

Brain size could determine whether you are good at maintaining friendships

Researchers are suggesting that there is a link between the number of friends you have and the size of the region of the brain - known as the orbital prefrontal cortex - that is found just above the eyes. A new study shows that this brain region is bigger in people who have a larger number of friendships. Their study is published on 1 February 2012 in the journal, *Proceedings of the Royal Society B*.

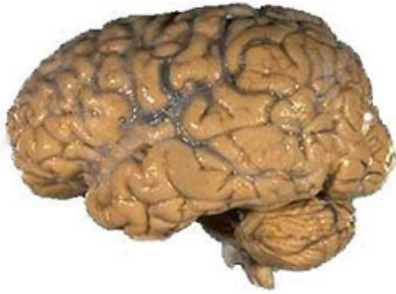


Image: National Institutes of Health, via Wikimedia Commons

The research was carried out as part of the British Academy Centenary 'Lucy to Language' project, led by Professor Robin Dunbar of the University of Oxford in a collaboration with Dr Joanne Powell and Dr Marta Garcia-Finana at Liverpool University, Dr Penny Lewis at Manchester University and Professor Neil Roberts at Edinburgh University.

The study suggests that we need to employ a set of cognitive skills to maintain a number of friends (and the keyword is 'friends' as opposed to just the total number of people we know). These skills are described by social scientists as 'mentalising' or 'mind-reading' - a capacity to understand what another person is thinking, which is crucial to our ability to handle our complex social world, including the ability to hold conversations with one another. This study, for the first time, suggests that our competency in these skills is determined by the size of key regions of our brains (in particular, the frontal lobe).

Professor Dunbar, from the Institute of Cognitive and Evolutionary Anthropology, explained: "'Mentalising' is where one individual is able to follow a natural hierarchy involving other individuals' mind states. For example, in the play 'Othello', Shakespeare manages to keep track of five separate mental states: he intended that his audience believes that Iago wants Othello to suppose that Desdemona loves Cassio [the italics signify the different mind states]. Being able to maintain five separate individuals' mental states is the natural upper limit for most adults."

The researchers took anatomical MR images of the brains of 40 volunteers at the Magnetic Resonance and Image Analysis Research Centre at the University of Liverpool to measure the size of the prefrontal cortex, the part of the brain used in

high-level thinking. Participants were asked to make a list of everyone they had had social, as opposed to professional, contact with over the previous seven days. They also took a test to determine their competency in mentalising.

Professor Robin Dunbar, said: "We found that individuals who had more friends did better on mentalising tasks and had more neural volume in the orbital frontal cortex, the part of the forebrain immediately above the eyes. Understanding this link between an individual's brain size and the number of friends they have helps us understand the mechanisms that have led to humans developing bigger brains than other primate species. The frontal lobes of the brain, in particular, have enlarged dramatically in humans over the last half million years."

Dr Joanne Powell, from the Department of Psychology, University of Liverpool, said: "Perhaps the most important finding of our study is that we have been able to show that the relationship between brain size and social network size is mediated by mentalising skills. What this tells us is that the size of your brain determines your social skills, and it is these that allow you have many friends."

Professor Dunbar said: "All the volunteers in this sample were postgraduate students of broadly similar ages with potentially similar opportunities for social activities. Of course, the amount of spare time for socialising, geography, personality and gender all influence friendship size, but we also know that at least some of these factors, notably gender, also correlate with mentalising skills. Our study finds there is a link between the ability to read how other people think and social network size."

Professor Dunbar's research was funded by the British Academy Centenary Research Project and by the British Academy Research Professorship. His research has already examined the different brain sizes of different species, but this study looks at the differences within species. Professor Dunbar published a paper last year, which found that people living near to the Poles needed larger brains for visual processing because of the dimmer light conditions.

Source: Oxford University

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