

The evolution of homosexuality

Gender bending

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Genes that make some people gay make their brothers and sisters fecund

THE evidence suggests that homosexual behaviour is partly genetic. Studies of identical twins, for example, show that if one of a pair (regardless of sex) is homosexual, the other has a 50% chance of being so, too. That observation, though, raises a worrying evolutionary question: how could a trait so at odds with reproductive success survive the ruthless imperatives of natural selection?

Various answers have been suggested. However, they all boil down to the idea that the relatives of those who are gay gain some advantage that allows genes predisposing people to homosexual behaviour to be passed on collaterally.

One proposal is that the help provided by maiden aunts and bachelor uncles in caring and providing for the children of their brothers and sisters might suffice. That seems unlikely to be the whole story (the amount of help needed to compensate would be huge), though it might be a contributory factor. The other idea, since there is evidence that male homosexuals, at least, are more likely than average to come from large families, is that the genes for gayness bring reproductive advantage to those who have them but are not actually gay themselves. Originally, the thought was that whichever genes make men gay might make women more fecund, and possibly vice versa.

Brendan Zietsch of the Queensland Institute of Medical Research in Brisbane, Australia, and his colleagues have, however, come up with a twist on this idea. In a paper to be published soon in *Evolution and Human Behavior*, they suggest the advantage accrues not to relatives of the opposite sex, but to those of the same one. They think that genes which cause men to be more feminine in appearance, outlook and behaviour and those that make women more masculine in those attributes, confer reproductive advantages as long as they do not push the individual possessing them all the way to homosexuality.

The straight truth

Other evidence does indeed show that homosexuals tend to be "gender atypical" in areas beside their choice of sexual partner. Gay men often see themselves as being more feminine than straight men do, and, *mutatis mutandis*, the same is true for lesbians. To a lesser extent, homosexuals tend to have gender-atypical careers, hobbies and other interests.

Personality tests also show differences, with gay men ranking higher than straight men in standardised tests for agreeableness, expressiveness, conscientiousness, openness to experience and neuroticism. Lesbians tend to be more assertive and less neurotic than straight women.

There are also data which suggest that having a more feminine personality might indeed give a heterosexual male an advantage. Though women prefer traditionally macho men at the time in their menstrual cycles when they are most fertile, at other times they are more attracted to those with feminine traits such as tenderness, considerateness and kindness, as well as those with feminised faces. The explanation usually advanced for this is that macho men will provide the sperm needed to

make sexy sons, but the more feminised phenotype makes a better carer and provider—in other words an ideal husband. And, despite all the adultery and cuckoldry that goes on in the world, it is the husband who fathers most of the children.

As far as masculinised women are concerned, less research has been done on the advantages that their appearance and behaviour might bring. What data there are, however, suggest they tend to have more sexual partners than highly feminised women do. That may, Dr Zietsch speculates, reflect increased competitiveness or a willingness to engage in unrestrained sexual relations (ie, to behave in a male-like way) that other women do not share.

Dr Zietsch and his colleagues tested their idea by doing a twin study of their own. They asked 4,904 individual twins, not all of them identical, to fill out anonymous questionnaires about their sexual orientation, their gender self-identification and the number of opposite-sex partners they had had during the course of their lives. (They used this figure as a proxy for reproductive fitness, since modern birth-control techniques mask actual reproductive fitness.)

The rules of attraction

Their first observation was that the number of sexual partners an individual claimed did correlate with that individual's "gender identity". The more feminine a man, the more masculine a woman, the higher the hit rate with the opposite sex—though women of all gender identities reported fewer partners than men did. (This paradox is normal in such studies. It probably reflects either male boasting or female bashfulness, but though it affects totals it does not seem to affect trends.)

When the relationships between twins were included in the statistical analysis (all genes in common for identical twins; a 50% overlap for the non-identical) the team was able to show that both atypical gender identity and its influence on the number of people of the opposite sex an individual claimed to have seduced were under a significant amount of genetic control. More directly, the study showed that heterosexuals with a homosexual twin tend to have more sexual partners than heterosexuals with a heterosexual twin.

According to the final crunching of the numbers, genes explain 27% of an individual's gender identity and 59% of the variation in the number of sexual partners that people have. The team also measured the genetic component of sexual orientation and came up with a figure of 47%—more or less the same, therefore, as that from previous studies. The idea that it is having fecund relatives that sustains homosexuality thus looks quite plausible.

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