

# Girls under stress age more rapidly, new study reveals

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Research by Stanford psychologist Ian Gotlib and others shows that girls with a family history of depression have shorter telomeres than girls without that risk factor.

(Medical Xpress)—Stress takes a toll on both mind and body. Intuitively, that's not a big surprise. Many studies have found links among stress, depression and disease. But scientists didn't really know which came first: stress, depression or changes in the body.

Stanford psychologist Ian Gotlib and colleagues at Stanford, Northwestern University and the University of California, San Francisco found one way to address this question. They studied healthy girls at high risk for developing depression because they have a [family history](#) of the disorder. These girls were stressed out, and they responded to stress by releasing much higher levels of the hormone cortisol.

The girls also had [telomeres](#) that were shorter by the equivalent of six years in adults. Telomeres are caps on the ends of chromosomes. Every time a cell divides the telomeres get a little shorter. Telomere length is like a biological clock corresponding to age. Telomeres also shorten as a result of exposure to stress. Scientists have uncovered links in adults between shorter telomeres and [premature death](#), more frequent infections and chronic diseases.

Gotlib, the David Starr Jordan Professor and chair of the Department of Psychology, was surprised by the telomere shortening: "I did not think that these girls would have shorter telomeres than their low-risk counterparts – they're too young."

So which came first: stress, depression or premature aging? These otherwise healthy girls showed signs of stress and premature aging before any of them were old enough to develop depression.

## Girls under stress

For this study, published recently in *Molecular Psychiatry*, the team recruited 10- to 14-year-old healthy girls with a family history of depression and compared them to healthy girls without that background.

The researchers measured the girls' response to [stress tests](#), asking them to count backwards from 100 by 7's, and interviewing them about stressful situations. Before and after the test, the team measured the

girls' cortisol levels. They also analyzed DNA samples for [telomere length](#).

Before this study, "No one had examined telomere length in young children who are at risk for developing [depression](#)," Gotlib said.

Healthy but high-risk 12-year-old girls had significantly [shorter telomeres](#), a sign of premature aging.

"It's the equivalent in adults of six years of biological aging," Gotlib said, but "it's not at all clear that that makes them 18, because no one has done this measurement in children."

## Preventive actions

What can a concerned parent or guardian do? Gotlib noted that other research shows exercise delays telomere shortening in adults, and he recommended that high-risk girls learn stress reduction techniques.

In other studies, Gotlib and his team are examining the effectiveness of stress reduction techniques for girls. Neurofeedback and attention bias training (redirecting attention toward the positive) seem promising. Other investigators are studying techniques based on mindfulness training.

The researchers are continuing to monitor the girls from the original study. "It's looking like telomere length is predicting who's going to become depressed and who's not," Gotlib said.

**More information:** "Telomere length and cortisol reactivity in children of depressed mothers." *Molecular Psychiatry* advance online publication 30 September 2014; [DOI: 10.1038/mp.2014.119](https://doi.org/10.1038/mp.2014.119)

Provided by Stanford University

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