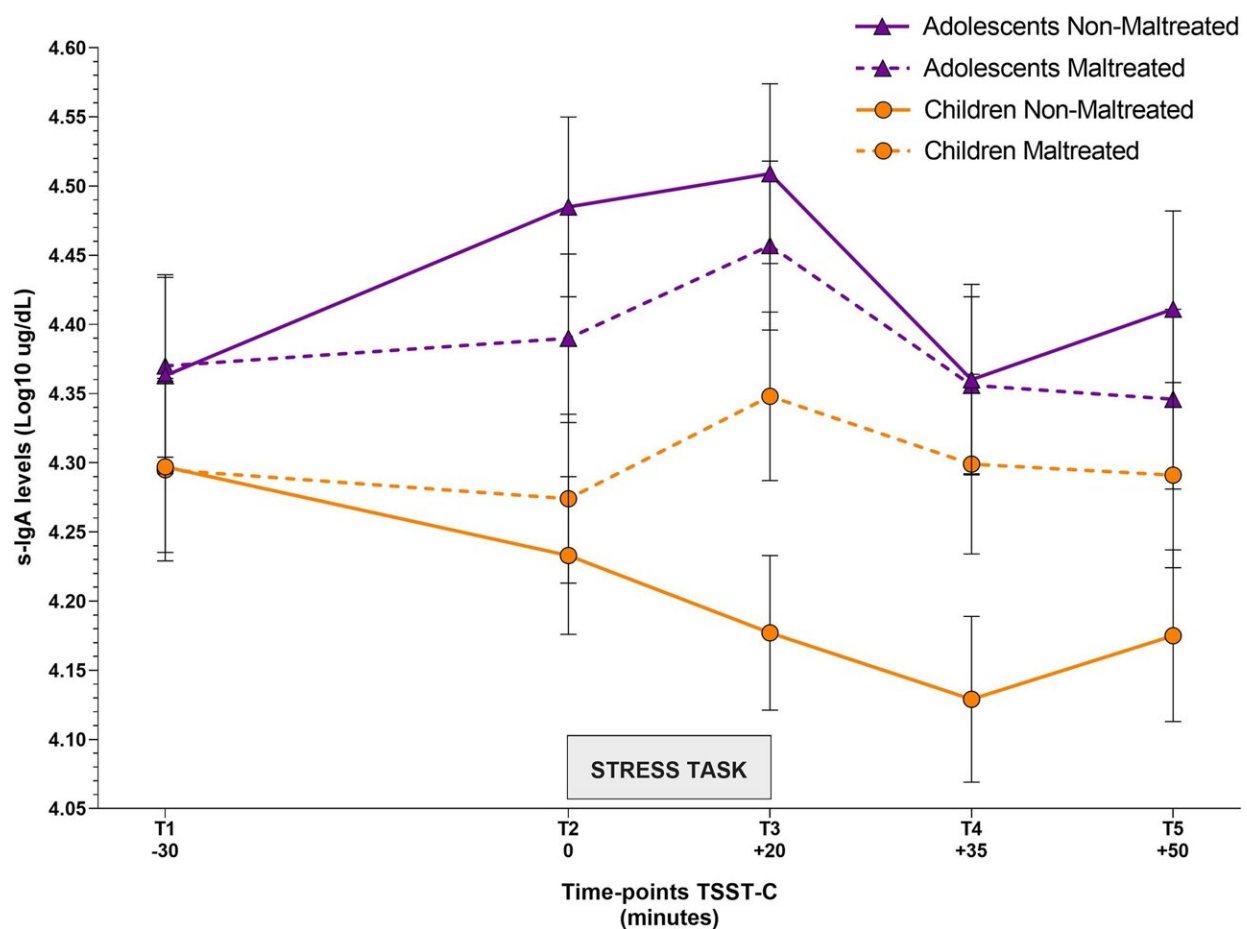


Children with history of maltreatment could undergo an early maturation of the immune system

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s-IgA trajectories according to the developmental stage, and the history of CM (Model 2): (1) non-maltreated children, (2) children exposed to CM, (3) non-maltreated adolescents, and (4) adolescents exposed to CM. Error bars SE.

