

# Children with heightened levels of serum interleukin-6 found to be at higher risk for mood disorders

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Bipolar disorder is characterized by transitions between depression and mania.  
Credit: Wikipedia

(Medical Xpress)—A team of researchers affiliated with several institutions in the U.K. has found that nine-year-old children with high levels of serum interleukin-6 (IL-6) in their blood have a higher-than-average risk of developing a mood disorder by age 22. In their paper published in the journal *Psychology Medicine*, the researchers describe the longitudinal study they carried out with children and their parents and what they learned from it.

The study by the team was part of The Avon Longitudinal Study of Parents and Children, which involved thousands of volunteers—a [longitudinal study](#) is a research effort carried out over many years in which participants are observed and tested in various ways to learn more about cause and effect in diseases. As part of the study, the researchers drew blood from 4,645 nine-year-old children and tested CRP levels (infection fighting interleukin-6), asthma and eczema. As the children grew older, researchers periodically observed them and when they turned 22, 3,361 of them were asked to take a test that measured hypomanic and/or depression symptoms.

The researchers found that those people who as nine-year-old children had tested in the top one-third for the highest levels of IL-6 had a significantly increased risk of experiencing hypomanic symptoms (such as being bi-polar or developing [seasonal affective disorder](#)) by the age of 22, compared to children that tested in the bottom third. In contrast, the researchers found no evidence of increased risk of mood disorders in people who had either asthma or eczema as children.

IL-6 is produced naturally in the body (by [white blood cells](#)) when people experience infections, fevers or even engage in aerobic activities—any of which can lead to one or more types of inflammation. Prior research has shown a possible link between inflammation and mood disorders and that IL-6 in particular is capable of altering brain activity, particularly the parts associated with sleep, mood, self-esteem,

anxiety and memory. The researchers suggest that it might be possible to test [children](#) in the future for IL-6 levels, and if they are high, to bring them down to help avoid mood disorders later on in life.

**More information:** J. F. Hayes et al. Childhood interleukin-6, C-reactive protein and atopic disorders as risk factors for hypomanic symptoms in young adulthood: a longitudinal birth cohort study, *Psychological Medicine* (2016). [DOI: 10.1017/S0033291716001574](https://doi.org/10.1017/S0033291716001574)

### **Abstract**

There are no existing longitudinal studies of inflammatory markers and atopic disorders in childhood and risk of hypomanic symptoms in adulthood. This study examined if childhood: (1) serum interleukin-6 (IL-6) and C-reactive protein (CRP); and (2) asthma and/or eczema are associated with features of hypomania in young adulthood.

Participants in the Avon Longitudinal Study of Parents and Children, a prospective general population UK birth cohort, had non-fasting blood samples for IL-6 and CRP measurement at the age of 9 years ( $n = 4645$ ), and parents answered a question about doctor-diagnosed atopic illness before the age of 10 years ( $n = 7809$ ). These participants completed the Hypomania Checklist at age 22 years ( $n = 3361$ ).

After adjusting for age, sex, ethnicity, socio-economic status, past psychological and behavioural problems, body mass index and maternal postnatal depression, participants in the top third of IL-6 values at 9 years, compared with the bottom third, had an increased risk of hypomanic symptoms by age 22 years [adjusted odds ratio 1.77, 95% confidence interval (CI) 1.10–2.85,  $p$  Higher levels of systemic inflammatory marker IL-6 in childhood were associated with hypomanic symptoms in young adulthood, suggesting that inflammation may play a role in the pathophysiology of mania. Inflammatory pathways may be suitable targets for the prevention and intervention for bipolar disorder.

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