Childhood cognition may explain grey matter-cognition associations in old age

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Variations in brain cortical thickness in old age can be related to cognitive ability in childhood, according to a new study published in Molecular Psychiatry. The results suggest that differences in cortical thickness in old age, which are frequently interpreted as a cause of cognitive aging, may actually result from lifelong associations between cortical thickness and cognitive ability.

The preservation of brain cortical tissue (grey matter) volume is frequently thought to be a foundation for successful cognitive aging; however a clear causal connection has not been established. Sherif Karama and colleagues analysed data from 588 subjects. The subjects took
the same well-validated test of general cognitive ability at age 11 and 70 years, and had brain scans (MRI) at about 73 years old. The results suggested widespread correlations between brain cortical thickness and cognitive ability at age 70. However, when these correlations were adjusted for the cognitive ability test scores that had been taken 60 years previously, the association was no longer significant. Childhood cognitive ability substantially accounted for the association between cognitive ability and brain cortical thickness in old age.

The authors speculate that there could be a lifelong association between cortical thickness and cognitive function, caused by factors that exist from early in life. Additionally, there might be a reciprocal, dynamic association between cortical thickness and cognitive ability. For example, greater cortical thickness could lead to greater cognitive ability, which in turn may foster an increased propensity for stimulating activities and result in cortical growth.

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