Credit: *Brain, Behavior, and Immunity* (2022). DOI: 10.1016/j.bbi.2022.04.010

Acute psychosocial stress states stimulate the secretion of an antibody type protein that is decisive in the first immune defense against infection, but only after puberty. However, children with a history of maltreatment present a similar response to that of adolescents, which suggests there is an early maturation of the immune system in these cases. This is one of the main conclusions of an international study coordinated by Professor Lourdes Fañanás, from the Faculty of Biology and the Institute of Biomedicine of the University of Barcelona (IBUB), with participation of the groups from the Mental Health Networking Biomedical Center (CIBERSAM).

This study, published in the journal *Brain, Behavior, and Immunity*, includes the participation of researchers from the CIBERSAM groups at the Hospital Clínic de Barcelona, IDIBAPS, University Hospital Gregorio Marañón (Madrid), the University Hospital Puerta del Hierro (Majadahonda, Madrid), and the University Hospital Araba—Santiago Apostol (Vitoria, Basque Country). Among the collaborators are the Unit of Adolescent Crisis Germanes Hospitalàries Sant Boi, the Adolescent-Day Hospital in Gavà (Orienta Foundation), and the Adolescent-Day Hospital in Galdakao.

The team analyzed the behavior of the secretory immunoglobulin A (s-IgA) through saliva—a less invasive biological sample compared to blood tests—in acute psychosocial [stress](#) in children and adolescents, so as to explore the potential variability according to the [developmental stage](#) and history of child maltreatment.

The study involved 94 children and adolescents aged from 7 to 17 as participants (54 of them with a psychiatric diagnosis) from a broader Spanish study (EPI-Young Stress Project). To assess their biological reactivity to stress, they provided five samples of saliva during a Trier

social stress test for children (TSST-C)—a standardized protocol to analyze the biological response to acute stress in a controlled and reliable way—for the specific analysis of s-IgA and cortisol levels.

As part of the study, "we associated the acute psychological stress s-IgA secretion with the time after puberty, but children with a history of maltreatment presented a similar response. This is the first scientific study to ever explore this, and it is essential to have more studies to confirm the value of the secretory immunoglobulin A as a biomarker of acute stress," notes Professor Lourdes Fañanás, member of the Department of Evolutionary Biology, Ecology and Environmental Sciences of the UB and principal researcher of the CIBERSAM group.

Exposure to stress leads to the activation of several biological processes that aim to mount an efficient response to a threatening situation and they later restore the homeostasis when the stressor ends. The changes involved in the [stress response](#) depend on the [sympathetic nervous system](#) (SNS) and the hypothalamic-pituitary-adrenal (HPA), and each involves a quick adaptive response, known as the fight-or-flight response. The SNS activates the [immune system](#)—characterized by the activation of inflammatory processes—which could be altered after long periods of chronic stress (such as maltreatment).

Symptoms of an accelerated biological aging

The study states that the measurement of s-IgA could be a feasible biomarker to explore the peripheral immune reactivity to stress in young populations. Specifically, the researchers observed that, although children and adolescents presented similar s-IgA basal levels, their s-IgA reactivity to stress seemed to differ since the former showed an increase after the stressor rapid recovery, while the latter did not show a s-IgA response.

"However, we observed that children exposed to situations of maltreatment presented a response-to-stress pattern similar to that of the adolescents," notes Laia Marques-Feixa (UB-IBUB-CIBERSAM), first author of the paper.

As noted by Águeda Castro, co-author of the study, "this phenomenon could be in line with the widespread theories that defend that individuals exposed to a wide range of pernicious exposures—of psychosocial and chemical nature—experience what is known as accelerated biological aging."

"However, we need more studies to elucidate the role of the history of child maltreatment and the developmental stage in the regulation of the immune system of the young people."

Moreover, these maltreatment-associated alterations in the immune system "could have a high impact, since the deregulation of this system affects the whole organism, and has been related to different pathologies, both physical and mental, in the short and long term," notes Laia Marques-Feixa.

More information: Laia Marques-Feixa et al, Secretory immunoglobulin A (s-IgA) reactivity to acute psychosocial stress in children and adolescents: The influence of pubertal development and history of maltreatment, *Brain, Behavior, and Immunity* (2022). [DOI: 10.1016/j.bbi.2022.04.010](https://doi.org/10.1016/j.bbi.2022.04.010)

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