

Are political leanings all in the genes?

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02 February 2008

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THE race to become the most powerful politician on earth is well under way, and the US is gripped by election fever. In newsrooms and bars across the land, liberals and conservatives are slugging it out, trying to convince each other that their way of thinking is right. They may be wasting their breath.

According to an emerging idea, political positions are substantially determined by biology and can be stubbornly resistant to reason. "These views are deep-seated and built into our brains. Trying to persuade someone not to be liberal is like trying to persuade someone not to have brown eyes. We have to rethink persuasion," says John Alford, a political scientist at Rice University in Houston, Texas.

Evidence to support this idea is growing. For example, twin studies suggest that opinions on a long list of issues, from religion in schools to nuclear power and gay rights, have a substantial genetic component. The decision to vote rather than stay at home on election day may also be linked to genes. Neuroscientists have also got in on the act, showing that liberals and conservatives have different patterns of brain activity.

The idea that our politics are in part shaped by our genes is not itself new, but it has only recently come to the attention of political scientists. In 2005, Alford published a paper in which he analysed two decades of work in behavioural genetics, including a huge database containing the political opinions of 30,000 twins from Virginia (*American Political Science Review*, vol 99, p 153). He found that identical twins were more likely than non-identical twins to give the same answers to political questions. For example, on the issue of whether property should be taxed, four-fifths of identical twins gave the same answer, compared to two-thirds of non-identical twins.

What could account for this? Well, given that identicals have the same genes while non-identicals share only half their genes, the fact that identical twins gave the same answer more often than non-identicals suggests the answer must be influenced by their genes.

These results are startling. Evolution is a slow process that takes centuries to effect changes, so why would it endow us with genes that affect issues which seem fleeting on an evolutionary scale? Frank Sulloway, a psychologist at the University of California, Berkeley, backs the idea that inheritance can influence political attitudes, but admits the results may sound odd. "There's no such thing as a gene for disliking hippies," he says. The point is that certain genes shape personality traits, and these are linked to political opinion.

In 2003, John Jost, a psychologist at New York University, and colleagues surveyed 88 studies, involving more than 20,000 people in 12 countries, that looked for a correlation between personality traits and political orientation (*American Psychologist*, vol 61, p 651). Some traits are obviously going to be linked to politics, such as xenophobia being connected with the far right. However, Jost uncovered many more intriguing connections. People who scored highly on a scale measuring fear of



Enlarge image
How personality is linked to the way people vote



death, for example, were almost four times more likely to hold conservative views. Dogmatic types were also more conservative, while those who expressed interest in new experiences tended to be liberals. Jost's review also noted research showing that conservatives prefer simple and unambiguous paintings, poems and songs.

Jost noticed a pattern emerging from these results that fits neatly into existing models of personality. Many psychologists believe personality can be categorised into five classes, relating to conscientiousness, openness, extroversion, agreeableness and neuroticism. The latter two seem to have little to do with political orientation. Scores on the conscientiousness scale, however, show a significant correlation with position within the political spectrum (see Diagram).

A much stronger link exists between political orientation and openness, which psychologists define as including traits such as an ability to accept new ideas, a tolerance for ambiguity and an interest in different cultures. When these traits are combined, people with high openness scores turn out to be almost twice as likely to be liberals.

Combine the genetic influences on personality with the political tendencies of different personality types, and the idea that genetics shapes political tendencies seems very plausible indeed. All of the big five personality traits are highly heritable (*Journal of Research in Personality*, vol 32, p 431), with several studies suggesting that around half of the variation in openness scores is a result of genetic differences. Some traits that are linked to openness, such as being sociable, are also known to be influenced by the levels of neurotransmitters in the brain. And levels of these chemicals are controlled in part by genes. So while there isn't a gene for liking hippies, there is probably a set of genes that influences openness, which in turn may influence political orientation.

To join the dots in the argument, researchers next need to identify the brain areas and genes that shape political thinking. No one has yet identified a gene that correlates with liberalism or conservatism, for instance, but James Fowler, a political scientist at the University of California, San Diego, thinks the decision to vote rather than stay at home on election day may be linked to individual genes.

The act of voting inevitably has an emotional dimension. Voters generally have a certain degree of trust in their chosen candidate, for example. That suggests that two well-studied genes may be involved: *5HTT* and *MAOA*, which both help control the levels of serotonin, a neurotransmitter that also influences brain areas linked with trust and social interaction. People with versions of the genes that are better at regulating serotonin tend to be more sociable. According to Fowler's hypothesis, they should also be more likely to vote.

In a study currently under review at *The Journal of Politics*, Fowler confirms that his hunch was correct. Using data on 2500 adults from across the US, he shows that people whose version of the *MAOA* gene is efficient at regulating the brain chemical are 1.3 times more likely to vote than those with a version that is less efficient. By itself, *5HTT* did not show such an effect. But Fowler found that this gene interacted with the environment in an intriguing way. Members of religious groups are known to be more likely to vote and, among this subset of subjects, those with a particular version of *5HTT* were 60 per cent more likely to vote.

Many other genes are likely to be involved. In a paper presented in April 2007 to the annual conference of the Midwest Political Science Association, held in Chicago, Ira Carmen, of the University of Illinois at Urbana-Champaign, discussed *D4DR*, a gene involved in regulating levels of the neurotransmitter dopamine. It is known that high levels of dopamine can cause obsessive-compulsive disorder. Carmen speculates that dopamine might therefore be linked to the need to impose order on the world. If so, variants of the *D4DR* gene that lead to higher levels of dopamine should be found more frequently in conservatives. Carmen plans to apply for a grant to study this and other issues in around 200 or so individuals.

