

# Unlocking the impact of early-life adversity on brain function

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Credit: Esma Atak from Pexels

Do adults with a history of childhood trauma have altered brain responses to psychological challenges? Previous studies indicated that this can occur in laboratory animals, but it has been unclear whether it

occurs in humans.

Now a team of scientists, led by researchers from McGill University, have found evidence that exposure to [childhood adversity](#) is associated with an altered ability to process stressful challenges and other emotional material. These effects might diminish the ability to cope with threatening events, increasing the risk for psychiatric disorders later in life.

"By integrating the results from 83 previous brain imaging studies, we were able to provide what is arguably the clearest evidence to date that adults who have been exposed to early life trauma have different [brain responses](#) to psychological challenges," says Marco Leyton, Full Professor in the Department of Psychiatry at McGill University.

"This includes exaggerated responses in a region that processes emotionally intense information (the amygdala), and reduced responses in a region that helps people regulate emotions and associated behaviors (the [frontal cortex](#))," adds Leyton, who is the Director of the Temperament Adversity Biology Lab (TAB Lab) at McGill.

## **Protecting children from trauma**

"These findings might explain why adults who experienced [childhood trauma](#) have intense emotional responses to stress. Once these responses begin, coping is extremely difficult. This could express itself as heightened threat reactivity and susceptibility to [mental health problems](#)," says Dr. Niki Hosseini-Kamkar, first author of the study and who undertook the work as a Postdoctoral Fellow in the Department of Psychiatry at McGill University.

The results highlight the need to protect children from trauma. If trauma does occur, help should be provided early, potentially decreasing the

development of long-lasting effects. The importance of these findings is underscored by [current events](#) in the Middle East, Africa, and Europe where war is traumatizing new generations of children.

"Many questions remain. For children who are exposed to traumas, what are the best interventions, how soon do they need to be applied, and what factors might aggravate or protect against the development of problems?," adds Hosseini-Kamkar, who conducted the study while at McGill but is now pursuing research at the Atlas Institute for Veterans and Families and the University of Ottawa Institute for Mental Health Research.

According to the researchers, these results are an important next step in understanding associations of adversity exposure with [brain function](#) and mental health problems while highlighting the importance of considering the role of development.

The work is [published](#) in the journal *JAMA Network Open*.

**More information:** Niki Hosseini-Kamkar et al, Adverse Life Experiences and Brain Function, *JAMA Network Open* (2023). [DOI: 10.1001/jamanetworkopen.2023.40018](https://doi.org/10.1001/jamanetworkopen.2023.40018)

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