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**BBC**

**Dark winters 'led to bigger human brains and eyeballs'**

By Judith Burns Science reporter, BBC News

Humans living at high latitude have bigger eyes and bigger brains to cope with poor light during long winters and cloudy days, UK scientists have said.

The Oxford University team said bigger brains did not make people smarter.

Larger vision processing areas fill the extra capacity, they write in the Royal Society's Biology Letters journal.

The scientists measured the eye sockets and brain volumes of 55 skulls from 12 populations across the world, and plotted the results against latitude.

Lead author Eiluned Pearce told BBC News: "We found a positive relationship between absolute latitude and both eye socket size and cranial capacity."

The team, from the Institute of Cognitive and Evolutionary Anthropology, used skulls dating from the 1800s kept at museums in Oxford and Cambridge.

The skulls were from indigenous populations ranging from Scandinavia to Australia, Micronesia and North America.

Largest brain cavities

The largest brain cavities came from Scandinavia, while the smallest were from Micronesia.

Eiluned Pearce said: "Both the amount of light hitting the Earth's surface and winter day-lengths get shorter as you go further north or south from the equator.

"We found that as light levels decrease, humans are getting bigger eye sockets, which suggests that their eyeballs are getting bigger.

"They are also getting bigger brains, because we found this increase in cranial capacity as well.

"In the paper, we argue that having bigger brains doesn't mean that high-latitude humans are necessarily smarter.

It's just they need bigger eyes and brains to be able to see well where they live."

The work indicates that humans are subject to the same evolutionary trends that give relatively large eyes to birds that sing first during the dawn chorus, or species such as owls that forage at night.

Co author Prof Robin Dunbar said: "Humans have only lived at high latitudes in Europe and Asia for a few tens of thousands of years, yet they seem to have adapted their visual systems surprisingly rapidly to the cloudy skies, dull weather and long winters we experience at these latitudes."

The team took into account the overall body size of each individual by measuring the foramen magnum - the hole in the base of the skull that attaches to the spinal column.

They also controlled for the possibility that the larger eye sockets were needed for extra fat around the eyeball to insulate them from freezing temperatures.

The team intends to do more work on establishing a firm link between eyeball size and enhanced visual processing areas in the brain, and to replicate the link found in the 55 original skulls with further study on specimens from other museums.

DAILY MAIL (London)

July 27, 2011 Wednesday

**BRAIN POWER LIGHTS UP THE DARK** **NORTH**  
**BYLINE:** By Fiona MacRae Science Correspondent  
  
**LENGTH:** 397 words

FOR Northerners tiring of those old jokes about them being less than bright, help is at hand.

Scientists say the Northern brain is actually bigger than those of the South.

But before Northerners round triumphantly on their pea-brained Southern crictics, big doesn't necessarily mean smarter.

Instead, the extra grey matter simply helps them see clearly in the lower light levels that come with living at high latitudes.

To put it another way, Northern dimness led to the evolution of bigger brains.

The intriguing theory comes from Oxford University scientists who measured the brain volume of 55 skulls from around the world.

Some were English, others came from as far afield as China, Africa and the Pacific Islands.

Plotting brain volume with the geographical location of the person's country clearly showed that the further north they lived, the bigger their brain.

Scandinavians had the most brain power and Pacific Islanders the least.

Measurements of the eye sockets also showed that those from northern climes had bigger eyes.

Finally, the research team showed that the eyesight of those living in the north is just as good as those based near the equator, despite their days being illuminated by less of the sun's light.

Researcher Eiluned Pearce, from the university's school of anthropology, said that this suggests that the bigger brains and eyes are needed to see properly in dimmer light.

'As you move away from the equator, there's less light available, so humans have had to evolve bigger and bigger eyes.

Their brains also need to be bigger to deal with the extra visual input.'

Northerners, however, should not get too big-headed as the researcher added: 'Having bigger brains doesn't mean that higher latitude humans are smarter, it just means they need bigger brains to be able to see well where they live.'

The study, published in the Royal Society journal Biology Letters, took into account other factors that could have affected the results, including the fact that people living at higher latitudes are physically bigger over all.

The study did not examine differences in brain size in individual countries, however these are expected to be bigger in long, thin countries such as Brazil and Chile.

In the UK, there may be very slight differences between northern and southern cities Ð if they haven't been wiped out by the population mixing over the years.

Guardian Unlimited

July 27, 2011 Wednesday

**People at darker, higher latitudes evolved bigger eyes and brains**  
**BYLINE:** Alok Jha[guardian.co.uk](mailto:guardian.co.uk" \t "_blank)  
  
**LENGTH:** 558 words

People who live at higher latitudes have larger eyes and more processing power in their brains to deal with visual information, compared with those living nearer the equator, a study suggests.

