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Accelerated telomere shortening in response to life stress.

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Numerous studies demonstrate links between chronic stress and indices of poor health, including risk factors for cardiovascular disease and poorer immune function. Nevertheless, the exact mechanisms of how stress gets "under the skin" remain elusive. We investigated the hypothesis that stress impacts health by modulating the rate of cellular aging. Here we provide evidence that psychological stress — both perceived stress and chronicity of stress — is significantly associated with higher oxidative stress, lower telomerase activity, and shorter telomere length, which are known determinants of cell senescence and longevity, in peripheral blood mononuclear cells from healthy premenopausal women.

Women with the highest levels of perceived stress have telomeres shorter on average by the equivalent of at least one decade of additional aging compared to low stress women. These findings have implications for understanding how, at the cellular level, stress may promote earlier onset of age-related diseases.

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