
Low education makes the brain age faster

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Mental capacity and IQ deteriorate much faster for people with less education than others, study reveals. The findings provide new insight into the development of dementia.

Growing old isn't fun. Our joints and muscles get weaker and our brain and mental capacities get slower. But this happens faster for some than for others.

That's the conclusion of a new Danish study that found that people with little lose mental and cognitive abilities much faster than those who do more years at school.

When the scientists looked at the participants' educational backgrounds and lines of work and compared them with how their cognitive performances deteriorated over the years they found a considerable difference.

"It seems that challenging the intellect daily counters the wear and tear of the brain brought on by ageing," says Eigil Rostrup, consultant doctor at Glostrup Hospital and senior researcher behind the study which was recently published in the journal *Human Brain Mapping*.

An unhealthy lifestyle isn't the reason

Previous studies have shown that people with low incomes and limited education have a tendency to lead less healthy lifestyles than others and exercise less. This kind of lifestyle leads to a higher risk of dementia and ageing of the brain -- and could perhaps explain the results.

"We expected to see a majority of smokers and overweight people in the group of participants whose mental capacities had deteriorated the most, as the unhealthy lifestyle is hard on the body. But surprisingly that wasn't the case," says Rostrup.

"The obvious interpretation is that people with limited education and a job that's less mentally demanding age faster, because they don't exercise their cognitive functions on a daily basis to the same extent," he says.

Long-term study reveals developments

The Danish study was based on data from 2,400 boys born in Greater Copenhagen in 1953, collected over the course of 57 years. The boys were tested physically and mentally at the age of 20, and then again at the age of 57. The data allowed the researchers to evaluate the participants' physical state, weight, and smoking habits, as well as their IQs.

From the group of 2,400 men, the researchers then picked the 100 healthy participants who got the best scores at age 57 compared with their results at age 20, and the 100 men who got the poorest scores compared with their results at age 20. These participants were invited to Glostrup Hospital, where they had their brains scanned while solving a task.

“We asked the participants to lie completely still in the MR-scanner without doing anything. Once in a while a light would flash in the scanner and at the same time the participant had to move his fingers,” says Rostrup.

This allowed the researchers to tell how the participants’ brain activity changed from activity in the so-called default mode network to problem solving activity. The ability to make this change deteriorates with age.

Mental gymnastics ease symptoms of ageing

The brain scans showed that the least educated participants were not as good at making the change from default mode to problem-solving activity. And that’s a sign of advanced ageing, says Rostrup.

“In young people the brain quickly and efficiently switches from the default mode to problem-solving activity. But in elderly people, and especially those who are demented or suffer from Alzheimer’s, this change is slow and inefficient,” says Rostrup.

So the results suggest that an education or a job that challenges the brain on an everyday basis will give you extra mileage when it comes to avoiding dementia and working against the general ageing of the brain.

“The better our brains manage this change from rest to problem-solving when we are 60, the better equipped we will be at the age of 80 when it comes to handling the tasks of daily life and avoiding the symptoms that are especially common in patients with dementia, including Alzheimer’s,” says Rostrup.

“However, it should be mentioned that it was only a minor effect and that the participants weren’t necessarily on their way to developing dementia. But it’s a biological indication of advanced ageing,” he says.

Could be used to prevent dementia

Simon Fristed Eskildsen, associate professor at Aarhus University and researcher at the Center of Functionally Integrative Neuroscience, says new study is interesting and based on a large amount of data and information that isn’t usually available, says He believes that the study could be a step towards understanding how dementia and Alzheimer’s develop.

“It’s interesting if we can predict whether people will develop dementia or Alzheimer’s, as we will then be able to take preventive measures against the symptoms. One approach could be a change in lifestyle, getting more exercise. Or exercising one’s cognitive functions to a greater degree,” says Eskildsen.

It’s also very interesting from a medical perspective to catch patients at the early stages of dementia, so the illnesses aren’t so advanced that nothing can be done, he says.

“Dementia is hard for the patients and their relatives, and it’s also a great economic strain on society, as people with dementia often have difficulty taking care of themselves. So the results are very interesting, as they may help us understand and prevent dementia and Alzheimer’s,” says Eskildsen.

Needs to be tested on individuals

However, the study is only a small step towards being able to predict dementia and Alzheimer’s, as the researchers normally can’t compare the individual patient’s cognitive performance at a young age with their performance late in life, Eskildsen says.

“It would be very interesting if we could develop a way to measure the deterioration in individuals. Here the

researchers are looking at large groups for an extended period of time in order to evaluate the deterioration process. Doctors very rarely have that information at their disposal," he says.

So, at this point the study indicates that it pays to exercise -- not just the body, but also the mind -- if one would like to stay young for as long as possible.

 [Education and mental gymnastics seem to keep the brain from developing early signs of ageing, new Danish research shows. \(Photo: Shutterstock\)](http://www.shutterstock.com/da/pic-149897186/stock-photo-group-of-male-construction-workers-at-a-building-site.html?src=xgzDe2Rob_7g-UWb58kReQ-1-3) [9]
 [constructionworkers.jpg.crop_display.jpg](#) [10]

Fact box

The 'Brain's Default Mode Network' is located in three areas of the brain: the frontal cortex, the posterior cingulate cortex and the parietal lobe.

The change from activity in the brain's default mode network to the problem solving activity is known as the task-induced deactivation (TID).

Fact box

Upwards 80,000 Danes suffer from dementia. The illness grows more and more common as life expectancy goes up.

Alzheimer's is a type of dementia and accounts for roughly 60 percent of all cases of dementia.

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["Subclinical cognitive decline in middle-age is associated with reduced task-induced deactivation of the brain's default mode network"](#), Human Brain Mapping (2014), DOI: 10.1002/hbm.22489 [17]

[Bo Christensen](#) [18]
Iben Gøtzsche Thiele

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