"As you move away from the equator, there's less and less light available, so humans have had to evolve bigger and bigger eyes," said [Eiluned Pearce](http://www.icea.ox.ac.uk/about-us/staff/students/eiluned-pearce/" \t "_blank) from the Institute of Cognitive and Evolutionary Anthropology at Oxford University, a lead author on the study.

"Their brains also need to be bigger to deal with the extra visual input.

Having bigger brains doesn't mean that higher-latitude humans are smarter, it just means they need bigger brains to be able to see well where they live."

This suggests that someone from Greenland and someone from Kenya will have the same ability to discern detail, but the person from the higher latitude needs more brainpower and bigger eyes to deal with the lower light levels.

Professor [Robin Dunbar](http://www.isca.ox.ac.uk/about-us/staff/academic/prof-robin-dunbar/" \t "_blank), director of the [Institute of Cognitive and Evolutionary Anthropology](http://www.icea.ox.ac.uk/" \t "_blank) at Oxford University and a co-author of the study, said that people whose ancestors have lived within the Arctic circle, have eyeballs 20% bigger than people whose ancestors lived near the equator.

They have an associated increase in the size of the brain's visual cortex, which previous studies have shown correlates with the size of the eyeball.

Brain volume is known to increase with latitude: people living at high latitudes north and south of the equator have bigger brains than people living near the equator and .

Dunbar said that scientists have wondered whether these inherited differences in total brain volume were driven by the pressure to adapt to low light levels at high latitudes.

Th researchers measured the brain volumes and eye sockets of 55 skulls kept at the [Oxford University Museum of Natural History](http://www.oum.ox.ac.uk/" \t "_blank) dating from the 19th century.

The skulls represented 12 different populations from around the world, including indigenous people from England, Australia, China, Kenya, Micronesia and Scandinavia.

The results, [published on Wednesday in the journal Biology Letters](http://rsbl.royalsocietypublishing.org/lookup/doi/10.1098/rsbl.2011.0570" \t "_blank), showed that the biggest brains, averaging 1,484 millilitres, were from Scandinavia, while the smallest brains, around 1,200 millilitres, came from Micronesia.

Average eye socket size was 26.83 millilitres in Scandinavia and 21.83 millilitres in Micronesia.

Dunbar said the increase in brain volume must have evolved relatively recently in human history.

"It's only within the last 10,000 years or so that modern humans have occupied all latitudes right up to the Arctic circle.

This is, I guess, an adaptation that's happened within the last 10,000 years."

The researchers controlled for possible confounding variables influencing their data, such as the fact that people who live at higher latitudes are physically bigger and the possibility that the size of a person's eye socket in colder climates might be bigger to allow for a thicker layer of insulating fat.

The results for human eyes mirror those found in birds and non-human primates.

Bird species that sing earlier in the dawn chorus at high latitudes have bigger eyes than those that sing later, and nocturnal primates have bigger eyeballs than species that are awake during the day.

he Express

July 27, 2011 Wednesday   
Edition 1;   
National Edition

**Why Northerners have bigger brains**  
  
**BYLINE:** Nathan Rao  
  
**SECTION:** NEWS; Pg. 11  
  
**LENGTH:** 444 words

IT may confirm what half the country has thought all along but now it's official - Northerners really do have bigger brains.

Scientists say the further away from the equator people live, the more grey matter they have, which some will no doubt be tempted to believe explains the mental aptitude of brainy Northerners like particle physicist Brian Cox, 43, from Chadderton, Lancashire.

The long list could also include former Countdown presenter and maths genius Carol Vorderman, 50, who grew up in Prestatyn, North Wales, or poet William Wordsworth, born in Cockermouth, Cumbria.

The study reveals that the further north people live from the equator, the more likely they are to have larger eyes.

It is thought they are necessary to see in the reduced light levels of the northern hemisphere.

The size of the eye sockets and the part of the brain that deals with sight are therefore bigger.

Researchers measured 55 skulls from museum collections dating to the 1800s, from 12 different populations from across the globe.

They found the size of the brain and eye sockets rose in line with the latitude of the country of origin.

It is not quite a good enough reason for Northerners to get smug, however.

For it is only the part of the brain connected to sight which increases, which doesn't have much effect on our intelligence.

Professor Robin Dunbar, one of the paper's Oxford University authors, said: "Unfortunately it does not mean that everybody with a bigger brain is a superhero.

"People who live at higher latitudes do seem to have larger brains but this is because the brain's visual processing area at the back of the brain is larger.

"It seems that in the grim north there are lots of dark days and long nights, so the size of the eyeball increases to cope, and the brain also increases to process the information.

It doesn't mean that these people can see any better, just that the eye has adapted to the environment."

