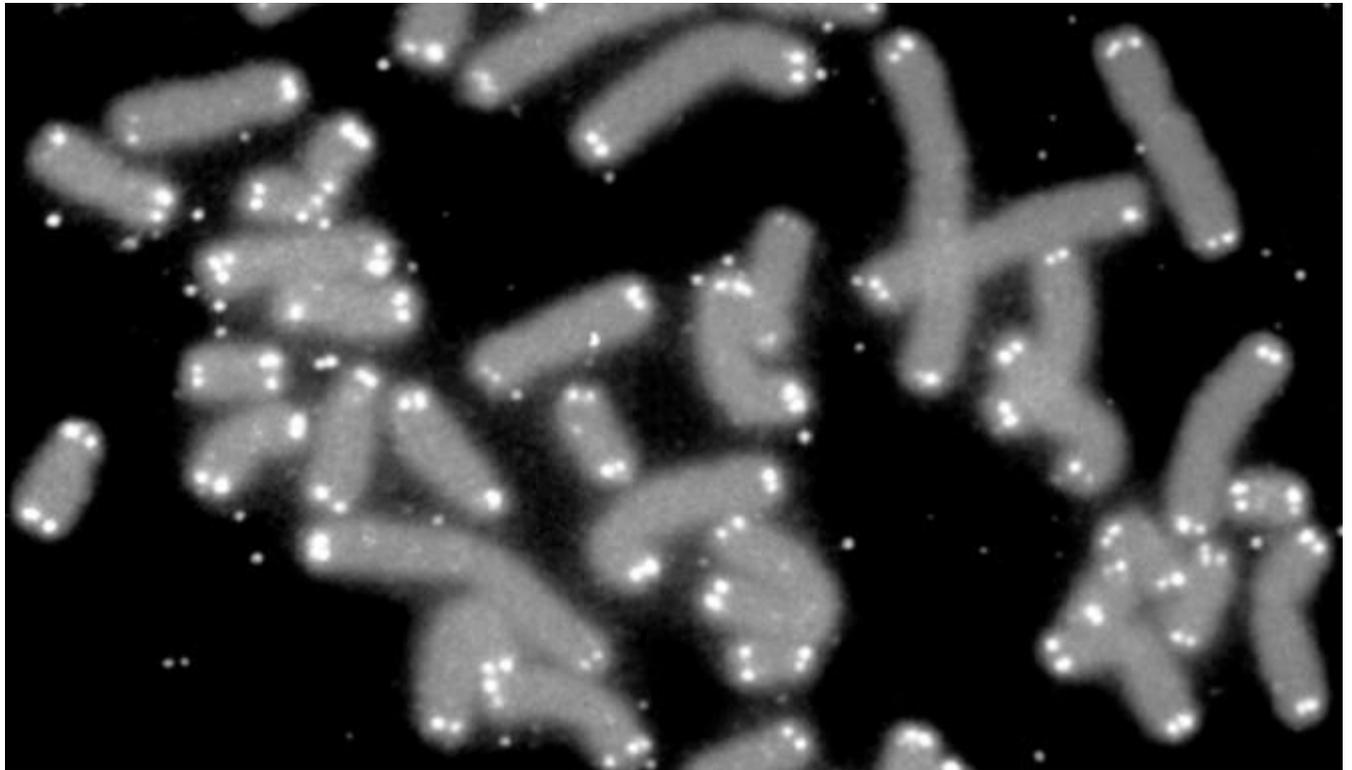


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Stress And Poverty Makes Children's Chromosomes Look Middle-Aged



Poverty and stress are especially hard for children, but disparities might harm children's chromosomes as well. A hard life, according to new research, might prematurely age children's chromosomes! This finding has serious implications. [The new study published](#) in *Nature* revealed that unstable, stressful upbringings seem to shorten telomeres – the protective, structural caps found on the end of chromosomes – and make them seem decades older. The changes in chromosomes can be seen in nine-year-olds.

The study examined the [DNA of 40 African-American boys](#) and found that the boys from socially disadvantaged homes had telomeres that were on average one-fifth shorter than the boys who were raised in more secure and nurturing homes. Chromosomes' telomeres generally get shorter with age, so a shorter chromosome cap is associated with advanced age. The authors are clear to add that it's too soon to draw conclusions that stress and deprivation are the actual cause of the chromosome end caps shortening. Still, the implications could be that stress and poverty might actually decrease lifespans and the damage might start in childhood.

Even more daunting, the study found that [children whose moms changed partners](#) during their childhood have the most significant changes in chromosomes. Those children had chromosome caps that were 40 percent shorter than the chromosomes of boys with unchanged family dynamics during the first nine years of life, according to *The Verge*.

The study did find certain [gene variants that made chromosomes' telomeres](#) more sensitive to stress; however, the same gene variants were associated with even longer chromosome telomeres when the boys came from a more comfortable background, *The Independent* reported. Daniel Notterman said that gene variants that amplified the length discrepancies are involved in making dopamine and serotonin. This seems to show that a person's sensitivity to stress plays a large role in how drastically the chromosomes are affected. Hilda Pickett from the Children's Medical Research Institute in Sydney hopes the research will eventually explain the mechanics of how stress shortens the chromosome caps. She also says that the exact role of dopamine and serotonin also requires more research.

Notterman said, "I'm not surprised we found such a relationship and I'm not surprised by the gene interaction. I'm surprised by the magnitude of the association." Next, he plans to study the chromosomes of 1,000 children and then follow up with them at age 15. That will help answer questions that arose from the small sample size. For now, Notterman continues his research. The first group of boys are now 15-years old and he plans to analyze the influence of stress on the same children's chromosomes now that they are older.

[Image via Human Genome Program]

Read more at <http://www.inquisitr.com/1206765/stress-and-poverty-makes-childrens-chromosomes-look-middle-aged/#ozm5ld1FBMOdq9V9.99>