These gene studies are not the only way in which researchers are trying to pin politics down to more fundamental science. If Jost's personality work is correct, the differences between conservatives and liberals should show up in measures of brain activity. Tasks that involve dealing with conflicting information, for example, are known to activate an area of the brain known as the anterior cingulate cortex (ACC). Since liberals are generally more open to conflicting ideas, activity in this area of the brain would be expected to differ between them and conservatives.

Last September, David Amodio, a neuroscientist at New York University, showed that it does. He asked around 40 people to complete a simple test, in which they had to press a button as soon as a certain letter flashed up on a computer screen (*Nature Neuroscience*, vol 10, p 1246). The letter appeared in most rounds of the test and subjects soon learned to respond fast. In one out of five cases, however, a different letter appeared. Participants were not supposed to press the button but, having grown used to seeing the "right" letter, many did so accidentally. The ability to hold back and resist the habit of pressing the button is used as an analogy for dealing with conflicting sources of information, and to measure individuals' capacity to manage them.

As he predicted, Amodio found a correlation between the strength of liberal attitudes and scores on

the test. More importantly, he was able to link that difference to brain activity. Electrodes placed on subjects' skulls revealed that liberals had greater ACC activity when they had to hold back from pressing the button. Liberals also had higher activity immediately after making a mistake, and the greater the activity, the better their performance over many rounds. The results, says Amodio, suggest that basic brain mechanisms, such as those that control habit formation, may distinguish liberal minds from conservative ones.

But some studies linking biology to political attitudes need to be taken with a pinch of salt. One recent brain-scan study, published in *The New York Times* as an opinion piece, was pilloried in the press for being marketing, not science. The study was criticised in part because the researchers involved had links to FKF Applied Research, a firm which employs brain scanning in its market research work. And there is no shortage of critics who question the whole idea of linking politics with biology. Personality studies in particular have been singled out as sloppy science, in part because qualitative traits like openness cannot be measured in the way that height or eye colour can. To gauge personality, psychologists generate a series of questions designed to measure the trait of interest. Asking a subject whether they "jump into things without thinking" is one way to measure openness. But some of the questions on the tests assess issues that are political in nature, such as a subject's views about foreigners. If this is the case, "the correlation is completely circular", says Evan Charney, a political scientist at Duke University in Durham, North Carolina.

Charney has a more general criticism of the personality work. As others have pointed out, a rather unflattering view of conservatives emerges from the studies. They are portrayed as dogmatic, routine-loving individuals, while liberals come across as free-spirited and open-minded folk. "I keep expecting Jost to show that conservatism is negatively correlated with penis size," jokes Charney. He feels that inherent biases in the make-up of academia, which is dominated by liberals, leads to the "pathologising of conservatism".

This last criticism is difficult to dismiss. "It's hard to come up with totally unbiased language," admits Sulloway. However, the details of the language are not critical to the overall result. When political questions are weeded out, the results remain the same, he says. And Jost points out that conservative academics have run personality studies and come up with similar results to their liberal colleagues. "We are all pretty much finding the same kinds of differences," he says.

Even if the personality differences between people who hold varying political views turn out to be real, others are sceptical we will ever understand the genetics that underlie them. Lindon Eaves, a behavioural geneticist at Virginia Commonwealth University in Richmond, helped assemble much of the data that Alford reviewed in 2004. He says that complex traits such as openness are likely to be determined by the combined action of a large number of genes. It is not impossible to identify them, but previous experience suggests it will be tough. Eaves points out that studies of twins have shown schizophrenia to have a substantial inherited component, but the jury is still out on whether we will find the individual genes involved.

We may soon find out whether Carmen and others will prove Eaves wrong. Next March, Carmen is inviting over 50 geneticists, politics researchers and neuroscientists to a conference at the University of Illinois at Urbana-Champaign to discuss such ideas, in the hope of giving birth to a whole new field of study.

Even without a detailed understanding of the genes involved, these studies could influence real-world politics. At worst, the research could be interpreted in a depressing way. Jost and others speculate that all societies contain groups analogous to western liberals and conservatives: one wants to bring in new ideas, the other resists change. In different times and areas of the world, the party names differ, as do the topics of contention. Yet politics will always be characterised by two groups pulling in different directions. If the genetic basis means these groups are hard-wired to disagree, it makes debate and policy analyses seem a little pointless.

A liberal conspiracy?

Those involved in day-to-day politics do not see it that way. In part, that may be because the studies have attracted little attention outside academia. Of the researchers that *New Scientist* spoke to, none said that professional politicians had expressed an interest in their work. Some political think tanks know about the results, but view them with suspicion. At the American Enterprise Institute, a pro-free-market group, scholar David Frum says that he is "flattered by the evidence that conservatives are more honest and dutiful than liberals". But given the huge number of variables that affect the outcome of an election, it would be a foolhardy researcher who would draw generalisations from Jost's work, he says.

Those involved in the research add that even if we do find genes that have a powerful influence on politics, it will still be worth having political debates. Alford says his work shows that our reaction to homosexuality, like homosexuality itself, is in part determined by our genes. But over time, he adds, policy still changes. Arguments over gay rights in Europe and North America now focus on issues of discrimination at work and the right to marry. Just 50 years ago, much of the debate was about whether homosexuality should be legal. The two sides still do not understand each other, but protest

movements, media pressure and other factors have helped change the issues they fight over. "The fact that people exist at poles doesn't eliminate the persuasive element of politics," says Alford.

So the guy at the bar may never agree with you, but perhaps realising that can be liberating. "We spend a lot of energy getting upset with the other side," says Alford. We often think our opponents are misinformed or stubborn. Accepting that people are born with some of their views changes that, Alford points out. Come to terms with these differences, and you can spend the energy now wasted on persuasion on figuring out ways of accommodating both points of view.

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Printed on Sat Feb 09 07:59:04 GMT 2008