Scientists are looking into whether brain size in live people correlates in the same way.

But Prof Dunbar added: "This is much more difficult with modern travel as people can move all over the globe, making it difficult to correlate brain size to location."

Lead researcher Eiluned Pearce, from Oxford University's School of Anthropology, said: "As you move away from the equator, there's less and less light available, so humans had to evolve bigger eyes.

"Their brains also need to be bigger to deal with the extra visual input.

"Having bigger brains doesn't mean that higher latitude humans are smarter, it just means they need bigger brains to be able to see well where they live."

The study is published in the journal Biology Letters.

Metro (UK)

July 27, 2011 Wednesday   
Edition 1;   
Scotland

**It's dim up north, so eyes are bigger**  
  
**SECTION:** NEWS; Pg. 15  
  
**LENGTH:** 145 words

PEOPLE living far north of the equator have developed bigger eyes - and brains - to cope with the dark, long winters and grey skies.

Scientists measured eye sockets and brain capacity of 55 skulls from 12 populations across the world.

The further north, the bigger their eyes and brains, and Scandinavians - such as Ulrika Jonsson - had the biggest.

Eye socket volume varied from 22mm near the equator to 26mm at latitudes of 45 to 60 degrees, which includes Britain, according to the Royal Society journal Biology Letters.

Lead researcher Eiluned Pearce, from Oxford University's School of Anthropology, said: 'Away from the equator, there's less light, so humans have had to evolve bigger eyes.

Their brains need to be bigger to deal with the extra visual input.

It does not mean higher latitude humans are smarter, they need bigger brains to see well where they live.'

**REUTERS**

**It's dim up North, so people need bigger brains**

(Reporting by Kate Kelland; Editing by Steve Addison)

LONDON | Wed Jul 27, 2011 9:43am BST

People from northern parts of the world have evolved bigger brains and larger eyes to help them to cope with long, dark winters and dim skies, scientists said on Wednesday.

Researchers from Oxford University studied the eye sockets and brain capacity of 55 human skulls from 12 different populations across the world and found that the further human populations live from the equator, the bigger their brains.

It's not because they are smarter, however, but because they need bigger vision areas in the brain to cope with the low light levels at high latitudes, the scientists said in a report of their findings in the journal Biology Letters.

"As you move away from the equator, there's less and less light available, so humans have had to evolve bigger and bigger eyes," said Eiluned Pearce from Oxford's School of Anthropology, who led the study.

Their brains also need to be bigger to deal with the extra visual input.

"Having bigger brains doesn't mean that higher latitude humans are smarter, it just means they need bigger brains to be able to see well where they live."

The skulls used in the study dated back to the 1800s and included samples from indigenous populations of England, Australia, Canary Islands, [China](http://uk.reuters.com/places/china), France, India, Kenya, Micronesia, Scandinavia, Somalia, Uganda and the United States.

The researchers plotted the volume of the eye sockets and brain cavities against the latitude of the central point of each individual's country of origin and found that the size of both the brain and the eyes could be directly linked to the latitude of the country.

Oxford's Robin Dunbar, who also worked on the study, said the results showed the speed at which humans had evolved to cope with the challenges of new habitats.

"Humans have only lived at high latitudes in Europe and Asia for a few tens of thousands of years, yet they seem to have adapted their visual systems surprisingly rapidly to the cloudy skies, dull weather and long winters," he said.

The researchers said that from measuring the brain cavity, the study suggested the biggest brains belonged to populations who lived in Scandinavia, and the smallest belonged to Micronesians.

The Daily Telegraph (London)

July 27, 2011 Wednesday   
Edition 1;   
National Edition

**It's dim up north, but it gives you a bigger brain;   
Southerners are smaller-minded, study finds**  
  
**BYLINE:** Nick Collins  
  
**SECTION:** NEWS; Pg. 3  
  
**LENGTH:** 588 words

NORTHERNERS have been given new reason to lord it over their southern counterparts: they are likely to have bigger brains.

But before they start feeling too smug, southerners have the perfect retort: a bigger brain does not make you more intelligent.

An Oxford University study has found that people from countries further from the equator have evolved more grey matter and larger eyes than those from sunnier climes.

This is because living in areas with long, dark winters and cloudy skies means that the eyes and brain have to work harder to process images.

Having wider pupils allows the eyes to take in more light, while a bigger retina is able to distinguish more detail, producing a higher-resolution image.

A bigger brain is required to deal with all the extra information.

Researchers said the findings could theoretically apply to different communities within a particular country, meaning that people in the North of Britain might have larger brains than those in the South.

Northerly populations evolved to cope with short periods of daylight after migrating to Europe and northern Asia up to 40,000 years ago.

