2020; see Figure 1), thereby replicating similar levels observed in an earlier study (O'Connor et al, 2017).

Figure 1: Exposure to any type of "Moderate to Severe" childhood trauma in attempt, ideation and control groups. Reproduced from O'Connor et al. (2020a).



Of direct relevance to the link between trauma and cortisol, Carpenter and colleagues, in two studies, showed that higher levels of childhood trauma were associated with lower cortisol reactivity to a laboratory stressor (Carpenter et al., 2007, 2011). Another influential study, Power et al. (2012), using data from the 1958 British birth cohort study, found evidence that childhood maltreatment was associated with flattened morning cortisol levels in mid-adulthood. In our own work, we have provided further support linking childhood trauma with blunted, or lower cortisol levels in response to stress and in naturalistic settings (O'Connor et al., 2018; 2020). Specifically, we have found that individuals vulnerable to suicide who reported more than one

moderate or severe type of childhood trauma exhibited the lowest cortisol levels in the laboratory (see Figure 2) and in the real world (see Figure 3).

## Future directions

Taken together, it is clear that childhood trauma plays a key role in the context of suicide risk. Converging evidence suggests that the experience of childhood trauma may predispose individuals to vulnerability to suicide in adulthood by leading to diminished HPA axis activity. McEwen's (1998) work on allostatic load and the idea that stress-related, repeated activation of the HPA axis leads to its own dysregulation is incredibly important. Lovallo's (2013) theorising that adverse early life experiences cause modifications in frontolimbic brain function which may then lead directly to (a) reduced stress reactivity, (b) altered cognition (characterized by a shift in focus to more short-term goals and impulsive response selection), and (c) unstable affect regulation also remains an important framework to guide future research. However, much remains to be learned. To date, there has been relatively little research investigating the effects of childhood trauma on health behaviours and the extent to which trauma may amplify the negative effects of stressors on sleep quality and duration, eating, alcohol consumption, substance abuse and physical activity. Similarly, the effect of worry and rumination (perseverative cognition) on health outcomes in the context of childhood trauma remains under-researched. Perseverative cognition has been shown to adversely affect cardiovascular, autonomic and endocrine nervous system activity and to negatively impact on health risk behaviours including sleep outcomes (Ottaviani et al., 2016; Clancy et al., 2016; 2020). However, the extent to which similar processes are exacerbated in

Figure 2. Effects of childhood trauma levels on cortisol reactivity to stress in individuals with a history of suicide attempt and ideation. Reproduced from O'Connor et al. (2018)

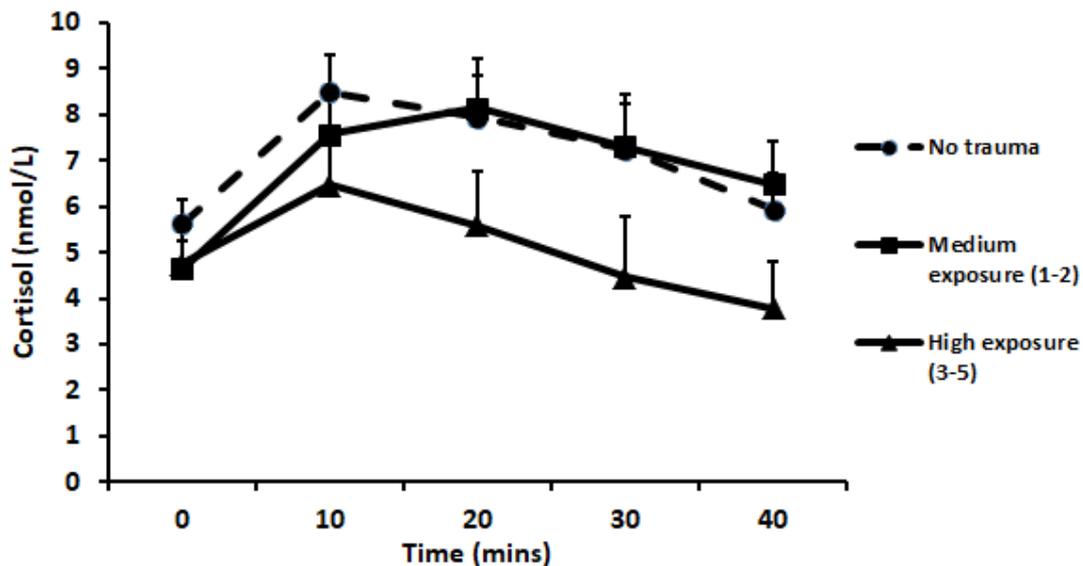
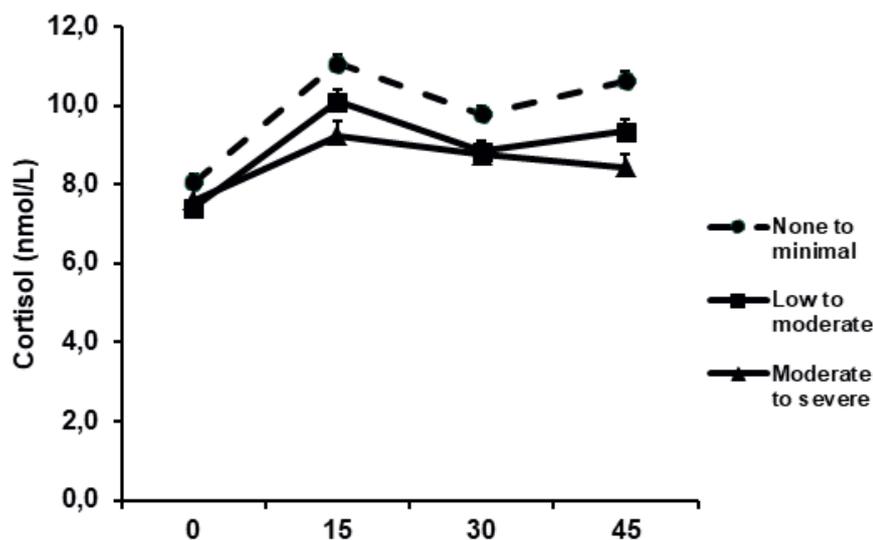


Figure 3. Effects of childhood trauma levels on cortisol awakening response in individuals vulnerable to suicide. Reproduced from O'Connor et al. (2020a)



individuals who have experienced childhood trauma is unknown. Therefore, further research ought to elucidate the precise causal mechanisms that link childhood trauma with increased physical and mental health vulnerability in adulthood.

These future investigations should aim to utilise a multi-level, prospective approach that integrates distal (childhood trauma, family history) and proximal risk factors (e.g., daily stressors and emotions, health behaviours, executive

functioning) and/or adopt a life span approach that follows-up individuals over extended periods of time. Health psychology, armed with the biopsychosocial model and a multitude of excellent research tools, measures and approaches, is well placed to answer these important and urgent questions.

For much more information on our work visit Laboratory for Stress and Health Research (STARlab) at the University of Leeds.

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