

Genetic Research and Homosexuality ... to what degree is sexuality the result of something innate versus the effect of environmental forces?

BY LARRY RUDIGER

A pair of presentations at the most recent American Psychiatric Association (APA) convention has revived a contentious debate: can homosexuality be somehow forced into heterosexuality? This really points to a more basic question, though: to what degree is sexuality the result of something innate versus the effect of environmental forces?

Getting the Facts

In earlier columns, I've discussed some of the issues that make rigorous scientific study of this topic so difficult. Those barriers remain, including the cost of such projects, the lack of a clear benefit (that is, compared to the potential pay-off of, say, effective medications for costly diseases), and the difficulties in defining the terms in question. What, exactly, is meant by homosexuality?

Current Controversy

The research presented at the APA convention touches on some of these issues. I'd rather not discuss them in detail for they've yet to be published. A couple of caveats, though, are in order. First, when something is presented at a convention, there is often a very low standard for the evidence; it's likely to be an initial analysis of preliminary data. Second, just because research is being presented doesn't mean it expresses the organization's stance on a topic.

In this regard, APA has not budged. They retain their opposition to "reparative therapy" in part because there is considerable, credible evidence it causes harm. But also, APA has not retreated from their historic ruling that homosexuality is not related to mental disorder. While that decision was not reached in a political vacuum, it was and is bolstered by the evidence – which, I might add, ex-gay proponents have yet to counter in any meaningful fashion.

Finally, and somewhat ironically, the author of the controversial interview study, Dr. Robert Spitzer, was instrumental in the initial declassification of homosexuality – a highly unpopular position back in the early 1970's. As to his recent research, I will be surprised to see it published in a prestigious journal because it adds practically nothing to what we know: people with homosexual leanings who are also strongly religious will go to extraordinary lengths to try and eliminate what they believe is contrary to God's will. Stay tuned for further developments.

Recent Research

In my experience and opinion, the only research methodology that can convincingly describe the genetic nature of a behavioral trait is a twin study. That means you define a population – typically a geographical region – from which you randomly select a subset of all twins born there. They are

recruited and followed over time. Because of what's known about twins' genetic resemblance (when they're identical, it's complete; when they're fraternal – or not identical – then, on average, they'll share half their genes in common) you can construct mathematical models to test different propositions.

The most interesting ones are used to estimate the relative effect of genes, the shared environment (by assuming that a twin pair's home environment is equivalent) and then the unique environment – those things that happen to each individual. It's really just algebra on a grand scale. But it's powerful because if your model doesn't match the data, then there's a vanishingly small probability that your hunch is true. For me, that's the hallmark of good science: if you're wrong, then the data have a chance to tell you so.

Two of these big, ongoing twin projects are run by former colleagues from my behavior genetic research days. One's based in Virginia, covering the mid-Atlantic region; the other is in Australia. Both of these studies suffer inherent limitations of the subject. How do you measure homosexuality? Can you infer it from things that are known to be related to it – for example, childhood gender nonconformity? And what do you do about the fact it's a touchy subject, and, when asked, even in as careful a way possible, people are likely to be evasive (or even lie)?

In this regard, the mid-Atlantic study is probably more limited. They relied on a single item (how would you describe your sexual orientation), and regardless of what you're studying, that limitation alone causes problems (which ends up being expressed as imprecise estimates of genetic and environmental effects). Of about three thousand participants, 2.8% reported that they were either homosexual or bisexual. Compared with fraternal pairs, identical twins were about twice as likely to both be gay, lesbian, or bisexual. Further analysis suggested that, for all the pairs studied, the genetic part of things accounts for between 28% and 65%; the shared environmental side covers between zero and 40% – rough estimates to be sure, but there's nothing really to be done about it.

In addition, when they tested to see if the relatively higher rate of non-heterosexuality in identical pairs was actually caused by their environment (known to be more similar – in

part because they are identical!), the evidence was lacking. In other words, there's no evidence that identical twins are more likely to share homosexuality because of their upbringing or because, being so similar in appearance, of the way people react to them. Plainly put, according to this study their parents made them gay with the genes they passed on, not with their parenting techniques.

Meanwhile, Down Under

Two papers about the much larger Australian study sample (about 9,000 twin pairs) profited from that as well as more detailed, and reliable, measurement of sexuality. I'll only have time to discuss one publication (and will recommend the other to those most facile with math). In it, the researchers asked about both the internal sense of homosexual attraction as well as overt behavior – the familiar Kinsey scale. An interesting finding: bisexuality was rather less common in men while more extreme homosexuality was less common in women.

Because the sample was so large, the Australian researchers were able to run separate analyses for men and women. For both genders, familial influences are strong. But it's difficult to draw a line between genes and shared environment. Men's homosexuality, it seems, presented far less evidence for a shared environmental influence and may be strongly genetic. But for women, in addition to a smaller genetic effect (about 7%), about 40% was due to the

shared environment. Earlier research has found the same difference between men and women, but not with this degree of statistical power and applicability to the population as a whole. It suggests that, perhaps, lesbians are both born and made. Exactly how, this paper doesn't say.

Interestingly, though, men and women were much alike on a related variable: childhood gender nonconformity, or being a tomboy (women) or sissy (men). The evidence suggests that it's a bit more strongly genetic for men (50% versus 37%), but there's no sign it's caused by the environment for either gender. What of the rest, the 50% and 63% left over? It's just that – left over. It's something of a garbage can category: everything that cannot be estimated as part of the family environment or genetic make-up, and the expected errors you get with research (people filling out the form wrong, or lying, that sort of thing).

Taken together, these papers are provocative. What might be present in girls' environment that makes adult lesbian and bisexual identity more common? And why does the environment seem to have so little to do with men's sexuality, while women's sexuality does seem related to their upbringing? What of the relationship between childhood gender nonconformity and adult sexuality? I hope future research can give us some useful answers – and questions.

Papers discussed

Kendler, K.S., Thornton, L.M., Gilman, S.E., & Kessler, R.C. (Nov 2000). "Sexual orientation in a US national sample of twin and nontwin sibling pairs." *American Journal of Psychiatry*, 157(11), 1843-6

Bailey, J.M., Dunne, M.P., & Martin, N.G. (Mar 2000). "Genetic and environmental influences on sexual orientation and its correlates in an Australian twin sample." *Journal of Personality and Social Psychology*, 78(3), p 524-36.

Gangestad, S.W., Bailey, J.M., & Martin, N.G. (June 2000). "Taxometric analyses of sexual orientation and gender identity." *Journal of Personality and Social Psychology*, 78(6), p 1109-21.

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