Analysis of 55 skulls from 12 countries, dating from the 1800s, showed that those from northern areas had larger eye sockets and brain cavities than those from equatorial regions.

While the English had an average brain capacity of 1.4litres, the figure in Micronesia, which lies very near the equator, was just 1.2litres.

In contrast Scandinavians, the most northerly population tested, had a brain capacity of 1.48litres.

A similar difference was seen in eye volume, with English skulls indicating an average of 26.22ml, compared with 26.83 in Scandinavia and 21.83 in Micronesia.

Eiluned Pearce, a postgraduate student who led the research, said: "As you move away from the equator, there's less and less light available, so humans have had to evolve bigger and bigger eyes.

Their brains also need to be bigger to deal with the extra visual input.

"Having bigger brains doesn't mean that higher latitude humans are smarter, it just means they need bigger brains to be able to see well where they live."

Although the tests did not examine differences between skulls from different parts of the same country, Miss Pearce said the data could mean someone that with an entirely Scottish or northern English heritage may have a larger brain and eyes than someone whose ancestors were all from the South.

Any difference would likely be minimal because the difference in light levels between the North and South is slight and interbreeding within Britain would dilute any evolutionary change, she added.

Professor Robin Dunbar, the director of the Institute of Cognitive and Evolutionary Anthropology at Oxford, and a coauthor of the study, said: "Humans have only lived at high latitudes in Europe and Asia for a few tens of thousands of years, yet they seem to have adapted their visual systems surprisingly rapidly to the cloudy skies, dull weather and long winters we experience at these latitudes."

The study took into account of the fact that people living in more northerly areas were generally bigger built overall and the possibility that eye socket size could also be linked to the need to have more fat to insulate the eyeball in cold weather.

Other research has shown that birds which sing earliest in the dawn chorus have relatively bigger eyes, and animals which are nocturnal have larger eyes than those that eat and forage during the day.

"Having bigger brains doesn't mean that higher latitude humans are smarter.

The Mirror

July 27, 2011 Wednesday   
3 Star Edition

**AY-UP! NORTHERNERS HAVE BIGGER BRAINS;   
..BUT ONLY BECAUSE IT'S DIM OOP NORTH**  
  
**BYLINE:** MIKE SWAIN  
  
**SECTION:** NEWS; Pg. 20  
  
**LENGTH:** 160 words

YOU can accuse workshy, sexist, bolshie Andy Capp of many things but he's no fool.

Behind that gormless expression he is using his extra large loaf to do more loafing.

In fact, as a Hartlepool resident, Andy will have more upstairs than any southern counterpart.

Scientists have found that northerners have bigger brains - to help them see in the gloomy light.

They studied 55 skulls from 12 peoples across the world and found eye sockets and brains get bigger further from the Equator to cope with dull light and long winters.

Research found the biggest brains belonged to Scandinavians with the smallest being Micronesians in the western Pacific ocean.

Other skulls looked at were from see page 46 for today's England, Australia, Canary Islands, China, France, India, Kenya, Somalia, uganda and the uSA.

Sadly, for northerners, the report in the journal Biology Letters said bigger brains did not mean they are smarter.

We're sure Andy would disagree.

The Sun (England)

July 27, 2011 Wednesday   
Edition 2;   
National Edition

**EEEE BAAH CEREBRUM;   
Northerners have bigger brains, scientists reveal**  
**BYLINE:** EMMA LITTLE  
  
**SECTION:** NEWS; Pg. 32  
  
**LENGTH:** 247 words

PEOPLE have bigger brains the further North they hail from, scientists revealed yesterday.

But before they get swell heads, it is NOWT to do with them being more intelligent than southerners.

The reason for the tiny difference is that they have to live with less light.

Their brains have evolved - along with slightly larger eyes - simply to cope with it being dim up North.

Eiluned Pearce, of Oxford University's School of Anthropology, explained: "As you move away from the equator, there's less and less light available, so humans have had to evolve bigger and bigger eyes.

"Their brains also need to be bigger to deal with the extra visual input."

She added after leading a team that measured the eyes sockets and brain capacity of 55 ancient skulls from around the world, including England: "Having bigger brains doesn't mean that higher latitude humans are smarter."

The study - published in the Royal Society journal Biology Letters - found that early humans swiftly adapted to lower light levels as they migrated from Africa.

The brains of ancient Brits were found to be 26 millilitres in size, close behind those of Scandinavians, who boasted the biggest.

Meanwhile humans living near the equator had 22-millilitre brains.

Oxford Professor Robin Dunbar, director of the Institute of Cognitive and Evolutionary Anthropology, said of the migrants: "They seem to have adapted their visual systems surprisingly rapidly to cloudy skies, dull weather and long winters."