

## You won't believe it - we get less grumpy with age! Analysis of the brain shows how it changes as we mature and shapes our personality

- Those with a thicker outer cortex tend to have more neuroticism, a study found
- People with a thinner and more-folded cortex are more open and agreeable
- The study also found people become more agreeable as they get older
- This is because the region related to neuroticism in the brain thins out

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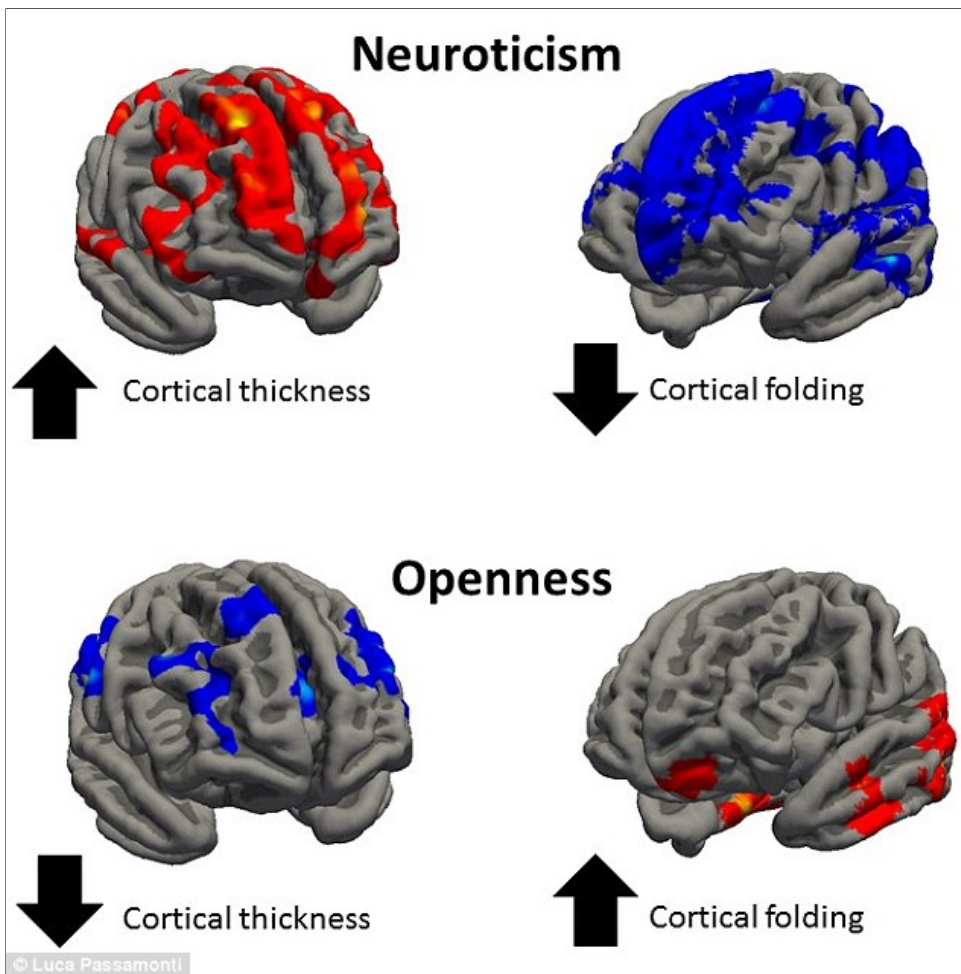
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It's the news that will shock grumpy old men everywhere - but we actually get nicer as the years roll by.

According to University of Cambridge brain scientists, we become less moody, more agreeable and more conscientious as times passes.

The changes are a natural process as the organ matures and come after new technology allowed the scientists to map the brains of 500 volunteers and track any changes over time.



The researchers found high levels of neuroticism are associated with increased thickness and reduced folding in some regions of the brain. Openness is associated with reduced thickness and an increase in folding

With colleagues in the US and Italy, they focused on the anatomy of the cortex, or outer layer, where the higher functions that make us human are centred.

Significant links were found between the thickness of certain areas and personality.

Those regions linked to moodiness, agreeableness and conscientiousness alter their shape over time as the brain 'stretches'.

The surface becomes thinner and more folded or wrinkly, creating a bigger surface area, as opposed to the tendency for those prone to mood changes to have a thicker, less wrinkly cortex.

Although the volunteers were aged 22 to 36 with no history of psychiatric or medical problems, the researchers said their findings provided an

## WHAT THE SHAPE OF YOUR BRAIN MEANS

New research, led by psychologists at the University of Cambridge, found differences in the brain's anatomy are linked to these different behaviour traits.

explanation for findings that we do mellow with age.

Dr Luca Passamonti, of Cambridge's Department of Clinical Neurosciences, said: 'Evolution has shaped our brain anatomy in a way that maximises its area and folding at the expense of reduced thickness of the cortex.

'It's like stretching and folding a rubber sheet – this increases the surface area but the sheet becomes thinner. We refer to this as the 'cortical stretching hypothesis'.'

Cortical stretching has allowed the human brain to expand rapidly without becoming too big for our skulls, said fellow researcher Professor Antonio Terracciano, of Florida State University. He added previous research as well as our common experiences show that people's personalities change with age.

They looked at images of the brains of 500 people, focussing on the brain cortical anatomy, the outer layer of the brains.

The researchers found high levels of neuroticism are associated with increased thickness and reduced folding in these regions of the brain.

Openness is associated with reduced thickness and an increase in folding.



**As the brain area associated with neuroticism thins out, we become less irritable. As brain areas linked with openness and agreeableness become thinner but more folded, these traits also increase. Stock image**

'The thickness of the cortex tends to decrease while the area and folding increase,' said the professor.

'People often talk about becoming more mature. They take more responsibility and become less antagonistic, less combative, and many studies show this.

'By finding brain regions closely linked to personality, they highlight the important role biology plays in our personality. Our research highlights a possible explanation for the biological mechanism behind these changes.'

Professor Terracciano said the volunteers would have to be tested again in 20 years to fully confirm the theory.

The research is featured in the journal *Social Cognitive and Affective Neuroscience*.

Dr Wendy Burn, co-chair of the Gatsby Wellcome Neuroscience Project at the Royal College of Psychiatrists said: 'This study reinforces our assertion that basic research in neuroscience is crucial in informing psychiatric care.

'It is imperative that psychiatric trainees are provided with the skills and knowledge to understand neuroscience to the level where they can confidently identify the link between brain activity and mental health.'